000699
NSWC WHITE OAK
5090.3a

ENGINEERING SAFETY AND ENVIRONMENTAL RISK ASSESSMENT AND MANAGEMENT PLAN VOLUME 1 OF 4 NSWC WHITE OAK MD

7/31/1991

EVENTS ANALYSIS, INC.

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

VOLUME I

July 31, 1991

Prepared by

Events Analysis, Inc.
12101 Toreador Lane
Oakton, Va. 22124-2217
9064

Contract No. N60921-88-D-0007
Delivery Order 0010

This is Volume 1 of a 4-Volume report describing work performed on

Contract N60921-88-D-0007, Delivery Order 0010
by Events Analysis, Inc.

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

VOLUMES I - IV

TABLE OF CONTENTS

VOLUME II. BASELINE ENGINEERING ENVIRONMENTAL ASSESSMENT

VOLUME III FIRE, SAFETY AND FACILITY SURVEY REPORTS

PART 1 DAHLGREN BUILDING SURVEYS

PART 2 WHITE OAK BUILDING SURVEYS

VOLUME IV S&E RISK MANAGEMENT MASTER PLAN

EXECUTIVE SUMMARY

This is Volume I of a four-Volume report of work performed on a project to

1) define systems at NAVSWC-White Oak utilizing energetic materials and directed energies which can pose safety risks to safety and the ecology and environment, and identify Safety and Environmental (S&E) risks those energies pose at White Oak, beyond those addressed by present regulations, directives and instructions. [1]

2) present a baseline engineering environmental assessment of the White Oak facility.

3) present a comprehensive plan for controlling those risks adequately in the future. The report includes a draft environmental assessment of those activities for use as a baseline for in-house NEPA compliance considerations.

Chapter 1 of this volume describes the project objectives, project scope, risk categories and considerations, the methodology employed and special considerations during performance of the project.

Chapter 2 provides the definition of the operations and functions conducted at White Oak site, as they relate to energetic materials and directed energies which can impact the natural, social and political environment, and the risk management system to control those materials and energies. Additional tables, figures and maps relevant to the study are appended to this volume.

Chapter 3 presents information about the risks identified during the study. It presents information about observed deficiencies related to broadly-defined energetic materials and directed energies, and risks attributable to the S&E risk management process observed during the study.

Chapter 4 summarizes the primary needs which changes in present S&E risk management practices will have to address.

Volume II contains the baseline Engineering Environmental Assessment for White Oak. In view of the uncertain future status of White Oak, this baseline engineering assessment is limited to one option: to modify center operations, as necessary to limit environmental impacts. This study serves to document the environmental relationships of present and past activities, and their impacts on the surrounding environment.

Volume III, Part 1 describes the results of fire and safety surveys of two selected buildings at Dahlgren and Part 2 the seven building surveys at White Oak.

Volume IV presents the Master Safety and Environmental Management Plan for RDT&E and support activities, to control adequately all categories of S&E risks, including residual and future risks. It also contains a section describing the basis for the Plan and considerations incorporated into the Plan, to assist in the assessment of changes and their effects on the management of risks. Also included are audit procedures to help assure that future S&E performance is as predicted.

---

[1] The purpose of this study was to identify examples of risks as needed to assess the White Oak S&E risk management system, rather than to perform a comprehesnive risk asssessment of all the risks at White Oak. During the study, individual risks found during site visits were communicated directly to the points of contact as they were observed. Thus risks discussed in this report should be considered illustrative, rather than specific deficiencies requiring abatement.

Individual findings during the course of the work were communicated to appropriate parties at the time they were observed. The general findings, resulting from analysis of the entire system and its interactions are reported in Part I of this document, have been discussed with White Oak personnel as they were being observed, recognized, analyzed or understood.

The diverse S&E risk management processes can be characterized as reasonably successful to date, based on White Oak's recent safety and environmental loss history. However, the study disclosed opportunities to modify the overall and individual S&E risk management system elements to make them more congruent with White Oak's activities and more efficient in the activities they addresses in the future - to do more with less.

PART 1 WHITE OAK SAFETY AND ENVIRONMENTAL RISKS

CHAPTER 1. INTRODUCTION AND OVERVIEW

1.1. PURPOSE

The purpose of this work was to identify baseline safety and environmental risks associated with energetic materials and directed energies, and develop a master plan for the management of those risks.:

1) define systems at NAVSWC-White Oak utilizing energetic materials and directed energies which can pose risks to safety and the ecology and environment, and identify the Safety and Environmental risks those energies pose, beyond those risks addressed by present regulations, directives and instructions.

2) develop a baseline engineering environmental assessment of the White Oak facility, for use as a baseline for in-house NEPA compliance considerations.

3) present a comprehensive plan for controlling those risks effectively in the future.

1.2. OBJECTIVES AND SCOPE.

The objectives of this work were to

- Develop White Oak NEPA baseline system definition documents.
- Describe safety and environmental risks for certain White Oak Operations.
- Provide a Master Safety and Environmental Risk Management Plan and Audit System.
- Report observed problem areas.
- Report the results of Occupational Safety and Health, Fire and Facility Safety Surveys.

1.3. SCOPE OF STUDY

The study addressed safety and environmental (S&E) risks related to energetic materials and directed energies at White Oak. The scope of the risk considerations included discovery, definition and documentation of hazards and associated risks posed by energetic materials and directed energies at White Oak; their elimination or control to achieve and maintain S&E risks at accepted levels; the decision process to ensure that risks are accepted at the proper level of decision making at White Oak; and monitoring of risks over the life of the activity or system to ensure that the risks remain as predicted and accepted. The scope includes S&E risks over the life cycle of an activity or system. The study considers management and technical aspects of risk identification, acceptance and control. It also considers residual risks remaining after compliance with all applicable regulatory, DOD, Navy, and local S&E requirements has been achieved.

Departments at White Oak were found to be concerned about two aspects of safety and environmental risks. One concern was for the safety of the systems being developed for White Oak sponsors over their life cycle wherever they may be deployed. Extensive S&E program efforts and validation procedures for those systems are presently considered. The second area of concern was the safety and environmental risks associated with the White Oak personnel and facility. This study focuses on the safety and environmental risks at White Oak activities, rather that risks posed elsewhere by the systems being researched, developed, test or engineered at White Oak.

The report addresses exposures to S&E risks faced by employees and other personnel on and off the White Oak facility; by systems, equipment or property on and off the facility; by the environment; and risks to the mission of the White Oak facility and the Center.

The Center is a NIF activity. The scope of an industrial facility risk study normally would include economic aspects of S&E risks to the enterprise and the facility, as well as the technical risk considerations, for example, lost income as the result of a mishap to a critical piece of test equipment. However, because the Government is self-insured, the economic aspects of the S&E risks are not addressed in this study.

1.3.1. Governing Requirements.

The study was not a compliance-oriented inspection, survey or review. While the building surveys did consider compliance with requirements, the main emphasis was on residual risks after compliance with applicable requirements is achieved. The S&E risk management process includes but is not limited to achieving compliance with applicable S&E requirements.

1.3.2. Geographic Area Considered.

The geographic area considered includes all Center property within the White Oak fence line. For environmental protection purposes, the geographical areas considered include White Oak base, plus those areas where underground, surface or air pollution effects might occur, based on our review of the Center's activities.

The geographic area considered does not include adjacent properties evaluation of activities on adjacent properties, except for environmental considerations. The area occupied by the Harry Diamond Laboratory is not considered as a part of the White Oak property for the purposes of this report.

1.3.3. Facility Boundaries.

Facility boundaries are as shown in Figure 1-1 on the following page. The property is also described more fully in maps found in Volume II, the Engineering Environmental Assessment.

1.3.4. Facility Definition Data.

According to NAVSWC Public Works Department facility records, the White Oak facility consists of over 2980 facilities and spaces identified with individual identifiers in the property records. These facilities include buildings, tanks, rooms, magazines, storage areas, and utilities, plus 8529 sq yds of roads and many other kinds of spaces which had to be considered for the project. From this list, approximately 1785 spaces occupying over 550,000 square feet of space was identified initially as being used by departments which would be expected to have energetic materials or directed energies present at White Oak. After establishing the scope of the term "energetic materials" relative to safety and environmental hazards and risks, additional spaces were added to the list. The changes resulted in selection of a total of almost 1900 spaces occupying over 700,000 square feet with over 1400 full time occupants for a site visit or review during the project.

Energetic materials and directed energies were broadly defined to include materials and energies that could do harmful work if misdirected or released. The study did not address building utilities such as gas, steam, water or electricity, unless it was pertinent in specific cases for reasons related to the activities in a building.

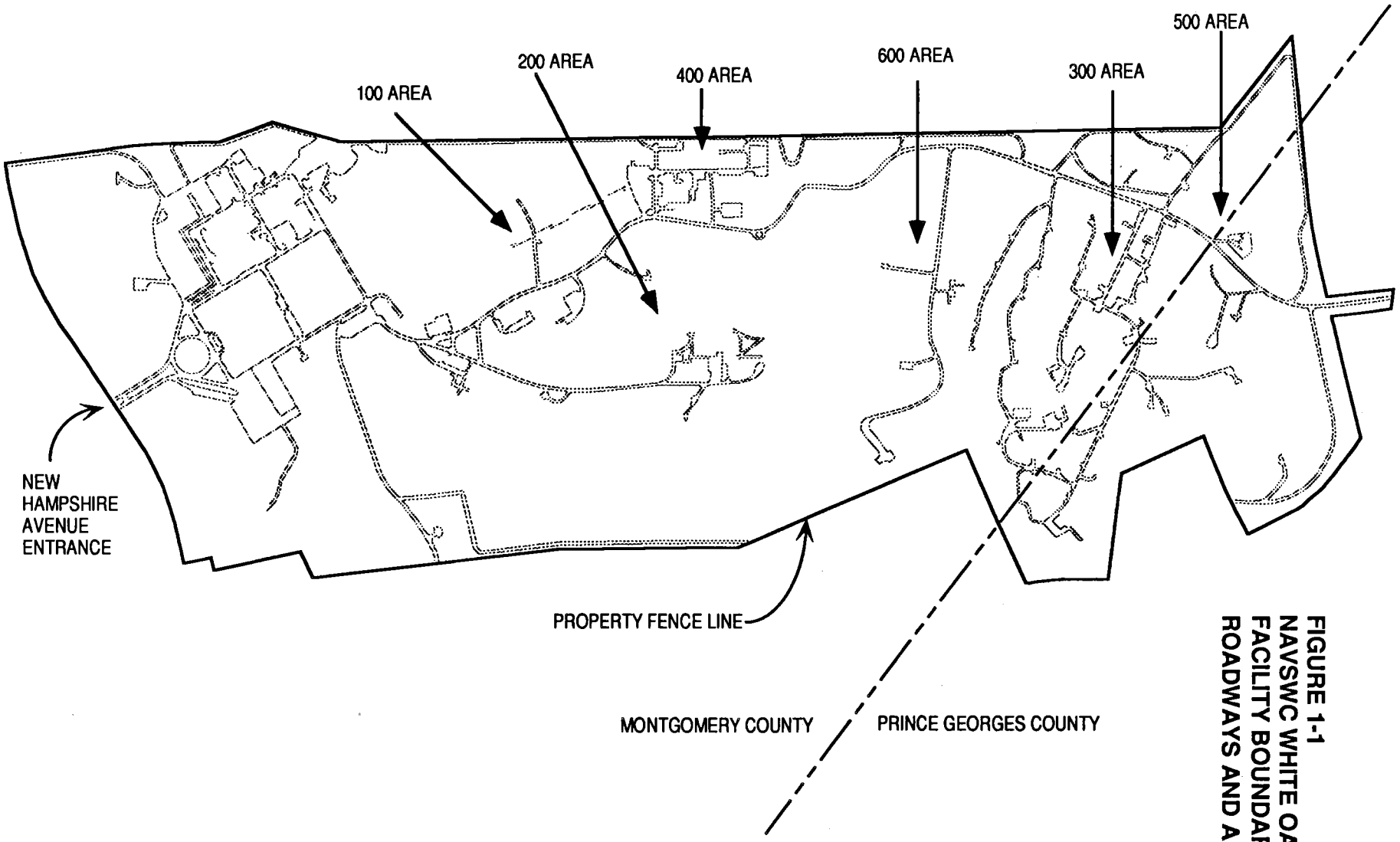


FIGURE 1-1
NAVSWC WHITE OAK
FACILITY BOUNDARIES,
ROADWAYS AND AREAS

1.3.5. Consideration of Environmental Effects.

The project required consideration of potential environmental effects on White Oak property, and off-premises environmental, political and social effects. Underground, surface and aerial dispersion mechanisms that might affect species present on and near the White Oak properly were considered, as were the species that might be affected adversely.

1.3.6. Past and Future Facility Activities.

Review of past activities was limited to a search of past studies performed for the Center, mishap and spill records, observations during the site visitations, and interviews with personnel presently employed at White Oak. Future activities were identified from contacts during the site visits.

1.3.7. FY 1990 Activities as Baseline.

During interviews and site visitations, attempts were made to quantify the level of activities of interest with respect to energetic materials and directed energy, so they could be presented as a baseline with this report. Almost without exception, these data were reportedly not routinely available. In their absence estimates were requested from the personnel visited. Estimates were offered in some cases, but the high degree of uncertainty expressed during the discussions indicated that the estimates should not be presented in this report. This situation is in contrast to the detailed, easily accessible, records maintained of range activities at NAVSWC-Dahlgren. This is addressed in the report.

1.3.8. Tenant and Contractor Activities.

At several locations, interviewees indicated that contractors either performed some of the tasks involved in the activity, or in one case operated their own tests on White Oak equipment. Since contractor activities are under the direction of Center personnel, they were not interviewed during the project.

1.3.9. Activities excluded from scope of study.

Activities excluded from the scope of the study included security operations at the Center which use energetic materials in their weapons and directed energies in their communications.

1.4. RISK IDENTIFICATION CONSIDERATIONS

1.4.1. Categories of risk.

Observations of facilities focused on three categories of risk. The first category is the risk posed by an energetic material or directed energy within a Department with the consequences of mishaps rising upward through the chain of command; this can be viewed as an "internal" risk, The second category is risk arising during activities conducted in one department that may be imposed on another department or exposure group; this can be viewed as a "lateral" risk, spreading laterally from one department to other departments or areas. The third category is the kind of risk arising over the long term, posed by introduction of changes or exposures to energetic materials and directed energies over the life cycle of an activity; this is considered a "longitudinal" risks.

INTERNAL risks, for example, would be posed by operations with gram quantities of explosive chemicals, or lasers operated within an enclosed laboratory. Hazards could potentially affect employees or equipment in the laboratory or occupied space, and create problems within (and for) the department operating the space. However, the hazards would not be likely to affect other facilities, departments, or the environment, nor pose problems outside the department. Internal risks need to be identified, assessed and acted on within a department, as they presently are under NAVSWCINST 5100.6B for Occupational Safety

and Health. The persons and equipment at risk are within a single organizational unit. They benefit from the work involving the risk, and are aware of and understand the general risk from their regular work. Risk are identified from Navy or Center requirements documents, from personal experience or by "worst-case" type analyses. Operating procedures for the operator, special training, warnings and certifications are typically provided to control such risks. Environmental risks, while clearly of concern are not usually addressed as thoroughly as safety risks-yet. A greater reliance of environmental experts was observed. Generally, Department managers were cognizant of the safety and environmental hazards and risks, and were attempting to deal with them effectively, in accordance with 5100.6B and the Center's hazardous materials minimization and hazardous waste programs.

LATERAL risks exist when others outside a department could be affected by a Department's activities. For example, a hazard poses a lateral risk if it can result in a mishap that affects adjacent rooms of a building or adjacent facilities occupied by other departments; can harm other employees or passers-by; can create effects that could be observed off-base and create off-base concerns; or can create environmental harm. In that case, consideration of the exposed workers, equipment, facilities or environment need to be incorporated into the hazard and risk analyses and assessment efforts, any controls adopted, and any risk disclosure decisions. Measures such as explosive QD arcs, warnings, barriers defining exclusion areas and other kinds of barriers are typically used to control this category of hazard, based on observations of the practices.

LONGITUDINAL risks exist when a system or its controls pose risks that can increase for various reasons over time, and thus require special management and technical attention. This type of risk requires prediction and surveillance in the same sense as a longitudinal statistical research project requires repeated observations of subjects over a period of time to assess hypotheses. This kind of risk can be illustrated by the changes that occur with successive loading of pressurized steel containers. Over time, the margin between the working pressure and the cylinders wall yield strength and other properties begins to decrease, reducing the "safety margin" of ferrous metal compressed gas cylinder. Thus the life of cylinders must be monitored to ensure that protective action is taken before a mishap occurs. Mishaps frequently occur when reasonably foreseeable changes are not analyzed or predicted, when monitoring and assessment of ad hoc changes is not required, or when such risks are accepted unwittingly at inappropriate levels of an organization. Another example is the longer term effect of periodic exposure to low dose rates of radiation, chemicals or asbestos, which many not be clearly understood or defined.

1.4.2. Levels of concern.

A strong orientation toward compliance with requirements was observed during the study. This orientation begs the question of the level of risk that exists after compliance is achieved. One of the observed gaps in the S&E management process was the need to address residual risks, particularly the lateral and longitudinal risks associated with some of the activities at White Oak.

All risks are not created equal. Nevertheless, the responsibility for assuming all levels of risk rests solely with Command by Navy order. Command is heavily dependent on supporting staff to provide data to support the risk acceptance decisions. Each risk has to be identified and assessed before the level of effort that should be invested in that eliminating or controlling that risk can be judged by the persons exposed to the risks, or the persons who must invest resources in its elimination or control. We found evidence that S&E risks were being treated according to perceptions of the level of risk, rather than by systematic analyses and assessments using the best available S&E management and engineering concepts, principles and practices. While risks were being addressed, did not observe the use of a risk level ranking system on which decisions about priorities could be based.

This report addresses that need by providing an indicator of the level of concern that should be attached to the risk by managers who control resources. This indicator of the level of concern provides managers with a measure to judge the significance of a hazard, with which they can formulate their risk acceptance or risk control decisions.

To identify the residual risks for this project, each energetic material and directed energy source at each location White Oak was reviewed to identify each category of risk that might be present. Hazards and associated risks were documented and a Navy risk assessment code from MILSTD 882B was applied to the risk. From those reviews, and consideration of the vertical, lateral and longitudinal aspects of the risk, an indication of a "Level of Concern" with which the risk should be treated by management was estimated. This Level of Concern was based primarily on the potential consequences of mishaps associated with the risks if they are not controlled adequately. The analysis considered the energies present, their potential behavior, and the people and objects exposed to that behavior, over the life of the systems involved. These considerations were supplemented by the experienced judgment of personnel interviewed and the study team members. The level of concern reflects the RACs assigned, based on the following considerations:

Level of concern	Nature of risks
RAC 1	Those risks that, if uncontrolled, have the potential to result in fatal or disabling injury to personnel, loss or extended disruptions of mission-essential equipment of facilities, or sufficient harm to the environment to result in a reasonably justifiable public demand to close the base, to bring legal charges against individuals, or jeopardize the future of a program for the United States or the Navy.
RAC 2	Those risks that, if uncontrolled, have the potential to result in substantial personal injury and lost time, substantial damage to or short-term disruption of mission-essential equipment or facilities, or sufficient harm to the environment to result in public controversy or embarrassment to the Navy or Department of Defense or degradation of the environment for a year or more, or non-compliance that puts continued operation of the base in jeopardy.
RAC 3	Those risks that, if uncontrolled, have the potential to result in brief lost-time injury to personnel on the station; disruption of mission-essential equipment or facilities for a week or less; or sufficient harm to the environment to constitute a violation of environmental permits or regulations, or degrade local biosystems for a year or less.
RAC 4.	Those risks that, if uncontrolled, have the potential to result in negligible injury to personnel with no lost time; inefficiencies or delays in the completion of work without mission degradation; or a minor release or discharge considered undesirable but acceptable in the current social climate.
RAC 5.	Those risks which are so small that they can be acknowledged and essentially dismissed until an opportunity arises to eliminate them during routine maintenance, building renovation, etc.

The study team members searched for energy sources that posed risks of sufficient concern to be addressed in this report during the on-site walk-throughs of the White Oak facilities. The team members made observations in each facility, and considered SOPs applicable to the operations which were observed. All observed risks involving energetic materials and directed energies requiring RAC 1 or 2 ratings were to be reported. These risks need continuing management attention as long as the energies are present at White Oak, to ensure that they are adequately controlled at all times. Items with Levels of Concern rated a 3 or 4 are reported only if controls were judged less than adequate at the time they were observed, to ensure that they are not ignored during normal future operations.

1.4.3. Criteria for needs identification.

During the site visits, aspects of successful safety and environmental risk management programs were used as criteria to identify needs that might exist in the White Oak S&E risk management program. Those criteria include the following:

- Have planned target safety and environmental performance levels been established for the activity? Does the activity utilize the best available system safety management and engineering concepts principles and practices to to achieve planned safety performance levels? If not, are the concepts, principles and practices used adequate to manage energetic materials and directed energy risks?

- Does the activity have an established technical process to systematically search for S&E internal, lateral and horizontal risks that demonstrably minimizes hazard and risk oversights and omissions.

- Does the activity have a process in place for defining and using estimated S&E risk levels to set S&E resource allocation priorities? Is the process systematic? If not, is the system for setting S&E priorities now in place effective?

- Does the activity presently define its systems in a way that facilitates the discovery and elimination or control of hazards in the system? Does it have the technical S&E knowledge and resources to perform safety analyses commensurate with the risks posed by energetic materials or directed energies they handle? If not what would strengthen S&E capabilities in the Departments

- Is there a change or configuration control system in place and functioning effectively in the activity? Does the change control system incorporate estimates of S&E risk levels in its operation? Does it produce outputs that can be used to verify that accepted risk levels are being maintained over the life of the activity, system, equipment or process? Does the lessons learned system feed into the control and monitoring system?

1.5. SYSTEM DEFINITION CONSIDERATIONS

1.5.1. RDT&E operations and systems considered.

RDT&E operations in the Electronic Systems Department (F), the Weapons Systems Department (G), the Protection Systems Department (H), the Strategic Systems Department (K), the Combat systems Department (N), the Research and Technology Department (R) and the Underwater Systems Department (U) were the primary focus of the study. These departments are the primary RDT&E users or generators of energetic materials and directed energies at White Oak.

1.5.2. Support operations considered.

The initial focus of the study was on RDT&E activities using energetic materials and directed energies such as explosives, radiofrequency emissions, electromagnetic pulsers, lasers, and ionizing radiation. As the study team became familiar with operations at White Oak, additional non-RDT&E supporting activities were found to pose hazards affecting safety and environmental risks. These hazards in operations such as Supply Department (S), Engineering and Information Systems Department (E) and Safety and Environmental Office (C8) had to be addressed because of risks they might introduce to the White Oak operations and the environment within the scope of the study. Each was involved with energetic materials such as fuels or chemical materials that by their nature are hazardous and pose risks to the station and the environment.

1.5.3. Facility use "licenses" and requirements.

Various types of special licenses were observed during the study, including for example explosives waivers and approvals, and radioactive material licenses. These kinds of "licenses" were considered in the context of the consequences of their recission or denial of renewals in the event of a safety or environmental problem attributable to energetic materials and directed energies at White Oak. In practice, Standard Operating Procedures (SOPs) also constitute licenses, in that operations may not be conducted unless an SOP has been

approved at the proper level of management, and acknowledged by the personnel who will be performing the work.

For convenience, a sample list of safety and environmental requirements from the Navy's Consolidated Subject Index is provided in Appendix E

Citations to regulations published in the Code of Federal Regulations (CFR) such as the policies of the Council on Environmental Quality or the Nuclear Regulatory Commission regulations are not reproduced.

1.4.4. Energies considered.

Energetic materials and directed energies were broadly defined for this study, because the main truest was to identify risks related to those materials and energies, and their successful management. Energies observed on the station during include energies of interest for safety and environmental reasons.

1.6. METHODOLOGY

Initial contacts with each departmental point of contact were established by the Safety and Environmental Office. Subsequent to the initial contacts, the study team worked directly with the points of contact in each department to visit the facilities and exchange information about the study and the activities being conducted at the facilities. Subsequent visits were made to a number of facilities to acquire additional data or make additional observations. Suggestions for improving the S&E risk management process were solicited during most visits, and several of those suggestions were incorporated into this report.

1.6.1. Described S&E systems.

Ordinarily, an initial step in the preparation of a study of this type is the definition of the system being studied. Early in this study, it became apparent that at White Oak there is no safety and environmental risk management system that is widely applicable and that could be modeled. Those systems now in place in the activities visited were too variable to document in the customary manner. Each group addresses its safety and environmental protection responsibilities in a slightly different manner. A generalized model with observed elements is appended, but it must be recognized that the nature and scope of existing practices is so divergent that it is not applicable to any of the departments observed. Any commonality that could be identified was incorporated into the Master Plan where possible.

1.6.2. Traced energy inputs and outputs for energetic systems.

During the site visits, the study team identified the energies present at each of the facilities on the list, and the major equipments involved with the energetic materials and directed energies. These significant energies and equipments are documented in the building summaries in Appendix B-1. At each site with such energies, inputs were informally tracked from their origins to the place where they would do their desired work, and then traced to the end of their life, where possible. This led to various kinds of concerns, ranging from explosive gases and chemical hazardous waste to inventory control concerns.

1.6.3. Identified candidate exposures to energetic systems.

Identification of exposures to energetic systems at White Oak required identification of the "energized fields" produced by the various types of energies. "Energized fields" are those fields created by energy released during an operation, or during a mishap involving the operation, and is the geographic area in which released energy can do harmful work to exposed people and objects. These areas are reasonably predictable for the energetic material and directed energy sources encountered at White Oak.

During visits and interviews, data about "energized fields" was requested where pertinent. In several instances these fields were identifiable. When they were, the study team was able to locate and

characterize the potential exposures to system operations or failures, and address the lateral safety questions they raised. The method of disclosure of the risks to those exposures was also explored after the exposures were identified.

1.6.4. Defined safety and environmental risks posed by energetic systems.

From observations of the systems, the energies involved and the potential exposures to the energized fields, hazard were identified, and risks were estimated using the Navy Risk Assessment Code (RAC). This scheme does not require probabilistic calculations, but rather is based on estimated probabilities of hazards becoming accidents and the estimated severity if they occur. The estimates were performed by the study team members with substantial experience in the method, and are believed to be sufficiently expert in its application to provide reasonably consistent approximations of the *RELATIVE* ranking of the risks identified.

1.6.5. Established S&E risk management needs.

The present risk management system(s) and relative risk levels observed at White Oak were compared with widely accepted safety and environmental risk management and engineering concepts, principles and practices

1.6.6. Developed S&E risk management master plan.

When the nature of the risks and their importance in terms of the RACs was determined, the risks were further analyzed to determine their significance in terms of the S&E risk management needs they suggested.

The diversity of the S&E risk control procedures was an important consideration during this stage of the project. One of the considerations related to each of the risks used during this step of the S&E Master Plan development process was the process by which the risks came into existence. Those processes were identified from replies to questions posed by the study team, and from observations during site visits, reviews of SOPs, conversations with S&E personnel, and information that was not available during the study.

1.6.7. Energetic systems risk control options.

Identification of risk control measures was not a requirement for this project. The risks were identified to support the determination of S&E risk management needs at White Oak. Control options would be identified under the procedures that were developed for the S&E Master Plan in Part III.

1.6.8. Special remarks about cooperation during study.

Every person contacted during the study was very cooperative and responded in good faith and good humor during our site visits and exchanges about their activities, even though we were sometimes the fourth and fifth "inspection" they had to cope with over a short time interval. We believe the Center will benefit from their cooperation and candor during the study if it moves toward the process provided in the Master Plan accompanying this report.

Those who participated should be thanked for their support of the study. We trust that the resultant Plan will enable all hands to further improve their ability to address their safety and environmental responsibilities more efficiently and effectively in the future, in the same spirit of cooperation.

1.7. INTERIM PROJECT TASK AND REPORT.

In September 1990, the study team was requested to provide support for the review of safety and environmental risks that might be present in certain R Department activities. This work effort resulted in numerous suggestions that were incorporated into a report prepared by D. Suddeth for C8 to present to R Department in September, 1990. Those findings are reproduced in Appendix F.

2. CHAPTER 2. BASELINE SYSTEM DESCRIPTION

2.1. PURPOSE OF CHAPTER 2

The purpose of this Chapter is to describe the significant safety and environmental risks posed by White Oak energetic materials and directed energy operations and functions as of the end of FY 90 in a manner that facilitates future action. Because of the diversity and complexity of the operations, and the large number of individual locations where operations can or do occur at White Oak, energy sources were used to determine which of the 2982 listed facilities on the site might be associated with sufficiently high S&E risks to be of concern to management. The buildings selected are listed in Appendix B-2. Not all buildings and rooms initially selected proved to be significant. Data about buildings and rooms found significant is found in the individual building reports in Appendix B.

2.2. ENERGIES IDENTIFIED DURING THE STUDY

2.2.1. Energies present on the Station

Energetic materials and directed energies were broadly defined for this study, because the main thrust was to identify risks related to those materials and energies, and their successful management. Energies of interest observed on the station during the study include the following, listed by their origin, and categorized by how they are introduced to the Station. The list includes energies of interest for safety and environmental reasons. Each energy source was tracked as it was observed, in the manner described in 1.5, to determine whether S&E risks might be associated with the source. Not all of the energies listed below were found to pose significant risks, which are discussed below.

2.2.1.1. Energies and energy sources introduced "through the fence."

a. Energies arriving at gate in packages

1. Acids
2. Alcohols
3. Bases
4. Batteries, wet storage or lithium, or others indicated to be hazardous
5. Chemicals not otherwise listed or specified by class
6. Chemicals, cleaning & maintenance, not listed elsewhere
7. Chemicals, photographic not listed elsewhere
8. Chlorinated Fluorocarbons
9. Explosives and devices containing explosives
10. Flammable liquids
11. Flammable solids
12. Fuel oil, aviation fuel, kerosene
13. Gas in cylinders, pressurized cans, etc.
14. Heavy metals (including arsenic, barium, beryllium, cadmium, chromium, lead, mercury, selenium, silver)
15. Liquefied Hydrogen
16. Liquefied self-refrigerated atmospheric gases, packaged, (oxygen, nitrogen, argon, or helium,)
17. Lubricating or machine oils
18. Oxidizers, including oxidizing fertilizer materials
19. Pesticides, cleaners or other poisons
20. Radioactive materials, including irradiators
21. Salts
22. Solvents/paints
23. Transformer oils
24. Wood preservatives

b. Energies arriving at gate in bulk via motor vehicles
1. motor vehicle fuels (gasoline and Diesel fuel)
2. heating fuels
3. liquefied petroleum gas
4. liquefied self-refrigerated atmospheric gas
5. asphalt paving or roofing materials

c. Energies arriving at fence in bulk via transmission facilities
1. electrical power via transmission cables
2. natural gas via pipeline
3. sewage entering (and leaving) via WSSC sewer lines

d. Energies arriving at gate as part of other activity
1. brought to station by contractor/service personnel
2. brought to station by an employee from another station
3. freight for other destinations in vehicles on station for partial unloading or pickup
4. fuels and batteries on motor vehicles or aircraft
5. mass/gravity/height and kinetic velocity of arriving aircraft

2.2.1.2. Energies created or transformed on the Station

a. Energies transformed on the Station

	Created energy type	Original energy type	Department
1.	electricity	acids	W
2.	electricity	chemicals/metals/radioactive	H
3.	explosive mixes	explosives	R
4.	explosives	chemicals	R
	heat	fuels	W (facilities)
5.	hazardous wastes	chemicals	E,G,R,W
6.	heat, chemical gases and residues	explosive chemicals	R
7.	ionizing radiation	alpha/gamma(x-rays)	H,R,
8,	magnetic fields	electrical	H
9.	mechanical work/fragments	explosive chemicals	R
10.	ordnance/explosive devices	explosives and devices	G,R
11.	pressure pulses	explosive chemicals	G, H, R
12.	pressurized gases	heat	H
13.	pressurized gases	mechanical	K
14.	radioactive materials	electrical	H
15.	radiofrequency emissions	electrical	F

b. Significant energies redistributed on Station
1. chemicals into explosives processing equipment
2. chemical/explosive residues into laboratory hoods/ducts
3. chemicals into special storage locations, lockers
4. explosives into day magazines
5. explosives into explosive characterization equipment
6. explosives into explosives transport vehicles
7. explosives into magazines
8. explosives into ordnance components and devices
9. explosives to test locations /holding areas
10. fuels to fuel-burning devices
11. fuels to vehicles

12. irradiators to various facilities on the station
13. ordnance/explosives into explosive "bombproof" chambers
14. radioactive sources to various facilities on station

c. Energetic materials in motion on the Station

1. transported by/on "vehicle"
   - trucks (explosives transport vehicles, supplier bulk/package transport vehicles, contractor vehicles)
   - cars/vans (departmental, contractor, employee?)
2. transported by air or water
   - airborne smoke, particulates (explosions, fuel burning)
   - waterborne (contaminated runoff, groundwater dispersion,)
3. propelled through conduits
   - pipes (fuels, pressurized gases, wastewater, sewers and drains)
   - wires/antennas (electrical/electrostatic pulses, electrical power, phones/network cables)
   - vents/ducts (fume hoods, exhaust ducts, HVAC ducts,
4. gravity or self-propelled
   - electromagnetic emitters (radios, radars, pulsers)
   - fragments/projectiles/missiles (explosive, potential high-pressure ruptures)
   - spills, seepage, dispersion into streams, groundwater
5. moved by hand
   - turn-in materials, equipment
   - scrap
   - hazardous waste

2.2.1.3. Energies leaving the station

1. airborne gases, vapors (from lab fume hoods, fuel transfer, painting, metal cutting and welding, rubber grinding, asphalt sublimation, and chemical processing equipment.)
2. airborne particulate matter (smoke, cleaning dust, roof/road dusts)
3. discharges through sanitary sewers (from sinks, outlets in buildings)
4. hazardous waste on turn-in program materials and equipment
5. hazardous wastes removed under Station waste disposal program
6. noise (from explosives tests, "gun" firings)

This list provides a starting point to determine risks at a specific location or in a specific space at White Oak.

2.3. MAJOR BUILDINGS OF INTEREST AT WHITE OAK

To consider the risks posed by energetic materials and directed energies at White Oak, it is helpful to recognize the building configurations that exist, and the activities and energies that are present in the buildings. After reviewing all buildings for these activities, the buildings listed below were considered significant for the study.

2.3.1. General White Oak areas and buildings arrangement

The White Oak Laboratory activities have been developed with efforts do keep related activities in reasonably close proximity to each other. This was accomplished by working with base "areas" which can be characterized by their activities. See Figure 1-1. For example, the 300 area is largely dedicated to explosives RDT&E. Buildings in an area generally have the same prefix. Buildings in the 300 area have numbers from 300 up. Temporary buildings are identified by the prefix T. T5, for example, is a temporary facility housing the Radiation Safety and hazardous materials program offices. Numbers on temporary buildings do not reflect the area in which they are located in the same manner as permanent buildings.

2.3.2. White Oak buildings and facilities studied

The study was initiated by reviewing the list of buildings provided by Public Works office (W) in its Facility Management Data System. That database was analyzed to identify facilities occupied by departments that processed energetic materials and directed energies. Initially, approximate 1785 spaces were identified as potential candidates for site visits and review. See Appendix C-1. Additionally, the database was reviewed to identify types of spaces that might be of interest. See Appendix C-2.1 and accompanying key to abbreviations, Appendix C-2.2 for a list of the types of facilities considered.

As the site visits progressed, other energy sources on the base were identified. Facilities housing possible energy sources of interest were added to the initial list of sites to visit or review. Through this process, almost 1900 spaces occupying over 700,000 square feet of spaces with over 1400 occupants were identified as being of interest to the study. In addition, other facilities of interest such as storage tanks were determined to be of interest. The buildings with energetic materials or directed energies were further described and are reported in Appendix B. A list of these building reports is found in Appendix B-2. Appendix B-3 describes the underground storage tanks considered during the study.

2.4. OTHER RELEVANT SYSTEMS AT WHITE OAK

2.4.1. Explosives handling system

Magazine transfer of explosives is handled by the R Department staff at White Oak. The same is true of shipments off base and storage of hazardous materials for disposal. R-12 keeps a computerized inventory of all hazardous material stored in the magazines. It does not keep a computerized running total of the amount (weight) of explosive, propellant and other hazardous materials it handles on a yearly basis. It does however keep a hard copy record of all material that is received and stored or released to NAVSWC laboratories for evaluation, test or some other modification. This record is kept on a monthly basis and includes the actual weight and/or number of items involved. While the study team felt that magazine inventories are well maintained, it was unable to determine if actual counts or weight determinations had ever been performed to compare the magazine inventories with the records.

There are currently in existence three waivers and exemptions(E1/76, W1/77 and W1C/78) that show up on the AMHAZ records. None of these relate to any QD arcs that would go outside of the base boundaries. Discussions with the NAVSWC safety office indicate a concerted effort to make sure that this situation does not occur. Several cases were discussed where the quantity of a magazine was reduced or even shut down to insure that the boundaries would not be violated. A situation was discovered recently in which explosive testing was being performed in a building that because of its structure and configuration could not meet the requirements for quantity distance criteria. The operation was shut down. An attempt was then made to obtain a waiver, but the Safety and Environmental Office would not concur and required that the building be upgraded to meet the required specifications or that the work be performed elsewhere.

There has also been discussion by the NAVSWC White Oak safety office with the Harry Diamond Labs to establish acceptable arcs and eliminate encumbrances between the two facilities. It was not clear whether Harry Diamond Lab personnel knew their arcs overlapped the White Oak space. This problem has either been resolved or is in the process of being resolved.

During site visits, a past incident was mentioned that suggested possible seismic faults or effects due to the ground shock when setting off explosives at White Oak. Further inquiries determined that there are no seismic problems based on explosive firings. There have been air blast and noise problems which caused complaints from local residents in the late 60's and early 70's. The complaints were resolved by closing the doors in the bombproof and reducing the quantity of material detonated.

The explosives handling system is described in Appendix D-1.

It was also reported by technical personnel that there were some additional complaints about smoke and noise within the last three years and this resulted in the project or operation being shut down. The public information office reported that there had been no complaints in the past two years. There is very little if any large scale explosives testing now occurring at NAVSWC White Oak. Testing of this magnitude is now performed at remote locations such as China Lake.

It was not possible to determine from existing inventory records that all explosives brought onto the station had been consumed or returned. It was suggested that by consulting all the records of personnel who work with explosives at White Oak, it might be possible to determine the final disposition of all explosives for inventory reconciliation purposes. At the present, it is assumed that all explosives sent to individuals for test purposes are consumed. This situation suggests that the full life cycle of explosives at White Oak may not be fully considered for S&E purposes.

2.4.2. Hazardous Waste System.

Several types of hazardous wastes are handled at the Center, including waste energetic materials or waste containing energetic materials. Wastes containing traces of explosives are forwarded by R Department to Dahlgren for safe disposal.

2.4.3. Supply system and related facilities

The use of various fuels around the station poses risks to the environment and some safety risks. The Center has an extensive program underway for the retirement or replacement of underground storage tanks with contents ranging from diesel and fuel oil to gasoline and some chemicals. The attention being given the program suggests that these tanks do not pose a significant risk of environmental contamination due to leakage or fire. The period of greatest risk appears to occur when the tanks are being filled during deliveries. Dikes have been provided for the larger underground tanks supplying the boiler house, and a tank near Building 130. A list of underground storage tanks is found in Appendix B-2.

A large liquefied petroleum gas (LPG) tank is located near the intersection of Dahlgren and Moffett roads (Facility 413.) This tank is used to store fuel for vaporizing liquefied nitrogen used in the high pressure nitrogen systems support the hypervelocity wind tunnel operations. At the time of the visit it was partially full, but reportedly had not been used "for some time." LPG is supplied by a contractor.

LPG has an extensive history of severe fires and explosions. The study team concluded that the risks posed by this tank were under control but this is another example of lateral and longitudinal S&E risks requiring continuing attention. When LPG is needed again for these operations, the movement of the road tank vehicle to and from this storage tank, and the transfer of the load from the vehicle into the tank pose the risk of leakage and a severe fire. A significant LPG leak would be likely to disperse onto and along the road, traveling downhill, and to engulf a vehicle on the road or transferring the LPG into the tank, leading to resultant fire and explosion with potential loss of life and potential problems with the wind tunnel operations.

A total of 17 other smaller LPG tanks, ranging in size from 30 to 500 gallons, are used to store LPG fuel outdoors for other operations around the station. LPG is highly flammable, heavier than air, and has a high BTU content. Placement of these tanks requires consideration of these attributes, regardless of compliance with codes. Not all tanks were reviewed, but tanks were observed outside buildings near the fire protection systems or power systems, increasing the size of the foreseeable loss if a leak and fire occurred.

Of the energetic materials used at White Oak, LPG is one that has a significant potential for harm and should be treated accordingly.

Table 1-1. Location of Liquefied Petroleum Storage Tanks Less than 1000 gallon size

Building	Tank size	Building	Tank size
20	350	334	500
20	350	343	70
151	500	348	325
201	500	389	50
310	23	613	325
311	70	620	70
319-1	320	3361	500
319-2	320	T14	500
333	30		

Explosives are not handled at the Supply Department's receiving docks, but other hazardous materials are, including flammable and other hazards materials. While the probability of a fire is small, releases of flammable materials on the receiving dock at a time when the dock was filled with a significant fire load poses the risk of loss of part of building 20.

Another aspect of the Supply Department's operation affecting the risks posed by energetic materials/hazardous materials is in the handling of the Material Safety Data Sheets. Receiving personnel note whether or not an MSDS accompanies a shipment, but take no action to held the shipment or demand an MSDS from a vendor if it does not accompany a shipment. Supply's position is that the burden of requesting an MSDS lies with the requisitioner of the material, who should know whether one is available or needed with an order. During discussions with technical personnel, it was learned that technical personnel familiar with chemicals do not hold MSDS in high esteem. Rather, they feel they have a more complete knowledge and understanding of the properties than is presented in an MSDS, which they view as being designed more to address litigation needs rather than to serve safety purposes. The result, it was felt, is overstatement or overgeneralization of the risks on the MSDSs. The Center's efforts to develop and implement an approved chemicals list for White Oak, and a documented procedure for adding chemicals to that list should help mitigate this problem in the future.

2.5. S&E RISK MANAGEMENT SYSTEM

The S&E risk management system at White Oak consists of many relatively independent subsystems in departments on the base, and in the Safety and Environmental Office activities. The departmental S&E risk management systems observed during site visits at White Oak very substantially among departments. These variations included differences in the scope and nature of the risks addressed, their analysis and documentation, the kinds of controls used, and risk disclosure practices, among other factors. The departmental S&E risk management system components are not systematically integrated from a management or technical perspective.

2.5.1. Departmental S&E elements

2.5.1.1. Departmental Risk management objectives.

One primary objective of the observed departmental S&E risk management system elements was compliance with applicable S&E requirements. All were strongly oriented to achieve compliance with existing DOD, NAVSWC, Navy, SPAWARS, and other applicable S&E requirements imposed by directives or regulations. This is influenced, no doubt, by the many inspections to which departmental activities are

subjected. In one instance, the study team was the fifth "inspection" within a month's time in one department. Thus emphasis on compliance is an important and necessary element of departments' and White Oak S&E programs, given the philosophy of the Navy's safety programs. Examples of the many S&E directive with which the Center must comply are shown in Appendix E. Table 1-2 describes examples of the wide range of inspections to which RDT&E departments at White Oak are subjected from time to time.

Table 1-2. Examples of Compliance Inspections at White Oak

Organization	Matters inspected	Requirements
Dept of Defense Explosives Safety Board (DDESB)	Explosives Safety	DOD 6055.9, OPNAVINST 8020.8H
Navy Occ. Safety and Health Inspection Program (NOSHIPS)	Occupational safety and health	OPNAV 5100.23C
AMHAZ (Ammunition Hazardous Materials Board)	Explosives safety and explosive hazards materials	OPNAV INST 8023.13F
SPAWARS-Navy Inspector General	Total Navy Requipments	All Navy Requipments
NAVSEACENTLANT	Explosives operations safety inspection	OP 5/NAVSEA
White Oak SEO	All White Oak operations	OPNAV 5100.23C and NAVSWC instructions
RASO	Radioactive materials	10 CFR, Licenses
NAVELEX (Chareston or H11)	Hero hazards	OPNAV 3565
EPA (& C83)	Environmental Safety issues	OPNAVINST 5090.1
US DOL Office of Federal Agency Inspection Programs	Civilian employee complaints on appeal, or contractor work place on station	29 CFR 1960, EO 12196

The frequent inspections and the demands inspections place on departmental personnel must be recognized as an obstacle to implementation of any changes in S&E programs. Additionally, they appear to leave the impression that S&E efforts are restrictive, rather than supportive of RDT&E activities, and that safety personnel or inspectors are "enforcers" of limitations on activities, rather than contributors to the success of these activities.

Other reported objectives of these departmental risk management system elements were to ensure worker safety, protect the equipment and facilities against operational disruptions, and protect against harm to environmental exposures.

2.5.1.2. Achievement of objectives.

To achieve these objectives, the primary S&E emphasis noted during site visits was to ensure compliance with applicable requirements. However, other hazards were also identified, and other steps to reduce S&E hazards and risks were undertaken by departments. For example, R department had an extensive list of S&E projects in process during the survey. See Table 1-3, R Department Safety and Environmental Improvement Projects, for example. The projects include improvements initiated by the department, as well as responses to compliance inspections. Some projects were instituted to reduce the need for waivers. A glance at the list of projects shows the wide range of S&E considerations involved in a department's S&E program when energetic materials or directed energies are associated with its operations.

Table 1-3. R Department Safety and Environmental Improvement Projects as of 9/90

Building or room number or area	Code	Safety or Env.	Abbreviated Project Title
30	R12	S	INST WALL/DOOR/RED LIGHTS
30-025	R10	S/E	INSTALL STEEL BLAST DOOR
300	R11	S	PROV OFFICE BLDG AT 343
300/600	R10	S	MARK "NO PARKING" AREAS
300/600	R01	S	NAVSEA INSPEC DEFIC PHASE I
300/600	R10	S	INSTALL PORTA MAGS/LOCKERS
300/AREA	R10	S	STRIPE "NO PARKING" AREAS
300/AREA	R12	S	NAVOSH MAG DEFICIENCIES
300 AREA	R01	S	NAVSEA GROUNDING REQUIREMENT
310A	R11	E/S	343 INSTALL CHEM LOCKERS
310A	R11	E	DECREASE HIGH HUMIDITY
310A	R11	E	PROV ACID STORAGE UNITS
310A/343	R11	E/S	INSTALL CHEM/SOLV LOCKERS
310B	R11	S	REPR FIRE DAMAGE/UPGRADE
311	R11	E	3O BASE/UTILITIES FOR CHEM LOCKERS
311 1	R11	S/E	PROV EXHAUST FAN & LIGHTS
312	R12	E	ENCLOSURE/FACILITY UPGRADE
318	R12	S	BLDG REPAIRS/UPGRADE
318	R12	S/E	TEMP/HUM CONTROL IMPROVEMENT
320/369	R15	S	RED LIGHT/FLAG INSTALLATION
324	R13	S	REPLACE BAD PANIC BARS
327	R12	S	CONTROL CABLE FEED-THRU HOLES
327	R12	E	PROV LASER RM AIR FILTERS
327	R12	S	PAINT FIRING CHAMBER
327	R12	S	REPL INSTRU FEEDTHRU COVER
327	R12	E	RAISE EXHAUST ABOVE ROOF
327	R12	S	INSTALL EXPL TEST CHAMBER
328	R12	S	REPLACE EXPL0 STOR TRAILER
328-106	R12	E	HYDRAULIC CONTROLS VENTG
328-107	R12	S	INSTALL FLOOD LAMPS
335/3351	R11	S	FACILITY UPGRADE
340	R10	S	336/3361 OUTSIDE LIGHTING
343	R11	S/E	CHEM STORAGE PAD/UTILITIES
343	R11	S/E	BLDG RENOVATIONS NOS MOVE
348	R13	E	CORRECT FUMEHOOD AIR FLOW
349	R12	S	PROVIDE OFFICE BUILDING AT 327
363	R15	S	VELOSTAT CONDUCTIVE MATS
364/3151	R10	S	INSTALL LIGHTNING MASTS
619	R11	E	MODIFY DRUM STORAGE AREA
630	R12	E	CLEAR TREES AROUND TANK
HELOFLD	R10	S	INSTALL LIGHTNING DET SYSTEM
MAGAREA	R10	S	364 MOD MAG VENT PIPES
WOAREA	R01	S	SPAWAR INSPECT DISCREPANCIES
ZONEINSP	R01	S	CORRECT DISCREPANCIES

For some activities, such as those involving energetic materials or special energy sources, additional engineering analyses of particular activities may have to be undertaken. These initiatives cross departmental boundaries occasionally, as occurred during the NOTES project development activities with several engineering analyses. Those analyses influenced activity site selection, departments' operational plans and other S&E considerations. Technical departments employing energetic materials and directed energies have technical staff members who perform engineering analyses of the systems and operations, to determine safe operating parameters for the project. An awareness of advanced S&E management and engineering technology and its application to RDT&E facilities handling energetic materials or directed energy systems was not observed during the site visits.

The S&E operating objective of ensuring compliance with S&E requirements, and reacting to deficiencies, appeared to dominate departmental S&E efforts. The study team found no evidence of systematic proactive White Oak personnel, system and facility risk-oriented S&E operating objectives, expressed in terms of accepted risk levels, or expressed in the form of targeted S&E risk levels. The management aspects of departmental S&E programs focused on conforming with requirements, rather than a broad management program designed to assure hazard and risk identification, assessment and elimination or control over the life of the activity. In the absence of such an S&E management approach in the Departments, the observed technical treatment of the risks was highly variable, ranging from formal engineering reports to informal, undocumented judgment calls by individuals during the course of their duties and inspections. Predicted risk levels before and after controls were implemented, as part of a management function, were not documented in a common format that would be readily accessible for management follow-up and other uses.

The primary documented outputs of past S&E analyses were Standard Operating Procedures which contained prescribed S&E procedures mandated by provisions NAVSWCINST 5100.6B Occupational Safety and Health. The SOPs reviewed contained a narrative description of the system, and steps required to operate it. The SOPs typically did not describe the activity-specific hazards and risks that the S&E procedures were expected to control, nor did they identify the risk levels involved.

2.5.2. White Oak S&E Office risk management system elements

The White Oak S&E Office provides additional elements of the center-wide risk management system. That office perform various safety and environmental support tasks not now performed in the departments. The nature of these tasks ranges from operational support, as in the case of radioactive source licensing and monitoring assistance or fire protection and suppression functions, to compliance and performance monitoring functions, such as safety inspections and air sampling, and the preparation of environmental assessments. Staff serves on several safety committees at White Oak.

One major function of this activity is performing S&E compliance and monitoring functions. For example, the Safety group provides occupational safety and health norms for departments, performs occupational safety and health inspections of departments against those norms, issues overnight waivers for explosives storage, investigates job safety reports, and similar tasks. The Environmental group's charter is essentially to run an environmentally clean operation and keep the Center out of trouble with 5090.1A as the guiding directive. It performs environmental regulatory compliance with hazardous waste, clean water, clean air at state and Federal levels.

CHAPTER 3. ASSESSMENT OF S&E RISKS

3.1. OVERVIEW OF CRITERIA FOR RISK ASSESSMENTS

The risk assessments were prepared in accordance with the method described in Chapter 1.

To judge the risks attributable to the energetic materials and directed energies addressed in this Chapter, the primary criterion was the severity of the injury or losses that could occur during normal or abnormal activities, assuming that safeguards were ineffective or disable.

To select the risks attributable to the S&E risk management system, the primary criterion was the scope of a mishap that could occur if the risk management system failed, partial or fully.

3.2. GENERAL FINDINGS

3.2.1. Management of S&E risks.

Overall, our impression was that the *internal* safety risks observed were generally known and controlled reasonably well by SOPs and other safety and environmental protection procedures. This conclusion is based on interviews with the personnel contacted, on study team observations of activities and facilities, on the mishap history at White Oak, and on the reported social climate currently existing in the community surrounding the station.

Changing demands for improved safety performance and more restrictive environmental protection demands are imposing increasingly stringent S&E performance demands on White Oak. At the same time, shrinking resources for this purpose are anticipated. These influences require White Oak to continually improve performance results with less resources. The present unintegrated S&E departmental risk management system elements will require significant changes to satisfy these demands.

3.2.2. Internal risks.

Internal S&E risks were being treated within departments with varying sufficiency. Among personnel in a department, variations in perceptions of existing levels of risk, precautions required and understanding of S&E management processes were observed. This suggested a need to communicate the available risk management and engineering technology and its applications more effectively among departmental staffs.

Past processes for the development of SOPs have resulted in SOPs whose S&E precautions are difficult or impossible for reviewers to verify, because they are not accompanied by a list of the safety or environmental problems which the precautions address. This is discussed more fully below.

3.2.3. Lateral risks.

Lateral S&E risks were being treated more variably, with explosives-related work being generally cognizant of the issue through the application of Navy explosives requirements such as explosives safety quantity-distance arcs, barriers, alarms and the like. Possibly because the explosives activities have such a long and spectacular history of use and loss, the need for lateral S&E risks and controls in that field are more fully recognized and controlled than other fields. Special safety analyses are not uncommon in those operations. At the other end of the spectrum, the radiofrequency and ionizing radiation lateral risks appear to be oriented predominantly toward compliance and engineering parameters. No awareness of advanced safety management and engineering technology was observed. For example, fields produced by electronic directed energies had been defined. However, no indication was observed that the "energized fields" for RF had been mapped to identify potential exposures in areas of the station, although the field

for one radar was reportedly known to the operators and the radiation safety official, and the threshold exposure distance physically marked for a local radar antenna.

Current departmental S&E procedures do not provide for *routine systematic* consideration of lateral risks. When lateral considerations were observed, they appeared to be the result of individuals (often from another Department who had become aware of the involved energies) concerned about their specific interests, rather than as routine procedure. These risks include exposure of various support personnel and other employees or personnel who might have a valid reason for entering an "energized field." Disclosure of these risks and opportunities for their acceptance by concurrence in approval documents is not part of the S&E management systems. There are exceptions to this general system problem. For example the concerns about the lateral S&E risks associated with the proposed establishment of the NOTES simulator at Pumpkin Neck generated extensive engineering analyses of the potential risks.

3.2.4. Longitudinal risks.

Longitudinal risks were clearly addressed by one department which performs periodic examinations of its high-pressure equipment. They are also considered in the handling of radioactive sources. At the other end of this spectrum, a department had allowed the buildup of explosive material in a building hood vent system over a long period without acting on the risk prior to a recent special initiative. The best example of this need to consider longitudinal risk development can be seen in past waste handling practices, before the practices were corrected by the Center's new hazardous materials minimization and hazardous waste programs.

The point is that these longitudinal safety and environmental risk considerations were not addressed earlier because they were not built into all departmental S&E management systems. Rather than being sought, identified and acted on before they occurred, the hazards accumulated and increased S&E risks over time. It is not clear that discovery of future problems will be handled differently without changes to the departmental or Center S&E risk management processes.

3.2.5. Management follow-up.

Other than compliance monitoring by internal and outside inspections of activities, the study team observed no systematic management plan or procedure to take predictive hazard analyses and use them routinely to monitor the system performance of its useful life to determine if it was working as advertised. The site visits created the strong impression that several activities were relying on one of the Center inspections to find deficiencies in compliance, and were prepared to act reasonably quickly to remedy the deficiencies was

3.2.6. Interface analyses.

Safety of activities and systems was primarily driven by compliance with applicable standards and requirements, with emphasis on NAVSWCINST 5100.6B Occupational Safety and Health requirements, by engineering analyses for safety margins, and by frequent compliance inspections. No interface analyses for lateral risks or operating and hazard analyses for longitudinal risks were observed or identified during the site visit interviews or from other observations.

3.3. S&E DEFICIENCIES OBSERVED DURING STUDY

3.3.1. Good housekeeping

Good housekeeping practices are a widely recognized basic S&E risk management requirement. Evidence of differences in good S&E housekeeping practices among departments was frequently observed. Spaces in some departments were observed to have clean, orderly and uncluttered work areas. Hazardous materials were stored in safety cabinets in many locations, and the work surfaces and floors disclosed no evidence of residues from spills or contamination. Shops with light machinery were clean and uncluttered, with materials stowed properly, machine guards in place and floors and lighting well maintained.

Other departments showed evidence of indifference to S&E good housekeeping practices such as an injection needle lying among other items on a lab bench in an unoccupied room, reactive chemicals on lab benches in occupied laboratory with a defective emergency warning light, material being stored in fume hoods, machining oil residues that had dripped onto Taylor street from a scrap metal container, inability to find MSDSs reportedly on file, standing water around operating equipment in the basement of a facility, cluttered work spaces in technical offices, equipment not properly stowed in technical shops, damp decaying leaves laying on high pressure components and lines in pits, hazardous materials on open shelves instead of safety storage lockers in the Servmart, and chemical residues in a former plating shop.

3.3.2. Building S&E risks.

In addition to the operational risks within departments arising from S&E management and technical approaches, and housekeeping practices, described elsewhere, several other residual risks affecting building safety were observed during site visits. For example, a large liquefied nitrogen cylinder was stored in a bathroom of a building, and connected to an activity in another room. Liquefied nitrogen vaporizes to form gas at a rate of over 200 times its liquid volume. In the event of a liquid leak, a strong asphyxiant gas that is very difficult to detect would be released into the bathroom atmosphere, posing significant risks to anyone who enters.

During one site visit, a large 4000 kva transformer was observed indoors across a hallway from an occupied office space in a recently renovated building. Extremely low frequency (ELF) electromagnetic radiation is an unknown S&E risk at present. Research to data hints that such a risk might exist. The controversy suggests that any benefits from locating a power transformer indoors near regularly occupied spaces may disappear quickly if the hypothesized risk is validated, and a future retrofit project were required to control the risk.

Another example arose when a department initiated activities to utilize an idle building and equipment it contained to perform test work. The work would involve energetic material with a QD arcs radius that exceeded the distance to the base fenceline. The project was aborted, but not before considerable planning energies had been invested in the effort. Another occupant of the same building from another department, which depended on the building electrical power supply for its operation, expressed concern about a safety and operational hazard on which he reportedly had been unable to get action. A building design deficiency could allow water to enter a key power supply system, posing a risk of uncontrolled energy flows, as well as disruption of the needed power supply.

These examples suggested a problem with *BUILDING* safety management at White Oak. It is unclear whether line responsibility for managing the safety of energetic materials and directed energy operations extends to facility or building designs, modifications or changes in uses at White Oak. It is equally unclear who is expected to analyze building safety risks and to bring those risks to a designer's or department's attention. No process for assigning accountability for building or facility safety to a specific organizational entity at White Oak was identified when two or more departments occupy the building.

This apparent accountability problem for joint occupancy buildings was verified by the Fire Department inspectors who described the great difficulty that they experience in attempting to assign abatement responsibilities for fire protection issues in common spaces of a building. They stated that the problem has reached the point where they seldom try to assign such responsibility and assume the responsibility for initiating corrective action themselves.

Occupational safety, fire safety and environmental protection is reviewed by the NAVSWC S&E Office staff, if invited during design, and after-the-fact during inspections. NAVFAC may engage contractors to perform safety analyses on MILCON construction projects. Public Works appears to have nominal responsibility for White Oak facilities. However, in one example observed at White Oak, a department performing work with energetic materials took the initiative to get a contractor to perform safety studies of a sole-use building involving energetic materials activities. No instructions or requirements addressing this responsibility were identified, especially for buildings occupied by more than one department. A need exists to clarify procedures at White Oak to ensure that S&E reviews are required and performed for internal, lateral and longitudinal hazards and risks posed by new or changed *buildings and facilities* as well as equipment designs, modifications or uses.

3.3.3. Dichotomy in S&E requirements among departments.

The study identified a dichotomy between S&E requirements for departments performing RDT&E activities at White Oak, and other departments introducing energies that could pose significant risks to safety and the environment. The clearest example of this dichotomy is in the handling of fuels at White Oak. Of the 400+ SOPs in effect at White Oak, none applicable to the materials or buildings were issued by Supply or Public Works, whose personnel manage the supply and distribution of fuels and other supplies on the base, or perform other activities affecting S&E risks, such as building maintenance. Of the 15 SOPs issued by S and W departments, all but two focused on protecting personnel in accordance with NAVSWCINST 5100.6B Occupational Safety and Health, rather than the building, facility or equipment safety and environmental risks.

Concern about these risks is demonstrated by the decisions that led to the extensive retrofitting of fuel and chemical storage tanks at White Oak. That program and its status if described in Appendix B-3. This action is a typical example of a reactive response to safety and environmental risks and regulation, rather than a proactive response. We found no indication that the program had been analyzed for new S&E risks that might be introduced by the retrofit program. This is another example of the problem with analyzing safety and environmental risks associated with facilities and buildings, but it also illustrates the dichotomy in S&E requirements imposed on RDT&E departments vs other departments introducing significant S&E risks on the base.

During the site visit with one department in a multi-use building, the personnel being interviewed and the study team member had to evacuate the office suite they were occupying to escape from very pungent fumes entering the offices. At the time the fumes were first noticed, none of the persons exposed knew or could determine whether the fumes might be flammable, health hazards or damaging to the room contents because of their attributes, so everyone evacuated the suite, and proceeded to the next site to be visited. Based on their understanding of other normal activities in that part of the building, the occupants concluded that the odor was probably paint fumes. If so, the incident illustrates the need for departments preforming maintenance on buildings to predictively analyze the effects of their actions on building S&E hazards. If not, this kind of lateral exposure also illustrates the need to consider the migration of hazards in buildings occupied by other departments during maintenance and operational activities.

Another example of potential maintenance hazards was identified when dead vegetation and a dying tree were noted near a building where explosives were being handled. The environmental effects resulted from the "salting" of the ground to achieve a level of conductivity in electrical grounding systems required by Navy explosives-handling facility requirements. This was an example of compliance with a safety requirement creating an environmental problem. Documentation of alternatives or the trade-offs that might have been considered to resolve the conflict were not identified.

In another building, a venting system from a photo processing room was observed to terminate in a larger room adjacent to the fume source. In another building, a chemistry laboratory containing a wide variety of chemicals was sprinklered; in the event of a fire requiring activation of the sprinklers, the runoff from the

sprinkler water would likely contain a mix of chemicals from the room. The floor outlet was too small to accommodate the runoff, so contaminated water would migrate outside the laboratory into other occupied spaces or exit routes for occupants.

Another kind of building risk posed by obsolete or improperly functioning equipment was observed during the site visits. In one instance, an obsolete and unused compressor was leaking oil. The leaking oil was apparently being captured in a catch basin. It was not clear who was supposed to monitor the contents of the catch basin. If and when the equipment is retired and scrapped, the dismantling will require planning to establish and maintain acceptable environmental and safety risk levels. The same problem existed with the removal of the retired plating shop equipment. If removed by a contractor, who is supposed to be responsible to ensure proper S&E analyses and risk management actions of the contractor? Similarly, who is expected to be responsible for establishing procedures for the safe operation of fuel, chemical and pressurized or liquefied flammable or asphyxiant gas delivery vehicles and material transfers by base transportation or contractor vehicle operators?

Other kinds of S&E risks beside energetic material risks can be associated with buildings and facilities. For example, while not observed in any of the buildings visited or documented at White Oak, microbial and bacterial infestation hazards in idle HVAC ducts and equipment have occurred elsewhere, and would be considered when maintaining or before dismantling idle facilities by a proactive facility risk management program.

These examples each reaffirm the need to consider S&E hazards and risks posed by facilities and buildings, and illustrate the need to consider S&E effects of activities conducted by non-RDT&E departments involved with introduction of S&E risks at White Oak. Only one SOP in the Safety Office SOP database, involving shipment of nitro propanol was applicable to S department operations. W department had 14 SOPs, all except one aimed at the safety of W employees. The exception was a procedure for ordnance grounding system inspections, which was part of a major ordnance grounding compliance program for White Oak - the one that resulted in the dead tree.

3.3.4. Energized field analyses.

The methodology used for the study was dependent on identification of energized fields to discover exposures and risks. Several energetic materials and directed energies at White Oak produce energized fields during normal operation, and others can result in energized fields during abnormal events. Existing energized fields are known to the RDT&E department creating them, and documentation describing them exists in either graphic form for explosives QD arcs, or tabular or calculated format for radiofrequency, ionizing radiation and high pressure systems. These formats do not lend themselves to identification of exposures within the fields, or potential energy conflicts. Appendix A-2 shows sources of radiation at the Center, but does not indicate energized fields, because they have not been mapped. For safety analysis purposes, overlays clearly identifying potential interactions are preferred. An example of this kind of display is found in Appendix A-3, showing explosives arcs but only pinpointing other sources of energy that can explode, because their energized fields have not been mapped. The operating history and declining use of systems creating energized fields at White Oak suggests that further efforts to describe existing RDT&E departments' energized fields in a better form of is not cost effective at this time. However, any changes that would increase existing energized field dimensions and resultant exposures or energy conflicts would require such an effort.

Documentation reviewed during the study indicates that energized fields have not been defined or predicted in any form by non-RDT&E departments for other energies such as fuels, chemicals and gases.

Appendix A-3 indicates where pressurized liquefied gas is located and could explode[2] but the field is not shown because it has not be identified. Technical methods for estimating these fields are available and their identification is not costly. However, until this is done, their potential to produce adverse S&E exposures and their consequences during abnormal occurrences pose an unknown, undefined risk. If the risk is undefined, it can not be managed to produce the desired performance level.

Not all energized fields lend themselves to graphic displays. During normal activities, some energized fields created by RDT&E activities may be confined indoors or within closed systems, as occurs with most ionizing radiation sources, explosions in "bombproof" shelters, or in in high pressure hypervelocity containment systems. During abnormal occurrences, however, even these energized fields can escape their confining barriers, and result in exposures and harm. Graphic displays of these potential fields in abnormal circumstances, as with QD arc displays, is necessary to perform an analysis of their potential adverse safety effects for risk assessment. It is also necessary to determine the degree of management attention that must be directed to ensure controls remain functional over the life of the risk. For the energetic materials and directed energies used at White Oak, these displays should probably be prepared for explosives, high pressure systems, LP gas, RF emissions, and ionizing radiation sources on a common map to show their interfaces and interactions due to the scope of their energized fields in abnormal occurrences. If lasers are to be used outdoors again, they should be added to the displays. Each of these materials acts nearly instantaneously in abnormal circumstances. That is why a prediction of the range of effects of abnormal events needs to be prepared and analyzed. These are the sorts of energized field "overlays" to find conflicts that had to be considered for the NOTES project.

3.3.5. Standard Operating Procedures (SOPs)

The SOP format for documentation of S&E procedures did not lend itself to review for completeness and validity of the S&E hazard and risk analyses, needed by reviewers if their review is to be systematic and meaningful. Further, the format does not require the kind of system description which can be reviewed to help the search for oversights and omissions by reviewers. Without a proper system description and hazard list it is unreasonable to expect reviewers to determine the adequacy of the disclosure of lateral and longitudinal risks, modification and change control needs, the lessons learned experiences, and the potential for reuse in other projects. During one discussion, a Division Head made several of these points, and suggested that hazards be listed in SOPs. Only two examples of SOPs with any kind of hazard listings were found in the 10% random sample of SOPs reviewed. The lists in each were in a different format.

Samples of the 411 approved SOPs on file in the Safety Office were reviewed during the study. Most SOPs had recent reviews, and conformed with review requirements. The format of the SOPs varied slightly from department to department, and the content varied substantially among the samples reviewed. Special attention was focused on the implementation of the SOP format, specified in Center instruction 5100.6B, Exhibit 3A, paragraph 5 (Hazard Description) as revised July 1988. Paragraph 5(a) calls for the person preparing the SOP to describe each hazard which is to be controlled, and paragraphs (b) and (c) discuss the compilation and attributes of this hazard list. Again, hazards were listed in only two of forty one SOPs sampled.

3.3.6. S&E Monitoring and Audits

As described previously, the current S&E audits and monitoring are primarily compliance oriented, rather than management-oriented validation of predicted and accepted S&E risk levels. The main weakness of this approach is that the departments deprive themselves of opportunities to proactively identify changes that increase the probability of a mishap but may not be covered by requirements. For example, by taking

---

[2] Open air detonations as well as boiling liquid/expanding vapor explosions (BLEVE) with this kind of material have been recorded.

the system description on which hazard and risk analyses were based in hand during observations of an operation, small changes in operating procedures can be detected before they lead to mishaps. By taking the hazard analyses in hand, the observer -manager or outside auditor - can determine if the hazards and their controls are both still in place. SOPs are required to be reviewed annually, but no requirement or guidance is in place for day to day procedural observations or spot audits by supervisors who are responsible for getting the work done each day. This situation suggests a need for an audit or monitoring process for this purpose.

3.3.7. Roving duty locations.

Certain personnel at White Oak are required by their duties be travel to points on the station where they may be exposed to risks posed by energetic materials. For example personnel delivering mail or operating a base taxi, performing fuel deliveries, maintenance or other support services, technical specialists such as photography or instrumentation specialists, fire fighters, and security personnel - among others - may become exposed to the potential effects of energetic materials or directed energies by inadvertently entering energized fields during the course of their duties. This risk has been recognized for station mail personnel, for whom a procedure has been established to analyze safety and health risks before access to a specific building or areas is granted for mail delivery purposes. Barricades and warning flags, lights and horns have been provided at other locations handling explosives. These protective measures seemed to be well recognized, understood and respected particularly for explosives throughout the Station. Within buildings, a number of bays were posted with similar warnings of risks.

Other risks are not so well recognized. In other locations, such as the liquefied nitrogen container located in the bathroom, it was not apparent that such safety and health risk assessments had been analyzed, accepted or documented, or even who should do this task. This situation again illustrates the need for consideration of lateral risks, including facility or building risks and risks to personnel in common building spaces.

3.3.8. Long term storage of energetic materials

Recent emphasis on reducing hazardous materials and hazardous wastes at White Oak has had a clear impact on most personnel contacted during this study. Three aspects of these efforts, explosives storage, chemical inventory management, and hazardous waste removal, merit special comment.

3.3.8.1. Explosive Storage.

Long term storage of obsolete explosives or ordnance items. During several discussions, the desire to keep old explosives and ordnance items in the 300-area Magazines was mentioned. The purpose is to ensure that if an accident happens, samples would be available to aid in the investigation. This position has the effect of placing station facilities, personnel and operations at risk for someone else's benefit. In the event of an accident, not only the old explosives but anything else in the magazine would be affected or lost, and depending on what is in the magazine at the time, the effects could reach to the circumference of the QD arcs, and in some circumstances create animosity toward the Center in the neighboring community. It would seem appropriate that the parties who would benefit from having the materials available should arrange for, fund, place and bear the risk of their long term storage.

3.3.8.2. Chemical inventory management.

In some departments, chemicals are made available directly from Supply to individual chemists upon requisition. In the past, this system has resulted in the growth of a large inventory of chemicals, without a record of how much of what is where. This is changing since the introduction of the Center's hazardous materials minimization plan and waste management plan, but unless the system by which the inventory

grew in the first place is addressed, that growth is likely to recur. Larger inventories tend to increase safety and environmental risks over the life cycle of the system as discipline in the use and disposal of the chemicals eludes supervisors and managers. With reasonable planning and a responsive supply system, it is not clear why chemical inventories can not be kept to the needs supported by project requirements.

3.3.8.3. Waste removal.

Several individuals contacted during site visits described materials that had been accumulated and reported for waste disposal but had not been removed promptly under the Center waste management plan. This had two observed effects. The individuals trying to comply with the plan were clearly discouraged by the response, and interpreted it to communicate the message that the Center was not really that serious about the program. A second effect was the continuing exposure of the environment to the potential for accidental release while awaiting pickup in areas that are not necessarily designed for such temporary storage.

Another aspect of waste removal was the storage of obsolete experimental or test objects or equipment which might contain hazardous wastes while awaiting disposition. Because of retirements and other changes at White Oak, persons who might be familiar with the objects and their constituents were no longer available. The effect is that equipment still on the Station should be suspected of having the potential for containing hazardous waste, and if any is indicated, the object(s) should be segregated from ordinary scrap inventory handling procedures. This is equally applicable to building retirement or reassignment for reuse, as is illustrated by the precautions being exercised with building 321.

3.3.9. Handicapped worker emergency warning systems.

This S&E risk to handicapped workers in emergencies was first noted during a visit to a location handling chemicals, but it is not confined to energetic materials and directed energies. The present handicapped worker emergency warning system is to rely on fellow employees to bring emergencies to the attention of handicapped workers. At one site, a hearing impaired employee is not able to hear audible fire alarm or other emergency signals, for example. At other sites, hearing-impaired employees in a photolab or other enclosed facilities are similarly dependent upon assistance from nearby co-workers when audible emergency alarms are sounded. When hearing or vision-impaired handicapped personnel or new hires who do not have an adequate command of the English language are employed, the risk of injury to such employees from several kinds of emergencies increases. Their safety in emergencies should not be dependent on other personnel. Other personnel may not be there to assist in numerous circumstances - lunchtime, illness, away from work position, vacations, etc. This is a need requiring analyses in each situation.

3.3.10. Sharing knowledge of S&E Risks among departments.

One of the more significant observations, in our view, was the ambiguous system now in place for the documentation and exchange of concerns about lateral S&E risks among departments. The manner in which lateral risks are addressed by persons introducing the risks seemed to depend on participation (by invitation of the originating department) in the SOP approval process, or the informal acquisition of knowledge of the project by individuals or departments that potentially will bear the risk of injury or harm. Communication links among person introducing risks and those who personally bear the risk are not defined, This can result in risks to departments either furnishing personnel for projects, or potentially exposed to mishaps during projects. A good example of this issue was addressed by the Center when the system to require an exchange of hazard information was put in place before F22 mail delivery personnel are authorized to deliver mail to a new location. That exposure problem was solved, but it is not clear how the solution will be broadly sustained over the life of the Center. This suggests a need to systematize the process for disclosure of risks as a part of the S&E risk management processes.

3.3.11. Documentation of hazard and risk analyses.

Typically, a department originating a project will do a form of hazard analysis. The analysis will identify applicable requirements and probably consider risks to departmental personnel, facilities and systems that might be associated with the project. In some instances, personnel, systems or facilities that might be exposed to the energies emitted with the project, either in normal or abnormal circumstances, are also analyzed. The types of hazard analyses range from rigorous engineering analyses to comparisons with Navy and other code requirements to informal "what-if" sessions. Departmental personnel may propose controls, or rely on the Safety and Environmental or Medical staff to review the operations and propose needed controls.

The scope, form and content of the outputs of these analyses vary widely. Without documentation in some kind of relatively uniform format to describe hazards and associated risks, it is difficult for hazards and risks to be communicated across disciplines in a location with such widely varying disciplines as White Oak. One reviewing supervisor stated the issue clearly. He has difficulty determining what specific hazards the safety precautions specified in an SOP he might be reviewing are intended to control. Thus he is placed in a position where he as an approving official is not really provided the information needed to make the decision (SOP approval) he is expected to make. In these circumstances, he must rely on his experienced judgment to arrive at a decision to concur. He observed that it would be helpful if the hazard and risks were identified on the SOPs when they are forwarded for review.

It is now the exception when hazard and risk analyses are documented as a list of concerns which must be addressed by SOPs to control hazards, or when such a list accompanies an SOP concurrence package. Only two of forty two SOPs in a random sample of currently effective White Oak SOPs contained descriptions or a list of the safety hazards which the procedures were intended to control. We observed no environmental protection concerns on the lists. In the system safety community, including elements of NAVSWC doing system safety work on fleet items, uniform presentation of hazard information is an accomplished fact. Preliminary hazard analysis outputs have common elements other technical analysis methods, and these could be easily adapted to the S&E analyses performed in connection with RDT&E safety, as well as occupational safety and health analyses. The White Oak Safety Office presently has in its computers databases adapted from system safety formats, but they are presently used after the fact rather than to support SOPs in process.

The narrowly documented departmental SOP development process observed also makes it difficult for supervisors of support personnel to identify and add for consideration any additional hazards that might be *introduced by their personnel* as a result of what they will do or that they may bring to the test or operation. For example, one department may be called on by another to use x-rays or provide photographs during a test to capture data generated by the test. To discharge their tasks at acceptable risk levels, the support supervisors who are expected to ensure that all hazards to their personnel, systems and facilities are acceptable must rethink much of the analysis in the absence of listed hazards on the SOP approval package. Additionally, when "corporate memories" leave with retirees, their knowledge base is also lost, adding to the burden of those who follow.

Compared with widely-used system safety documentation practices, this approach is neither efficient in terms of building a Center knowledge base for future use, nor reliable in terms of recognizing and acting to control S&E hazards and risks.

3.1.12. Documentation of incidents.

An aspect of White Oak operations noted during site visits was the focus on mishap documentation, rather than incident documentation. For example, one individual reported having an explosion in a chemical laboratory hood, but it had not been reported because the individual decided it was not significant, considering the nature of the work being performed in the laboratory. The reporting of incidents whenever a procedure doesn't work properly or when an unexpected disruption occurs in a process are apparently not generally viewed as opportunities to learn S&E lessons inexpensively, which they are. With the

difficulty that now exists in matching presently available engineering safety analyses with individual steps during the performance of daily tasks involving energetic materials and directed energies, this position is understandable, but unfortunate. If proper documentation of the system definitions were available it would be more economical and efficient for managers to investigate incidents for their potential S&E lessons as part of their day by day management activities.

3.1.13. Risk analysis engineering technology

During the site visits and review of SOPs, the observed basis for selecting and implementing specific steps to control significant risks in SOPs appeared to be wholly dependent on the risks determined by the analyst's past experiences, engineering analysis or engineering judgments. This is probably attributable to the lack of guidance for systematic search for hazards and risks to ensure that

- methods used to do the S&E tasks are the best available.
- resultant analysis outputs satisfy S&E risk management needs.
- the outputs can be used to facilitate training, and for incident investigation and analysis.
- the work products are documented and actually contribute to the Center S&E knowledge base.

We saw nothing to indicate that more advanced tailored *safety* analysis methods were being applied to the identification and control of S&E risks to employees, equipment, facilities and the environment. The present approach to SOPs results a list of steps to take during a procedure, but typically does not list or document for ready review the hazards or risks each step is designed to control, particularly with respect to interface S&E analyses, comparative risk levels, identification of control options, and emergency response demands. This appears to be attributable to the kinds of engineering analysis outputs that are produced. Thus the analysis technology and its present documentation practices can impede management of lateral and longitudinal safety and environmental risk management to achieve planned performance several ways.

- It has the practical effect of placing the entire burden of finding the "best" risk control procedure on the preparing individual's experience and memory, because reviewers must rely on partial information for their comments or suggestions.
- It reduces the opportunity for the Center to identify potentially more effective or efficient options that might be suggested by the highly skilled personnel actually engaged in the work covered by the SOP.
- It deprives the reviewer of the opportunity to compare the validity of the steps proposed against the risks to be controlled.
- It forces supervisors of work covered by SOPs to focus on complying with the risk control solutions in the SOP, rather than managing the problems on the list; that undermines the SOP validation feedback potential of the monitoring efforts.
- It impedes the ability of Center personnel to rebut audit or inspection findings of technical violations that were resolved more safely that provided by the audit standards.
- It deprives the Center of an opportunity to expand Its "corporate memory" of risk analyses, and the efficiencies that follow a good "lessons learned" system.

- It requires reworking the entire risk assessment for the process whenever a change in analysts or in the system requiring the SOP is being planned or introduced.

- It deprives Center management of an opportunity to determine the consistency of risk assessment efforts going on at the Center

These problems suggest a compelling need to improve the analysis methods and documentation of hazards and S&E risks considered during the various stages of projects or tests and other changes involving energetic materials and directed energy hazards and risks at White Oak.

3.1.14. S&E responsibilities for a building.

Sometimes S&E responsibilities for a building or facility and for work that goes on in a building or facility are divided among departments. Personnel from two or more departments or branches occupy many of the buildings at White Oak. It was not clear during the study who was expected to exercise S&E responsibility and accountability for those buildings housing more than one department. For purposes of exchanging data about lateral risks in a building or area, the departments have to work together in the development of the hazard analyses for all activities in the building. It was not clear if or how this has been done in the past, or that it is contemplated in the future, except by the SOP coordination process. While the internal hazards of an operation are often well known and understood within the originating department, the interactive lateral and longitudinal safety and environmental effects may not be as readily identified or recognized if no integrating S&E responsibility for the building is established.

3.1.15. Compliance efforts.

In practice, observations during site visits suggest that efforts at compliance with Navy requirements may not address the Center's needs fully in several ways. For example, the QD arcs established for explosives categories may be larger than necessary in that the rated explosives capacity typically overstates the actual hazards resulting from actual quantities handled during operations. The clearest example of how this can occur was the repeated insistence that the rated capacities not be reduced so as not to lose the higher level rating for the facility in case future demands required it. The effect is that excessive QD arcs impede other land uses. This particular issue was being addressed at the time the study was concluding.

Compliance with hazardous materials and hazardous waste minimization requirements is another area where deficiencies were observed. The primary deficiency was the Center's inability to achieve an inventory balance for energetic and hazardous materials. With an inventory balancing system, the Center could identify by name the energetic materials brought delivered to White Oak, the amount used at White Oak, and the amount leaving the station, and manage these materials to minimize their use and hazards associated with their use, ensure that they are properly managed while on the station, and assure the proper disposition of any that are not used, or that have become wastes. This problem was observed in the handling of both explosives and chemicals.

Explosives are tracked from their sources into the White Oak designated magazine inventories. When they move from designated storage locations to individual user facilities, there is no system in place for tracking them to determine their final disposition. Quantities used are documented in individual test reports, but there is no discernible effort to determine whether the aggregate of the individual uses is the same as the amount reportedly dispensed from White Oaks' designated magazine inventories. Because of this open loop, it could not be determined that all explosives brought onto the station were actually used as intended. As one person put it, we don't really know if any are being used to blow up stumps someplace.

Similarly, the quantities of chemicals used in laboratories apparently are not subject to sound input/output inventory management and control practices at White Oak. Supply data to try to establish the quantities of various chemicals coming onto the station, for example, was not made available. Supply reported that it

could not provide data about all the chemicals coming onto White Oak property because of an acquisition route by which individuals in laboratories can bypass the normal supply inventory control system. Thus the inbound chemical flows are not integrated in the manner needed to manage hazardous chemicals on the station. That system, moreover, seemed to track the inventory only to the user, not to its final disposition. During site visits, no system that allows chemical input/output inventory management at the departmental level could be identified to demonstrate compliance with NAVSWC or other instructions.

These are two more examples of a compelling need to integrate elements of the S&E risk management system that are currently fragmented among departments.

The other aspect of compliance involves the number, nature and duration of compliance inspections performed at White Oak. Each inspection detracts from a department's time to perform productive project task assignments. The present S&E risk management system at White Oak did not project an image of management control and confidence to outsiders during site visits. Ways to build such confidence to reduce the inspection load would seem to merit consideration.

3.1.16. Environmental review.

Project planning documents reviewed disclosed that environmental considerations are apparently not an important part of the project management process, there is no data item that must be checked off to indicate that the environmental concerns have been addressed satisfactorily. Two consequences are obvious: the environmental staff has to ask questions about environmental considerations when it learns of the project, which delays the process. Secondly, environmental considerations are added on instead of built into the project. Everyone is responsible, but no line person is required to decide that the box can be checked, and accountable for the results if it is checked. This is another example where everyone's responsibility becomes nobody's task.

3.1.17. Communications difficulties.

Judgments of S&E communications skills are admittedly subjective. The study team communicated with a large number of personnel from most of the departments at White Oak. The experiences left the study team members with the subjective impression that the communication of S&E risk management efforts at White Oak could be improved, to the Center's benefit. The views and opinions about the White Oak S&E program communicated to the team members varied greatly among the persons contacted in different departments. These views included unawareness or unconcern about the S&E program, assurances that everything was just fine when deficiencies were clearly visible, frustration that hazards weren't being corrected, the position that everything possible was being done, and a calm, orderly description of a sound S&E program element.

These observed differences undoubtedly reflected the unevenness of the unintegrated departmental E&S efforts. One result is that the motivation for S&E risk management efforts will be a significant motivational variable affecting the introduction of any changes to that system. Another result is the likelihood that inspectors will delve into time-consuming details during inspections in much greater than if a competent understanding of the management and technical aspects of the program could be articulated.

3.1.18. Non-NAVSWC use of NAVSWC facilities.

While not investigated in detail, the question of managing S&E performance of other agency personnel or contractor personnel using Center facilities and equipment areas during the site visits. In at least one instance, NAVSWC personnel turn over their equipment to non-NAVSWC personnel to use in tests. The point of contact could not describe how the S&E performance of such personnel was managed, nor the requirement imposed on them - they reportedly wrote their own SOPs, but the departmental representative was confident that outside personnel performed safe experiments. A review of several documents that require documentation of proposed experiments and tests by outside organizations before they can use Center facilities, revealed no requirement to address the S&E risks of the proposed work. In that, as a NIF

organization, the Center "markets" such work - the S&E risks associated with such work and their attendant costs to control should be considered in a comprehensive risk management plan.

3.1.19. Equipment disposal and life cycle considerations.

A need for a change in the management and analyses of S&E risks during disposal of facilities and equipment also was identified during site visits. This need for longitudinal S&E risk management was shown by several examples. The scrap equipment from old plating operations was observed in one building to be covered with dried residues of unknown nature at the time of the observations. It gave the appearance of hazardous plating solutions having dried in place on the tanks, pipes and machinery that were to be removed, leaving a coating of hazardous materials that could create problems for anything it touched. The accumulation of explosives residues on hood ducts is another illustration of this need. In the past, members of the study team had helped remove unwanted "surplus" irradiated material from outside a building overlooking a tributary to Paint Branch creek, where further decontamination of the building itself is required before it can be reused or razed. At another location a large metal slab reported to be beryllium was observed laying adjacent to a building - disposal plans unknown. In all cases, initial designs and operational plans apparently did not consider and eliminate or control the long term risks that might arise when the time arrived to shut down and dispose of the facility and its equipment.

At the time these activities or equipment were activated, the need to consider longitudinal risks was not as pressing as it is in today's environmentally conscious society, and so the oversight should not be judged by today's hindsight. However, the lesson learned is that disposition of equipment and related wastes and scraps from an activity has to be considered in the future. Modern safety management and technical analysis practices look at S&E risks over the entire life cycle of an activity. While very substantial effort is being devoted at White Oak to cleaning up problems created by past practices, the study team observed no documented plan or evidence to demonstrate that this "life cycle" lesson had been learned during site visits.

3.4. SUMMARY OF S&E RISK MANAGEMENT NEEDS IDENTIFIED DURING STUDY

The capability to produce accidental harm due to the nature, form or quantity of energy available was used as the criterion to identify energetic materials and directed energy risks of interest for this study. Two types of energetic materials and directed energy risks co-exist at White Oak. They include energetic materials and directed energies associated with systems being developed for deployment in the Navy, and energetic materials and directed energies associated with the operation of the White Oak facilities. Both types are considered only relative to their presence and use during activities at White Oak.

White Oak activities requiring S&E management attention include previously identified risks at the Station, and deficiencies reported in this study. Those risks in turn include risks created by the introduction of energetic and other hazardous materials onto the Station from non-White Oak sources (energy -in), and by the creation of the energetic and hazardous materials or directed energies on the station during Station operations (energy -on or energy-out). For example, explosives are introduced onto the Station from other locations and, while on the station, pose S&E risks requiring a control process. Additionally, chemicals which may be inherently hazards are further transformed into explosives on the Station. During their creation and subsequent development, testing and evaluation steps they pose risks on the Station or beyond its fenceline.

S&E risks during normal operations differ from risks during abnormal events at the Station. Abnormal events can include a breakdown in the controls designed to control the risks, or actual mishaps during operations. Both normal activities and abnormal events require consideration.

4. CHAPTER 4. S&E RISK MANAGEMENT PLAN REQUIREMENTS

4.1. Summary of risk management plan requirements

As a result of the study, the following significant changes to the current S&E risk management program at White Oak are recommended to enable White Oak to cope with anticipated S&E demands in the future.

4.1.1. A plan to do more with less

Based on the observations described, the major need is for an integrated S&E risk management plan that can be responsive to demands for increased levels of safety and environmental protection, and can be accomplished with decreasing resources. The challenge is to accomplish more with less resources. The present fragmented compliance-oriented approach by individual departments can not be expected to satisfy this need, based on deficiencies observed.

4.1.2. Integration of S&E management and analytical activities across departments.

A model for an integrated S&E management and tailored analytical tasks should be adopted to provide a consistent framework for S&E activities in all departments at White Oak. The system safety management and safety engineering model already used for hardware handled by NAVSWC provides a readily adaptable model for this purpose.

4.1.2. A process to define risk management objectives.

One of the first changes needed is to implement updated technical processes for analyzing internal, lateral and longitudinal hazards and risks associated with both RTD&E and non-RTD&E activities involving energetic materials and directed energies. The process requires application of new tailored technical safety analysis methods to a wider range of risks, and documentation of the risks found so they can serve as the objectives for the management of the program.

4.1.3. Management follow-up to achieve accepted risks.

Next, the plan needs to reorganize the S&E risk management tasks to improve their efficiency and effectiveness. Successful reorganization of tasks will permit better informed acceptance of risks, facilitate improved disclosure and implementation of controls across departments, identify and assess changes, and give management the tools it needs to achieve and maintain the accepted risk levels.

4.1.4. Documentation of the risk management outputs and decisions.

Finally, the plan needs to provide for more uniform documentation describing the systems analyzed, the S&E risks identified, the controls provided, the risk acceptance decisions made, the review of changes made to the system, and monitoring and follow-up results, to enable managers to achieve and maintain the risks at accepted levels.

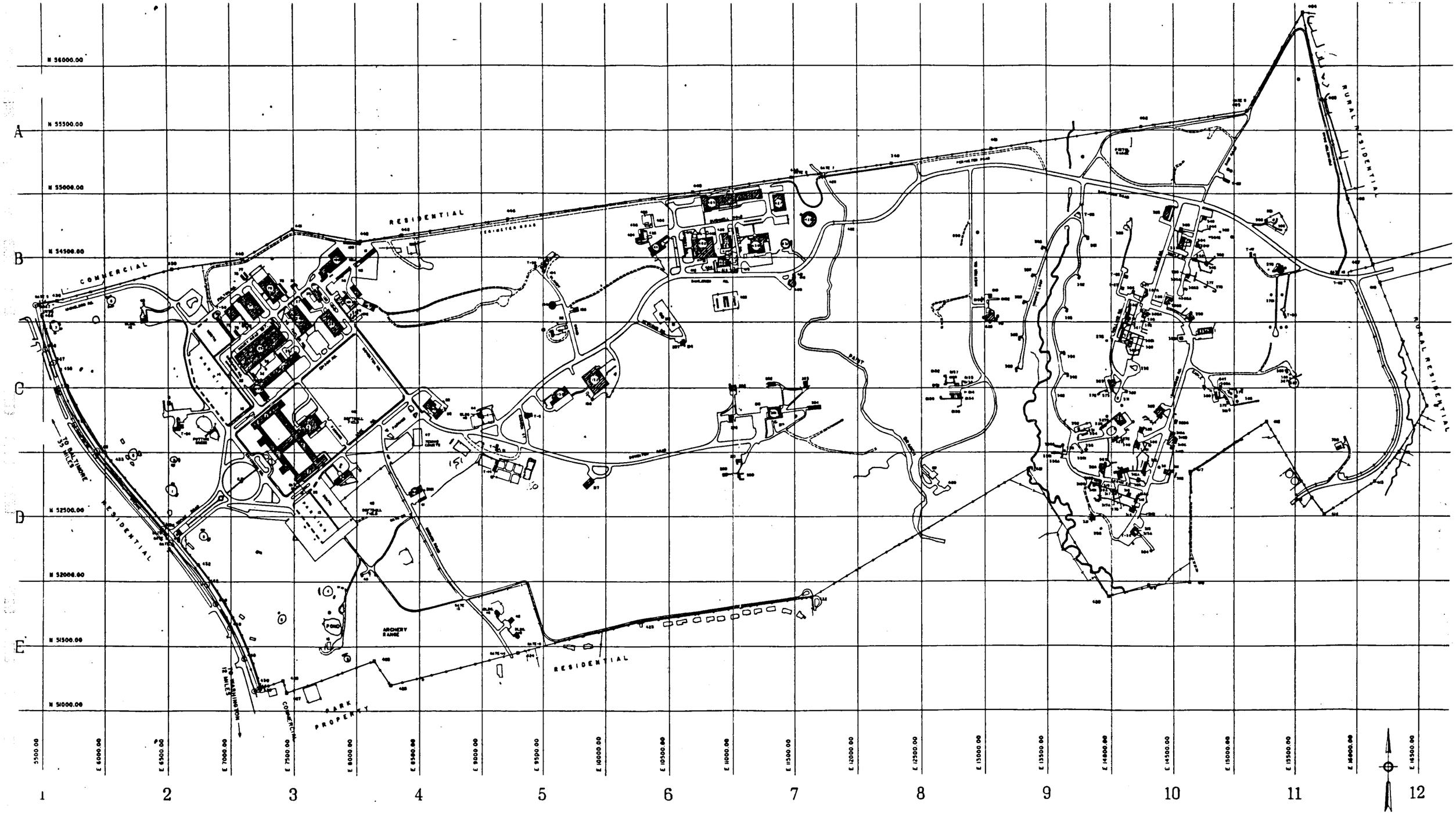
A plan to satisfy these objectives was developed, and is presented in Volume IV of this report.

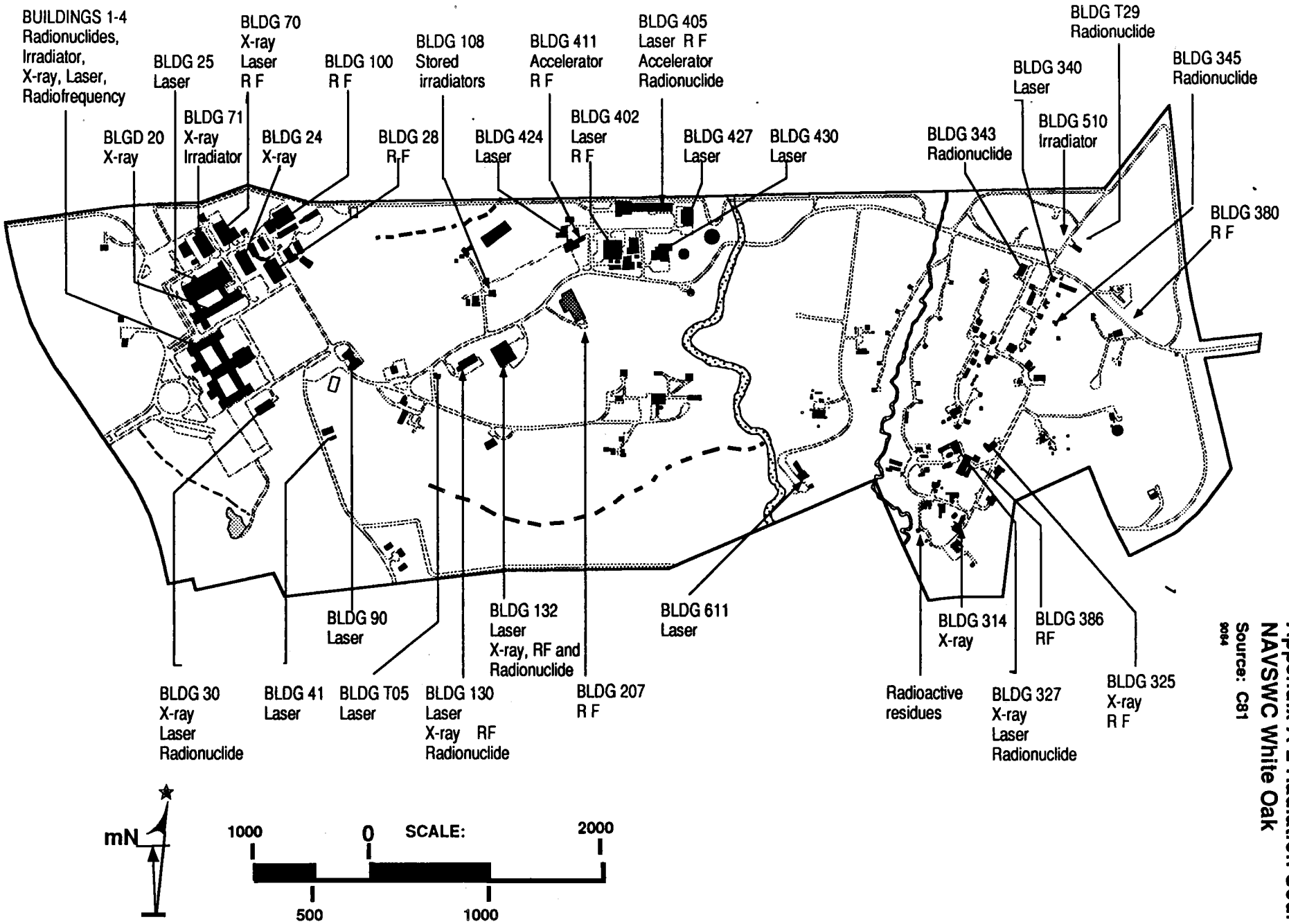
GLOSSARY OF ACRONYMS

AMHAZ	Ammunition Hazardous Materials Board
BTU	British thermal unit
DDESB	Department of Defense Explosive Safety Board
DOD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
HERF	hazards of electromagnetic radiation to fuels
HERO	hazards of electromagnetic radiation to ordnance
HERP	hazards of electromagnetic radiation to personnel
HVAC	Heating, ventilating and air conditioning
LPG	Liquefied petroleum gas
MIL-STD	A Department of Defense Military Standard
MILCON	Military Construction
MSDS	Material safety data sheet
NAVELEX	Space and Naval Warfare Systems Command
NAVFAC	Naval Facilities Engineering Command
NAVOSH	Navy Occupational Safety and Health
NAVSEA	Naval Sea Systems Command
NAVSWCINST	Naval Surface Warfare Center Instruction
NEPA	National Enviornmental Policy Act
NIF	Navy Industrially Funded
NOTAL	Not (distributed) to all
NOSHIPS	Navy Occupational Safety and Health Inspection Program
NAVSWC	Naval Surface Warfare Center
OPNAV	Office of the Chieve of Naval Operations
OPNAVINST	OpNav Instruction
PEL	Permissible exposure limit
QD	Quantity-distance
RAC	Risk Assessment Code per MIL-STD-882B
RDT&E	Research, Development, Test and Engineering
RF	radio frequency
S&E	Safety and environmental
SOP	Standard Operating Procedure(s)
SPAWARINST	Space Warfare Command Instruction
US DOL	United States Department of Labor
WSSC	Washington Suburban Sanitary Commission

APPENDIX A

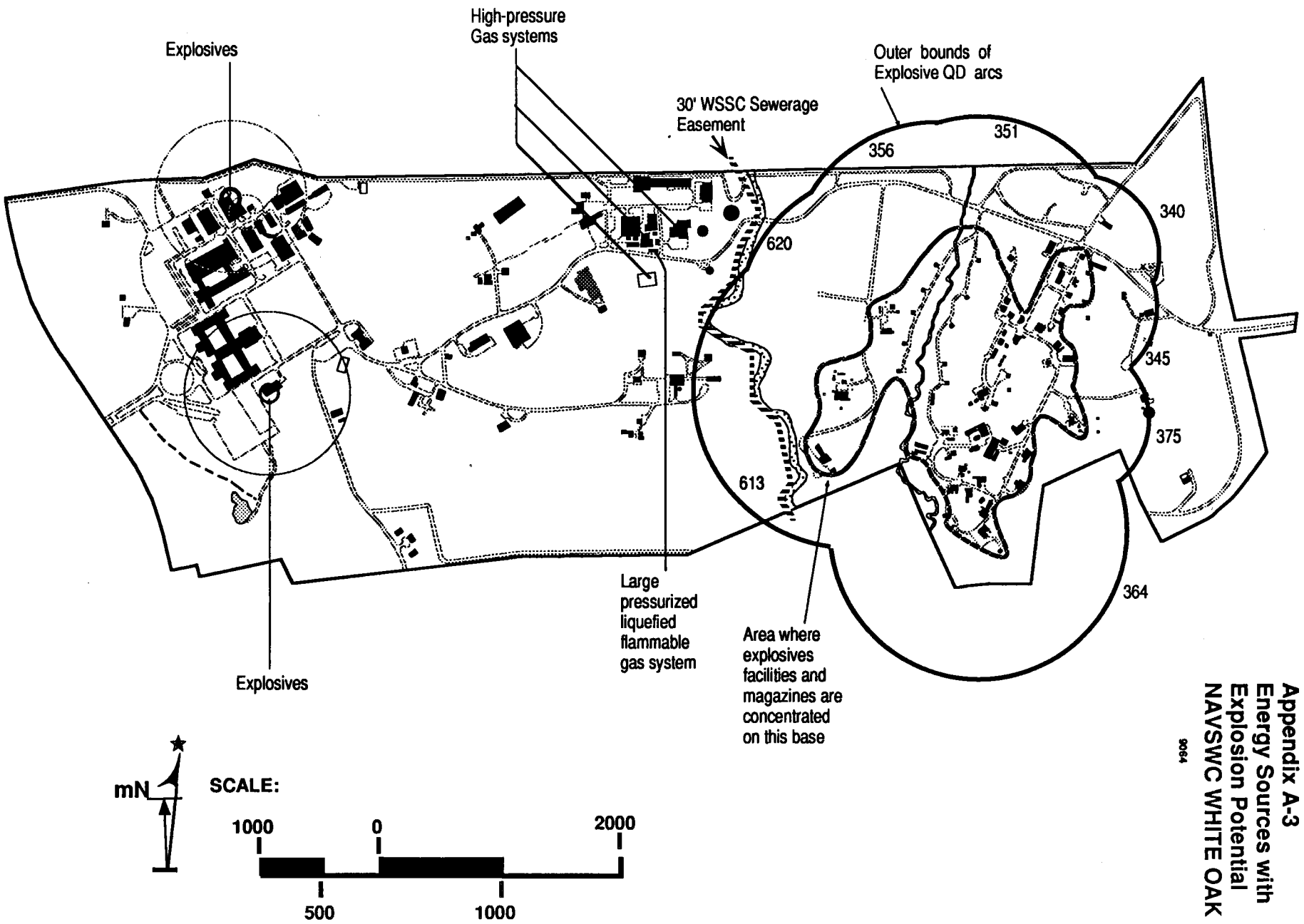
FACILITY MAPS


N 56000.00
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
RESIDENTIAL
COMMERCIAL
RESIDENTIAL
RURAL RESIDENTIAL
RURAL RESIDENTIAL
PAINT
TO BALTIMORE 35 MILES
RESIDENTIAL
ARCHERY RANGE
TO WASHINGTON 12 MILES
COMMERCIAL
PARK PROPERTY
RESIDENTIAL
250' 0 250' 500' 750' 1000'
1" = 300'



Appendix A-2 Radiation Sources
NAVSWC White Oak

Source: C81
9084



Appendix A-3
Energy Sources with
Explosion Potential
NAVSWC WHITE OAK

9064

APPENDIX B

BUILDING DESCRIPTIONS

Building 1

1. DESCRIPTION.

This is part of the main administration building of White Oak The building is constructed of brick, concrete block, and concrete. The building has four stories above ground and a basement. There are no underground tanks. No friable asbestos was evident during the survey. There are no known PCBs present. The approximate gross area per floor is 7204 square feet. This does not include hallways and jointly occupied space.

1.1 Location.

This building is located in WO grid number C 2 & 3.

1.2 Equipment.

Test equipment, computers, soldering operations, drill presses, grinders and similar mechanical items.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility was operated in part by U division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACE TYPES
U-10	2	302	2	OFFICE
U-13	1	217	1	TECH LAB
U-20	3	415	2	OFFICE
U-24	5	1359	8	LAB, TECH OFFICE, COMPUTER ROOM
U-30	3	307	3	OFFICE, TECHOF
U-32	9	1698	12	TECH OFFICE
U-33	1	0	0	TECH OFFICE
U-40	2	0	1	OFFICE
U-41	5	898	5	TECH OFFICE
U-42	4	1453	7	TECH OFFICE, LAB
U-43	3	555	3	STORAGE, TECH OFFICE, LAB
REPORTED TOTALS	101	7204	44	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted. Prepared as necessary for tests.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

Personnel in this building are shown in Section 2.1.1. During hazardous operations, if any, the number of personnel is limited to the number needed to support the test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no information available to document amount and types of energetic materials processed through this facility in FY90. As far as could be determined, there is no energetic materials used within the main administration building. This includes buildings 1,2,3,4 and 5.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available. (A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 2

1. DESCRIPTION.

This is part of the main administration building of White Oak The building is constructed of brick, concrete block, and concrete. The building has four stories above ground and a basement. There are no underground tanks. No friable asbestos was evident during the survey. There are no known PCBs present. The approximate gross area per floor is 10,483 square feet. This does not include hallways and jointly occupied space. The building appears well maintained.

1.1 Location.

This building is located in WO grid number C 2 & 3.

1.2 Equipment.

Test equipment, computers, soldering operations, drill presses, grinders and similar mechanical items.

2. OPERATIONS.

2.1 Administration.

This building is administered by : Information not Available.

2.1.1 Facility Operator.

This facility was operated in part by U division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACETYPES
U-10	1	206	1	TECH OFFICE
U-11	7	1255	2	LAB, TECH OFFICE,CONF ROOM, STORAGE,COPYRM
U-13	7	2185	14	TECH OFFICE
U-20	2	195	1	OFFICE
U-23	15	3491	25	TECH OFFICE, LAB, CONF ROOM, COMPUTER OPS
U-24	6	1304	8	TECH OFFICE
U-25	1	198	0	STORAGE
U-33	11	2009	23	LAB, TECH OFFICE
REPORTED TOTALS	185	10843	74	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted. Prepared as necessary for test.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP#	SOP Title
307	SIEMENS D-500 X-RAY DIFRACTION SYSTEM AUTOMATIC & SEMI-AUTO OPERATION

2.2. Personnel

Personnel in this building are shown in Section 2.1.1. During hazardous operations, if any, the number of personnel is limited to the number needed to support the test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no information available to document amount and types of energetic materials processed through this facility in FY90. As far as could be determined, there is no energetic materials used within the main administration building. This includes buildings 1,2,3,4 and 5.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for this facility.

Building 3

1. DESCRIPTION.

This is part of the main administration building of White Oak. The building is constructed of brick, concrete block, and concrete. The building has four stories above ground and a basement. There are no underground tanks. No friable asbestos was evident during the survey. There are no known PCBs present. The approximate gross area per floor is 4577 square feet. This does not include hallways and jointly occupied space.

1.1 Location.

This building is located in WO grid number C 2 & 3.

1.2 Equipment.

Test equipment, computers, soldering operations, drill presses, grinders and similar mechanical items.

2. OPERATIONS.

2.1 Administration.

This building is administered by U-25.

2.1.1 Facility Operator.

This facility was operated in part by U division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACETYPES
U-25	22	4577	31	TECH OFFICE, LAB, COMPUTER OPS.

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted. Prepared as necessary for test.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

Personnel in this building are shown in Section 2.1.1. During hazardous operations, if any, the number of personnel is limited to the number needed to support the test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no information available to document amount and types of energetic materials processed through this facility in FY90. As far as could be determined, there is no energetic materials used within the main administration building. This includes buildings 1,2,3,4 and 5.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation. The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

Building 4

1. DESCRIPTION.

This is part of the main administration building of White Oak The building is constructed of brick, concrete block, and concrete. The building has four stories above ground and a basement. There are no underground tanks. No friable asbestos was evident during the survey. There are no known PCBs present. The approximate gross area per floor is 22413 square feet. This does not include hallways and jointly occupied space.

1.1 Location.

This building is located in WO grid number C2 & 3.

1.2 Equipment.

Test equipment, computers, soldering operations, drill presses, grinders and similar mechanical items.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility was operated in part by U division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACE TYPES
U-11	18	3884	35	TECH OFFICE, STORAGE, TECH SH
U-13	8	1698	13	TECH OFFICE
U-20	2	1185	0	COMPUTER OPS
U-23	6	1506	8	LAB, STORAGE, COMPUTER OPS
U-24	12	3369	23	TECH OFFICE, LAB
U-25	7	2229	17	TECH OFFICE, LAB, STORAGE VAULT
U-30	1	0	1	TECH OFFICE
U-31	13	2453	22	TECH OFFICE, COMPUTER OPS
U-32	1	247	3	TECH OFFICE
U-33	20	3016	31	TECH OFFICE, LAB, COMPUTER OPS
U-41	4	779	8	TECH OFFICE, LAB
U-43	5	2047	11	TECH OFFICE, LAB
REPORTED TOTALS	97	22413	269	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted. Prepared as necessary for test.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

Sop# Soptitle

170B RESPIRATORY PROTECTION ROOMS 4-160 & 4-168

171B RESIRATORY PROTECTION

407 RESPIRATORY PROTECTION (DUST MASK)

2.2. Personnel

Personnel in this building are shown in Section 2.1.1. During hazardous operations, if any, the number of personnel is limited to the number needed to support the test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no information available to document amount and types of energetic materials processed through this facility in FY90. As far as could be determined, there is no energetic materials used within the main administration building. This includes buildings 1,2,3,4 and 5.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 5

1. DESCRIPTION.

This is part of the main administration building at White Oak The building is constructed of brick, concrete block, and concrete. The building has four stories above ground and a basement. There are no underground tanks. No friable asbestos was evident during the survey. There are no known PCBs present. The approximate gross area is 160 square feet. This does not include hallways and jointly occupied space. The building appears well maintained.

1.1 Location.

This building is located in WO grid number C 2 & 3.

1.2 Equipment.

Word processing, typing and related equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by U department.

2.1.1 Facility Operator.

This facility was operated in part by U division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACE TYPES
U-30	1	*(160)	1	TECH OFFICE
REPORTED TOTALS	1	*(160)		

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

Personnel in this building are shown in Section 2.1.1. During hazardous operations, if any, the number of personnel is limited to the number needed to support the test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no information available to document amount and types of energetic materials processed through this facility in FY90. As far as could be determined, there is no energetic materials used within the main administration building. This includes buildings 1,2,3,4 and 5.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 20

1. DESCRIPTION.

This facility is the Ordnance Environmental Lab. It is a 95,786 square foot, two story building which was built in 1946.

1.1 Location.

This building is located in WO grid number C3.

1.2 Equipment.

The major equipments used in this facility include:

Room 20-028: Three rotary accelerators; magnetic film and tape storage.

Room 20-033 - Leak Test Laboratory : Salt spray chamber; 4000 bridge crane.

Room 20-040C: 2' and 5" air guns (15,000 PSI).

Room 20-046 - Impact Drop Test Laboratory: 4000lb bridge crane; two impact test drop devices.

Room 20-052: VAX 11750 mainframe computer.

Room 20-058: Compressor room for house air.

Room 20-070: Bridge crane; vibration test bed (192 KVA).

Room 20-127: Two high pressure air guns (15" and 21" - use house air to provide 1-3000 PSI) ; 20,000 lb overhead crane; industrial machine tools (bandsaw, grinder, drill press, grinder).

Room 20-138 - Pressure Laboratory: 3 small pressure chambers (20,000 PSI); machine tools;

Room 20-158 - Temperature Laboratory: Walk-in temperature chamber (-100F to +200F); 9 hot/cool chambers (-65F - 160F); 2 cooler chests; 6 ovens; 2 1500lb cranes; vacuum bubble test device.

Vibration Laboratory: Environmental heat/cold boxes (use CO2 for cold); 4000lb gantry crane; 3 shaker assemblies; 2 amplifiers (40KVA and 60KVA).

Assembly Area: 4 pressure vessels (three rated at 0-1000 PSI and one at XXX PSI); 2 overhead cranes (4000 and 6000lb).

"Under Assembly Area": Ten foot diameter centrifuge that "has not been used in years".

2. OPERATIONS.

2.1 Administration.

This building is administered by - Unknown

2.1.1 Facility Operator (s)

H10 responsible for test facilities in rooms: 20-028, 20-033 , 20-040C, 20-046 , 20-058, 20-070, 20-127,20-138, 20-158, Vibration Laboratory, and the Assembly Area.

2.1.2 Approving Authority for Tests.

Could not determine who has overall approving authority for tests conducted in this building. Appears to be by Departments.

2.1.3 See Appendix for Applicable Safety/Environmental Instructions.

2.1.4 Licenses/Permits.

For H Department, the Approved SOP is the document that serves as the authority to proceed with a planned test or operation in this building.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

H Department:

SOP#	SOP TITLE
710	TEST POTS Mk4 MOD O (CODE H-14)
011A	ENVIRONMENTAL TESTING OF CAPTOR WEIGHT
033	THE FERRET LEAK DETECTOR (TYPE H-25 GENERAL ELECTRIC) IN BLDG 20.
047	THE HELIUM MASS SPECTROMETER LEAK DETECTOR (DUPONT TYPE 24-120B)
078	24"DIA.X 13' LONG PRESSURE VESSELS (2)
079	TRANSPORTABLE 20,000 psi PRESSURE VESSEL
130	CONDUCTING ENVIRONMENTAL TESTS OF ACOUSTIC DEVICE MK-4
272	ENVIRONMENTAL TESTS OF EX51 MOD 0 FIRING DEVICE BATTERY TEST SET.
285	6,500 PSI PRESSURE VESSEL
428	CODE H-14 VIBRATION FACILITY 246 SHAKER SYSTEM
429	CODE H-14 VIBRATION FACILITY 300 AND 335 SHAKER SYSTEMS
430	THE VACUUM BUBBLE LEAK STATION BUILDING 20, CODE H-14
703	CODE H14 RADIANT HEAT FACILITY
704	NSWC WALK-IN TEMPERATURE AND HUMIDITY CHAMBER (CODE H14)
705	8'DIAMETER X 30' PRESSURE VESSEL
706	FILTER SYSTEM, 8' DIA.X 30' PRESSURE VESSEL (CODE H14)
707	15,000 psi PRESSURE VESSEL
708	VERTICAL PRESSURE VESSEL (CODE H14)
709	ROTATING PRESSURE VESSELS (2) (CODE H-14)
711	15" X 15" PORTABLE PRESSURE VESSEL (CODE H14)
714	THE 21" AIR GUN
718	24 INCH DROP TESTER
719	THE 10 FOOT CENTRIFUGE, ACCELERATION & SPIN FIXTURES.
720	THE DROP SHOCK TESTER Mk 7 Mod 0.
721	THE SELF-IMPACEABLE DROP TESTERS (SED-100, SED-2000).
722	THE SCHAEVITZ CENTRIFUGE (12" RADIUS)
723	GENISCO CENTRIFUGE (12" RADIUS)
724	THE SCHAEVITZ CENTRIFUGE (35" RADIUS)
725	THE IMPAC 66 DROP TESTER
727	THE IMPACT 3636 & 1818 DROP TESTERS
729	THE FLOOR SPIN FIXTURE
829	VHg IMPACT TEST SET (CODE H-14)
830	THE 15" AIR GUN (CODE H-14)
831	2" & 5" HIGH-g AIR GUN (CODE H-14)

U DEPARTMENT

SOP# **SOP TITLE**

173 TINUS OLSEN & SUPER "L" TENSILE MACHINE

2.2. Personnel

Building 20 is staffed by H10 on an as required basis to perform testing.

The processing of live ordnance in this facility is carried out by Ordnance Equipment Mechanics selected from among the 8-10 G622A personnel who are rotated between this and other G622 facilities as required to meet operational needs.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

H Department reported that tests involving explosives are accomplished, "a few times per year", and no FY90 tests involving radioactive materials or chemical weapons.

2.3.2 Transportation/Storage.

Identified no transportation of energetic materials to or from this facility.

2.3.3 Emergency Preparations.

Emergency equipments include: warning horns and lights, emergency showers , fire alarms, fire extinguishers and sprinkler systems.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records, with the exception of the memory of an incident whereby a test object was propelled from the horizontal pressure chamber in the Assembly area.

3. POST-TEST ACTIVITIES.

Horizontal pressure chamber holds 15,000 gallons of water which is drained to sewer after tests.

3.1 Cleanup Operations.

N/A

3.2 Environmental Site Monitoring.

Environmental monitoring for this building is not performed.

4. FACILITY ENERGIES.

Significant energies associated with this building include:

High Pressure (to 20,000 PSI);
Vacuum;
Thermal (-100F-+200F);
Electrical High Voltage (60KVA);
Mass/Gravity (Cranes, drop test devices);
Noise;
Rotational Kinetic (12,000 g/pounds);
Linear Kinetic (air guns, rams);
Chemicals associated with industrial tasks and large quantities of CO2
X-Ray (Faxitron, Electron Microscope, Fluoroscope)

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include:

15,000 gallons of water from horizontal pressure chamber, in Assembly Area, drained to sewer after tests;

Electrical Vault 13 labeled as having PCBs;

CO2 released to atmosphere after tests;

Very small amounts of salt water from salt spray chamber (Room 20-033) drained to sewer after tests.

Outgassing from lithium batteries;

Intermittent very small amounts of hydraulic fluid, overflow from vibration test device, are drained to the sewer.

6. SUPPLEMENTAL COMMENTS.

High potential for electrical shock mishap in vibration test facility area (Room 20-070. A new door , at second level, and stairway exposes personnel to close (24") proximity to 440V leads on overhead crane.

There are many unlabeled high pressure air lines throughout this facility.

Large amounts of unused equipment and materials in basement.

The receiving area operated by S in this building is where inbound packaged chemicals and hazardous materials are first checked to ensure that they are accompanied by Material Safety Data Sheets. S relies on Center staff members to ask for MSDSs on their requisition to vendors to decide if the material ordered is hazardous material that requires an MSDS to accompany the shipment.

Building 24

1. DESCRIPTION.

This facility is a one story, 20,000 square foot building which houses a magnetic materials laboratory along with technical offices, storage, and a darkroom. The facility is used for the casting, fabrication, and development of speciality metal alloys for use in prototype designs. Capabilities include melt casting, milling, shaping, testing and characterizartion of various metals and alloy components.

1.1 Location.

This building is located in WO grid number B3.

1.2 Equipment.

Equipment used for casting and fabrication of metal alloys.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R32 P. Hesse

2.1.1 Facility Operator.

This facility was operated by three users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R32	28	10536	25	TECHOF, LAB, STORAGE, COPYRM, DARK/RM, MECHAN, TECHSH
R42	1	0	0	LAB
R43	7	5955	15	TECHOF, LAB, TECHSH
REPORTED TOTALS	36	16491	40	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

Forty personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

None.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

Hazardous waste generated in this facility is stored for removal by environmental staff and is processed in the Center's hazardous waste program.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Thermal (furnaces), pressure (cylinders), mechanical pressure (10 ton press), thermal (mishap, fire).

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 25

1 DESCRIPTION.

This facility is a 130,700 square foot, two story brick building with basement, built in 1947. The facility has 167 internal spaces, and a storage and material handling area along the north side of the building. The building houses offices, labs, the Servmart, shipping area, computer rooms, recreation area, and hazmat storage areas. Several spaces were being altered while this report was being prepared. Most of the activities of interest for the study, such as the plating shop and machine shop, had been terminated or moved to another location by the end of FY 1990. The building is physically connected to Building 20.

1.1 Location.

This building is located in WO grid number C3.

1.2 Equipment.

The major equipments used in this facility is now light machinery and materiel moving equipment. An overhead crane and burning and cutting equipment are located in the storage yard adjacent to the building.

Abandoned equipment including former plating shop vats, tanks , ducts and fans was observed in the building during the study.

Room No.	Equipment
Paint Shop	Paint spray booth
Paint Shop	Paint storage room
Paint Shop	Solvent vat with sink
Carpenter Shop	Typical powered equipment, saws, sanders, et al, and a large saw dust collection cyclone
Photo Lab on 2nd Floor	Kodamatic 42 Processor has a drain line that empties into a floor drain
Room 25-201E	Public Works Office - three Ozalid machines
Locker 1154	Located in old machine shop area, storage area for 6-700 gallons of solvents
Locker 1152	Caustics storage
Pipefitting Shop	This basement shop includes a welding room with a small exhaust fan system
HVAC Shop	Note-Flammables lockers have inventories posted on door and a file of MSDS prominently displayed
Machine Shop	This basement shop has a large number of typical powered tools, lathes, saws, drill presses, et al
25-168	Main frame computer rooms (2)

2 OPERATIONS.

2.1 Administration.

This building is administered by : Information Not Available.

2.1.1 Facility operator(s)

The building contains activities involving Codes C, D, E, G, M, P, S , T and W.

2.1.2 Approving Authority for Tests.

The approving authority for operations conducted in this building is the Department Head of the respective operating departments.

2.1.3 Applicable Safety and Environmental Instructions.

See Appendix for applicable safety and environmental instructions applicable in this building.

2.1.4 Licenses/Permits.

Operations in the building require no licenses or permits.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

ORG	SOPID	SOPTITLE
C83	390	RESPIRATORY PROTECTION
E14	162A	RESPIRATORY PROTECTION
E142	153	OPERATION OF THE 45 TON AND 200 TON HYDRAULIC PRESS BRAKE IN E142
W71	291	ELECTRICAL LOCK OUT/TAG OUT PROCEDURES.
W712	296	RESPIRATORY PROTECTION
W715	388	RESPIRATORY PROTECTION
W72	394	RESPIRATORY PROTECTION
W722	299	RESPIRATORY PROTECTION
W723	297	RESPIRATORY PROTECTION

2.2 Personnel

The building was occupied by over 230 people as of 9/30/90, distributed as follows among the departments according to W department records:

User	TotPers
C	20
D	7
E	14
G	15
M	1
P	3
S	12
T	4
W	159
Total	235

Building occupants include handicapped personnel.

2.3 Building Activities.

2.3.1 Test Activities, FY90.

There were no "tests" conducted in this building in FY 1990. Activities of potential interest for this study included a metal photoprocessing laboratory, storage of hazardous materials, residues associated with the terminated plating shop operation, small quantities of hazardous materials associated with the Servmart activities, and packaged hazardous materials at the receiving dock. There was no readily available data to document the amount and types of hazardous materials processed through this building in FY90.

2.3.2 Transportation/Storage.

Transportation of chemicals and hazardous materials to and from this facility is performed in connection with S operations.

Numerous cabinets for flammable and corrosive materials are located in this building. Also chemicals are stored in caged areas near the east door of the building that faces

2.3.3 Emergency Preparations.

Emergency equipment includes fire extinguishers and sprinkler systems in some parts of the building. Additionally, procedures provide for a non-handicapped escort for handicapped personnel in the event of an emergency.

A two-man rule is applicable for E13 after-hours operations, in anticipation of possible emergencies.

2.3.4 Flow Chart References.

Not applicable.

2.4 Performance History (Mishaps).

No mishaps occurring during the operation of this facility could be recalled by personnel familiar with the facility and none were found in Center records

3 POST-TEST ACTIVITIES.

Some developer is disposed of into drains by the metal photoprocessing lab operation. C8 checks discharges from that process.

3.1 Cleanup Operations.

Operations in this building are conducted in accordance with the Center's Hazardous Waste Management plan. When the plating shop equipment is removed, special precautions will have to be taken to assure proper handing and disposal of the associated wastes observed on this equipment and the facility.

3.2 Environmental Site Monitoring.

Environmental monitoring for this building is not performed.

4 FACILITY ENERGIES.

The primary facility energies are chemicals used in the metal photoprocessing laboratory, hazardous materials stored in protected areas in the building and on the receiving dock, and small qualities of hazardous materials in the Servmart operations. No inventory balance for chemicals present in this building, with the exception of the HVAC shop, was available at the time of this study.

Lasers are used by G department in the Optical Lab in Room 142. The lab has no permanent occupants.

Supply stores packaged inbound hazardous materials such as flammable solids and liquids in designated hazardous materials areas on the receiving dock. Returned chemicals (est. 200 lbs in 1990) are also stored in the hazardous area for return.

5 CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include the inadvertent dumping of chemicals used in the building into sewers, spills chemicals stored in the building, and exposures to residues from the terminated plating shop operations. Two areas of note include:

Paint Shop storage room - there is no sill to prevent paint from spilling out into the street in the event of a fire or other mishap.

A large "Waste Cutting Oil" tank on West side of building. Area around the tank, including the ground, is oil saturated.

6 SUPPLEMENTAL COMMENTS.

Most of the potential environmentally sensitive operations such as plating operations have been terminated in this building, and are now being contracted out. This action reduced the environmental risks very significantly.

Rehabilitation of the building was underway during the study. This rehabilitation included the addition of a substantial fire load in the form of a workout area lined with wood (see fire safety report).

Building 25 U-G

1. DESCRIPTION.

This brick, concrete and concrete block building has multiple functions, including office operations, computer operations, machine shop and facility support operations, a gym and laser lab operations.

1.1 Location.

This building is located in WO grid number B2.

1.2 Equipment.

Multiple types of equipment to support functions noted in description.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility is being used in part by multiple operators including C8, U41, U42 and G43 division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACETYPES
U41	3	368	3	TECH OFFICE
U42	1	2500	N/A	COMPUTERFACILITY
G43	1	500 est.	N/A	LASER LAB
REPORTED TOTALS	5	3368 est.	3	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Not known.

2.1.4 Licenses/Permits.

Not known.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP#	SOP TITLE
390	RESPIRATORY PROTECTION
162A	RESPIRATORY PROTECTION
153	OPERATION OF THE 45 TON AND 200 TON HYDRAULIC PRESS BRAKE IN E142
291	ELECTRICAL LOCK OUT/TAG OUT PROCEDURES.
296	RESPIRATORY PROTECTION
388	RESPIRATORY PROTECTION
394	RESPIRATORY PROTECTION
299	RESPIRATORY PROTECTION
297	RESPIRATORY PROTECTION

2.2. Personnel

Three full time personnel are assigned to this facility.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. There is also fire alarm system. Emergency lighting is provided. There is no current emergency response plan available. (A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

Significant energies associated with this building are with the laser operations.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The operations being conducted in this building are so diverse that there is little common relationship between them and the building cannot be characterized as having a single function.

Building 29

1. DESCRIPTION.

This is an ordnance assembly building which is approximately 4000 square feet. It was built in 1952 and has 12 internal spaces which house laboratories, computer rooms, technical offices and a conference room.

1.1 Location.

This building is located in WO grid number B3.

1.2 Equipment.

Computer and laboratory equipments.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility was operated by three users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R14	6	1108	1	LAB, COMPUTE, TECHOF
U10	5	1018	0	CONFER. COMPUTE, LAB
U25	1	1102	1	LAB
REPORTED TOTALS	12	3228	2	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

None known.

2.1.4 Licenses/Permits.

None known.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

Two full time personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no data available to document the amount and types of energetic materials,if any, that were processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 30

1. DESCRIPTION.

This building is listed as the Explosives Laboratory and Weapons Systems Integration Laboratorybuilding, a three story brick building with basement, built in 1947, with an area of approximately 32998 square feet. The basement houses an explosives magazine, building machinery, offices, laboratories for explosives testing, and a technical shop. The first floor houses laboratory and office spaces. The second floor houses chemical and computer laboratories and technical office spaces. The third floor houses computer and technical office spaces, and HVAC machinery. Analytical laboratories, detonator research and manufacturing, fuze systems-analysis and design, and other weapons research are performed in the building. The building also houses development and testing of initiation devices, explosive firing trains and energetic materials. There is also development of new chemical analysis techniques and use of these procedures for fleet support programs or in support of insensitive munitions programs.

1.1 Location.

This building is located in WO grid number D3.

1.2 Equipment.

Primary mission equipment includes an explosives magazine, explosives device testing benches and equipment, chemical laboratory equipment, potentiostats, small power tools, an xray system, lab hoods, and computers.

2. OPERATIONS.

2.1 Administration.

This building is administered by: Not Identified.

2.1.1 Facility Operator.

This facility was operated by eight users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
G41	6	1888	0	LAB
N14	17	5122	29	TECHOF, COMPUTE, LAB, STORAGE
R11	6	907	4	TECHOF,XRAY, LAB, DARKRM,
R12	19	3886	8	LAB, TECHSH, TECHOF, MAGAZIN,
R16	7	1560	3	LAB, STG/CHM
R33	2	555	2	LAB, TECHOF
R34	6	1425	5	TECHOF, LAB
R43	6	1098	2	LAB, TECHOF
REPORTED TOTALS	69	16441	53	

2.1.2 Approving Authority for Tests.

The approving authority for explosives tests conducted in this building is G . The approving authority for chemical tests performed in this building is R.

2.1.3 Applicable Instructions.

Instructions applicable to the energetic materials operations in this building include:

NAVSEA OP05, "Ammunition and Explosives Ashore, Volume 1, Safety Regulations for Handling, Storing, Production, Renovation and Shipping".

2.1.4 Licenses/Permits.

The Approving Process and Authority for Tests/Operations consists of the principal researcher making the decisions in R. The document that serves as the authority to proceed with a planned test or operation in this building is the SOP.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP ID# SOP TITLE

G DEPARTMENT

061	ASSEMBLING THE 76MM PRV
062	DISASSEMBLING THE MK 403 MT/PF FUZE
145	ASSEMBING THE APOBS FUSE
150	TRANSP OF EXPLOSIVES FROM BLDG. 30 MAGAZINE TO OPERATING AREAS 30-018,015,013.004
221	ASSY/DISASSY OF EX424 MORTAR ELECTRONIC FUZE ADENDUM TO 221 (FORMALLY 221A)
260	DISASSEMBLY/ASSEMBLY OF THE MK 407 MOD 2 POINT DETONATING/DELAY FUZE.
527A	ASSEMBLY OF THE MK 186 MOD 2 TORCH CARTRIDGE
013	DISASSEMBLY/ASSEMBLY OF THE Mk 393 MT/PD FUZE.
084	THE ASSEMBLY OF THE MODIFIED Mk 420 Mod 0 FUZE
229	CONDUCTING TESTS USING THE APOBS FUZE SLIDER ARMING TIME FIXTURE
422A	THE ASSEMBLY OF THE INFRARED DISTRACTION DECOY (IRDD) PROTOTYPE
527	EXPLOSIVE LOADING, HANDLING, ASSEMBLY, DISASSEMBLY AND TESTING
527D	THE EXPLOSIVE DISASSY, CLEANSING, AND REASSY OF THE Mk186 Mod 0 DECOYS.
026	THE ASSEMBLY/DISASSEMBLY OF THE EX 426 MT/PD FUZE.
152	STATIC DETONATOR SAFETY TEST FOR THE MK 407 MOD 2 PD/DELAY FUZE
024	DROP-BALL TESTING OF THE Mk 420 MOD 0 FUZE VARIANT.
156	DE-BOOSTERING AND FUZE SHIELD REMOVAL OF MK 420 FUZE.

R DEPARTMENT

002A	ELECTROSTATIC TESTING OF EED'S (BUILDING 30)
028	HELIUM LEAK DETECTION OF EXPLOSIVE DEVICES.
029	STITCH-WELDING OF EXPLOSIVE DEVICES
045	DOWN-LOADING OF EXPLOSIVE COMPONENT DEVICES
087	OUT-OF-LINE SAFETY TESTS AND SEQUENTIAL ARMING TESTS FOR THE EX37 ARMING DEVICE IN
128	TRANSPORTATION OF EXPLOSIVES FROM BLDG 30 MAG. TO OPERATING AREAS 30-021,007
151	STITCH-WELDING OF EXPLOSIVE DEVICES
349	SONIC WELDING OF EXPLOSIVE DEVICES.

U DEPARTMENT

316	STANDARD OPERATING PROCEDURE FOR ASSEMBLY OF FIELS EXPLODER FOREX 122 WARHEAD
056	BUILDING 30, GENERAL

The processing of live ordnance in this facility is carried out by Ordnance Equipment Mechanics selected from among the 8-10 G622A personnel who are rotated between this and other G622 facilities as required to meet operational needs.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no report documenting the amount and types of energetic materials or chemicals moved into or processed through this facility in FY90, nor readily accessible data to determine those amounts.

2.3.2 Transportation/Storage.

Transportation of explosives to and from this facility is accomplished by R12 (Brown.)

2.3.3 Emergency Preparations.

Emergency equipments include emergency eye wash, fire blanket, emergency shower, fire extinguisher and sprinkler equipment. There were no sprinklers noted in some surveyed spaces. No dry chemical fixed extinguishing system was noted during the survey. There are CO2 type portable fire extinguishers available. A fire alarm for the building, which is probably connected to a central station, was noted during the survey. No panic or shutdown buttons were observed. No emergency lighting is provided. Blast shields, barriers, lock outs and interlocks were observed in areas handling devices containing explosives. Door locks are present in the building. A fire blanket was located in the surveyed space.

Additionally, G622 safety procedures require that two persons always be present when working on live ordnance and that an operable vehicle be present at the site.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be located in Center records, or recalled by personnel familiar with the facility

3. POST-TEST ACTIVITIES.

Devices with energetic materials utilized in this facility are removed to the magazine in the basement, and thence to one of the main magazines for subsequent disposition.

3.1 Cleanup Operations.

The waste from operations in this facility are removed under the Center Hazardous Waste Management plan.

3.2 Environmental Site Monitoring.

Environmental monitoring for this building is not performed.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosives, chemicals, compressed gases, electrical, rotary and kinetic energies. There are no underground tanks for this building. Some asbestos may be present in the building. There are no known PCBs present.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include chemical spills of small quantities of laboratory chemicals, and gases released from compressed gas cylinders. Additional qualities of fumes or gases would be discharged from the building out of the fume hood ducts.

6. SUPPLEMENTAL COMMENTS.

At the time of the surveys, the room air pressure in some labs in 30 appeared to be greater that of that in the hall. This could potentially present an exposure to personnel in that building in the event of a hazardous material spill.

The storage of cylinders containing various pressurized compressed gases in this building was observed in a second floor hallway. While stowed according to requirements, the presence of cylinders at this location raises the risks to occupants during their handling into and out of the building, and to locations where they are used.

Building 40

1. DESCRIPTION.

This facility is a 4234 square foot, one story building built in 1950. The facility has 9 functional internal spaces, and storage and utility areas. The building houses the Fuze Wave Trace Laboratory.

1.1 Location.

This building is located in WO grid number D4.

1.2 Equipment.

Equipment involving directed energies in this building includes lasers and electronic measuring devices.

2. OPERATIONS.

2.1 Administration.

This building is administered by G41.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
G41	9	3104	8	TECHOF, CONFER, LAB, STORAGE

2.1.2 Approving Authority for Tests.

The test approval process is based primarily on the SOP approval process.

2.1.3 Applicable Safety and Environmental Instructions.

See Appendix for applicable safety and environmental instructions applicable in this building.

2.1.4 Licenses/Permits.

Laser operation procedures are reviewed by the Laser Safety Officer.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

179 RESPIRATORY PROTECTION.

2.2. Personnel

Eight personnel were permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are not transported to or from this building.

2.3.3 Emergency Preparations.

No unique emergency preparations noted.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be identified in Center records, or recalled by personnel familiar with the facility or its operations.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed under the Center Hazardous Waste Management plan.

3.1 Cleanup Operations.

Not applicable.

3.2 Environmental Site Monitoring.

Environmental site monitoring for operations in this building is not required.

4. FACILITY ENERGIES.

Significant energies associated with this building include laser devices.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility are limited to potential disposal of very small quantities of fluids or solids dissolved in fluids that could be dumped into sanitary system drains.

6. SUPPLEMENTAL COMMENTS.

The activities in this building posed no observed risks outside the build.

Building 41

1. DESCRIPTION.

This frame structure is used for laser testing. It has seven internal spaces and houses technical offices and a lab.

1.1 Location.

This building is located in WO grid number C4.

1.2 Equipment.

This building is primarily used for laser test operations and the mechanical and electrical equipment present was used to support this operation.

2. OPERATIONS.

2.1 Administration.

This building is administered by U-23.

2.1.1 Facility Operator.

This facility was operated by U division users at the time of the survey. Spaces allocated are shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACE TYPES
U-23	7	979	4	TECH OFFICE, LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Not known.

2.1.4 Licenses/Permits.

As required.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

Four personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There were no reported energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility .

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

The laser operations provide significant energies in this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

Building 71

1. DESCRIPTION.

This facility is a 11,659 square foot , one story building with a large high bay housing the main machine shop, and mezzanine structure housing offices and storage . It was built in 1946. The facility has 9 separate internal spaces, plus new spaces under construction for additional machine shop operations at the time of the survey . The building houses the main machine shop, labs , a metal processing facility , a rubber grinding shop, and offices. It is connected to the underground utility tunnel system on the station.

1.1 Location.

This building is located in WO grid number B3.

1.2 Equipment.

The principal equipment in this building is heavy machine shop equipment including heavy machine tools, fork lifts, 5- and 10-ton overhead cranes, welding equipment, a metal preparation system, rubber grinding equipment, vapor degreaser and fume hoods, and electrical power distribution equipment inside the building.

The building also houses computer facilities, and a radioactive material irradiator and an x-ray source.

2. OPERATIONS.

2.1 Administration.

This building is administered by: no single buidling supervisor was identified.

2.1.1 Facility Operator.

This facility was operated by four users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces used by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
E14	1	139	1	TECHOF
E142	3	9394	30	TECHSHOPS
E143	1	1030	5	TECHOF
R41	4	1096	2	RADIOACTIVE SOURCE LAB
Reported Totals	9	11659	38	

2.1.2 Approving Authority for Tests.

The machine shop operates in support of the Engineering Department other organizations . The nature of the work does not ordinarily involve energetic materials or directed energies, so no special safety procedures are specified for work performed in this shop.

A formalized approving process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

No building-specific safety or environmental instructions are applicable. See SOPs below.

2.1.4 Licenses/Permits.

The radioactive source is covered by a Sitle License from the NRC.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
209	OPERATION OF THE Cs-137, Co-60, Cs137 RADIATION SOURCES & X-RAY
146	SHIPPING NITRO PROPANOL

2.2. Personnel

Thirty eight personnel were permanently assigned to work in this building at the time the survey. data was compiled.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90. The primary energetic materials used in this building were electrical power, the radioactive sources and machine shop lubricants and oils.

2.3.2 Transportation/Storage.

Transportation of energetic radioactive materials to and from this facility is accomplished at the direction of R Department. The machine shop is cleared during delivery or removal of radioactive sources.

Hazardous machine shop lubricants and chemicals are received via Supply.

2.3.3 Emergency Preparations.

Hearing-handicapped personnel are assigned this building. Special procedures to ensure safe evacuation of handicapped personnel in the event of an emergency have been prepared and practiced.

2.3.4 Flow Chart References.

Flow chart references for this operation were not available or developed for this operation.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Radioactive materials utilized in this facility are removed under the Center health physicist's direction.

3.1 Cleanup Operations.

The waste from operations is generated by the machine shop, welding operations and rubber grinding operations in this building. Hazardous wastes are disposed of through the Center's hazardous waste pickup program.

3.2 Environmental Site Monitoring.

Environmental site monitoring for this building is not required or performed. Surveys of the area in which radioactive sources are utilized are monitored by the Center health physicist.

4. FACILITY ENERGIES.

Significant energies associated with this building include radioactive, electrical, chemical and mechanical sources.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include exposures to radioactive sources and X-rays, and exposures to small lubricating or machine oil spills and drippings off scrap machined metals.

A power switch gear system was situated within about 10 feet of asupervisor's office with three occupants. While ELF electromagnetic radiation is not recognized as harmful based on the present state of knowledge, if future reseach discloses risks, this configuration may have to be reexamined.

The newly relocated machine shop is equipped with numerous devices to protect against spills and releases of hazardous materials from the facility. Drippings - probably cutting or lubricating oil from scrap metal, such as turnings from the machining operations in this building, were observed on Taylor Road, where it meets Maury Road where material is placed awaiting pickup for disposal. Otherwise no releases were observed.

6. SUPPLEMENTAL COMMENTS.

The design of the relocated machine shop in this building addressed safety and environmental concerns extensively. No significant residual risks to exposures outside the building were identified in association with the machine shop operations in this building.

**

Building 72

1. DESCRIPTION.

This facility is a 3,553 square foot , one story building built in 1948. The facility has three internal spaces and houses lumber in storage . Compressed gas cylinders , including flammable cylinders, are stored under roof in a partially open area.

1.1 Location.

This building is located in WO grid number C2.

1.2 Equipment.

Not applicable.

2. OPERATIONS.

2.1 Administration.

This building is administered by : Not Identified.

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
E222	1	561	0	STORAGE
S61	2	2992	0	STORAGE
REPORTED TOTALS	3	3553	0	

2.1.2 Approving Authority for Tests.

Not applicable; no tests are conducted.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6b Occupational Safety and Health Program

2.1.4 Licenses/Permits.

None applicable.

2.1.5 Applicable SOPs.

No approved SOPs applicable to the operations in this building were identified.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

No energetic materials were processed through this facility during FY90.

2.3.2 Transportation/Storage.

Not applicable.

2.3.3 Emergency Preparations.

No unique emergency preparations noted.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be identified in Center records, or recalled by personnel familiar with the facility or its operations.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed under the Center Hazardous Waste Management plan.

3.1 Cleanup Operations.

Not applicable.

3.2 Environmental Site Monitoring.

Environmental site monitoring for operations in this building is not required.

4. FACILITY ENERGIES.

Significant energies associated with this building include laser devices.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility are limited to potential disposal of very small quantities of fluids or solids dissolved in fluids that could be dumped into sanitary system drains.

6. SUPPLEMENTAL COMMENTS.

The activities in this building posed no observed risks outside the build.

Building 73

1. DESCRIPTION.

This facility is a 700 square foot , one story building built in 1949. The facility has one internal space and houses paint and oil storage.

1.1 Location.

This building is located in WO grid number C3.

1.2 Equipment.

none

2. OPERATIONS.

2.1 Administration.

This building is administered by S.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
S61	1	700	0	STORAGE

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is not applicable.

2.1.3 Applicable Instructions.

2.1.4 Licenses/Permits.

n/a

2.1.5 Applicable SOPs.

No approved SOPs applicable to the operations in this building are recorded.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

This is a storage facility. There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is directed by S.

2.3.3 Emergency Preparations.

No special precautions noted.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or found in Center records.

3. POST-TEST ACTIVITIES.

Not applicable.

3.1 Cleanup Operations.

No waste is generated by this storage operation, except in the event of a spill.

3.2 Environmental Site Monitoring.

Environmental site monitoring for spills in this building is performed visually by S employees.

4. FACILITY ENERGIES.

Hazardous energies associated with this building include flammable paints and solvents.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include potential spills of paints with volatile solvents. The building is diked to control runoff.

6. SUPPLEMENTAL COMMENTS.

No debris or residue was noted in the diked area.

Building 79

1. DESCRIPTION.

This facility is a 926 square foot , one story building built in 1979. The facility has one internal space and houses gas cylinder storage.

1.1 Location.

This building is located in WO grid number C3.

1.2 Equipment.

None.

2. OPERATIONS.

2.1 Administration.

This building is administered by S.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
S61	1	926	0	GAS CYLINDER STORAGE

2.1.2 Approving Authority for Tests.

No t applicable.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6B Occupational Safety and Health

2.1.4 Licenses/Permits.

Not applicable.

2.1.5 Applicable SOPs.

None.

SOP # SOP TITLE

None

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by S.

2.3.3 Emergency Preparations.

Concrete pad. No special preparation noted.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

Not applicable.

3.1 Cleanup Operations.

No waste is produced.

3.2 Environmental Site Monitoring.

Not applicable.

4. FACILITY ENERGIES.

Significant energies associated with this building include various compressed gases in cylinders under pressure. Principal hazard is potential rocketing of cylinders if valve breaks off under pressure; fire.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include gaseous releases from high pressure cylinders. Released gases would be expected to disperse into atmosphere.

6. SUPPLEMENTAL COMMENTS.

Facility provides low-risk storage.

Building 90

1. DESCRIPTION.

This facility is a 20,037 square foot , two story building built in 1946. The facility has ninety eight internal space and houses technical offices, labs, storage, computer rooms, copy rooms, and conference space.

1.1 Location.

This building is located in WO grid number C4.

1.2 Equipment.

Multiple types of electrical and electronic equipment. Also multiple types of computer equipment were present.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility was operated by eight users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R14	28	5287	29	STORAGE, LAB, TECHOF, COMPUTER, COPY ROOM, CONFERENCE, KIT/HAF
R31	2	1040	2	LAB
R33	1	166	1	TECHOF
R42	12	2613	8	TECHOF, STORAGE, LAB, CONFERENCE , COMPUTER
R43	8	2460	9	TECHOF
R44	5	1177	6	TECHOF, LAB
TT	41	7047	29	OFFICE, LAB, STORAGE, COMPUTER, COPY ROOM, CONFERENCE, TECHOF

U41	1	247	0	COMPUTE
Reported totals	98	20037	84	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Not known.

2.1.4 Licenses/Permits.

Not known.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

003 BUILDING 90 FACILITY POWER HANDLING EQUIPMENT.

077 THE MK116 COMPUTER FACILITY (BLDG 90-020)

2.2. Personnel

Eighty four (84) personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Documentation regarding the amount and types of energetic materials, if any, processed through this facility in FY90 was not available.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emerency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 108

1. DESCRIPTION.

Building 108 is a 1088 square foot building which was built in 1946.

1.1 Location.

This building is located in WO grid number B5.

1.2 Equipment.

The building is used for storage and has no special equipment of interest to this study.

2. OPERATIONS.

2.1 Administration.

This building is administered by C81.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
C81	1	950	0	STORAGE

2.1.2 Approving Authority for Tests.

Not applicable.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6B Occupational Safety and Health

2.1.4 Licenses/Permits.

NRC license.

2.1.5 Applicable SOPs.

Procedures for handling energetic materials in this facility are prescribed by the NRC licenses and by CFR requirements.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

N/A; this is a storage facility.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by Center transportation personnel in W.

2.3.3 Emergency Preparations.

As prescribed by the NRC license.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be identified by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to radioactive disposal sites in accordance with regulatory, license and RASPO.

3.1 Cleanup Operations.

Not applicable.

3.2 Environmental Site Monitoring.

Not applicable.

4. FACILITY ENERGIES.

Significant energies associated with this building include radioactive sources in irradiators.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include potential exposures to radiation from irradiators.

6. SUPPLEMENTAL COMMENTS.

Building 125

1. DESCRIPTION.

This is a 550 square foot test equipment storage building with one internal space. It was built in 1965.

1.1 Location.

This building is located in WO grid number B4.

1.2 Equipment.

No special equipment noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by U 13.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
U13	1	4860	0	STG/OPN

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

None known.

2.1.4 Licenses/Permits.

None known.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Documentation regarding the amount and types of energetic materials, if any, processed through this facility in FY90 was not available.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available. (A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation. The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

Building 130

1. DESCRIPTION.

This two story building is a vulnerability and hardening facility which was built in 1973. It contains approximately 22757 square feet.

1.1 Location.

This building is located in WO grid number C5.

1.2 Equipment.

Portable "suitcase" EMF pulsers with an output of 24-50 KV

4000 lb overhead crane in HiBay area. It was reported that large pulsers were previuosly repaired in this building. This area now used for storage and portable pulser testing.

Machine shop in Room 013 contains machine tools typical to a small machine shop.

2. OPERATIONS.

2.1 Administration.

This building is administered by: Unknown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
H20	5	472	1	STORAGE
H203	1	116	0	OFFICE
H209	1	200	1	OFFICE
H21	5	1196	7	TECHOF
H23	12	4501	0	LAB
H25	17	5402	21	LAB
	41	11887	30	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared for signicant projects.

2.1.3 Applicable Instructions.

Unknown.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

R DEPARTMENT

027 ELECTRON BEAM-EXPLOSIVES INTERACTION STUDIES.

2.2. Personnel

Thirty people are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Not Applicable.

2.3.3 Emergency Preparations.

None.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

None.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

No environmental site monitoring for this building was noted.

4. FACILITY ENERGIES.

Significant energies associated with this building include:

EMP - Power sited as "Hundreds of Volts per Meter in Highbay Area but less than 100 V/M outside building." No record or knowledge of field measurements being made.

Cobalt 60 source of unknown energy.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include:

(1) People, equipment, and wildlife to an unknown, probably low, level of EMP outside (rear) of building;

(2) Potential contamination from a fire event from "Black Room" on second floor.

6. SUPPLEMENTAL COMMENTS.

"Black Room" on second floor reportedly contaminated with mercury and some form of ionizing radiation.

Personnel reported there is an underground storage tank under the building previously used to store radioactive waste.

Building 132

1. DESCRIPTION.

This building is a two story structure used as a DNA Casino Facility. It was built in 1974 and contains 39202 square feet.

1.1 Location.

This building is located in WO grid number C5.

1.2 Equipment.

Radiation Simulators:

NAME	RADIATION	POWER (10 to the ninth) WATTS
(1) Febertron 706	X Ray	3
(2) Febertron 705	Gamma	20
(3) TAGS	Gamma	180
(4) Casino	X Ray	500
(5) Phoenix	X RAY	4000

COBALT 60 Source (2000 curie)

Explosive Shock Simulator

2. OPERATIONS.

2.1 Administration.

This building is administered by H23

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
H23	35	23060	29	STORAGE, LAB, TECHOFC, TECHSH, KIT/FUL, CONFER

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared for each test.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

Station permit for Cobalt 60 source.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

404 RESPIRATORY PROTECTION

2.2. Personnel

Twenty nine personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

Building is sprinklered and has a fire alarm and radiation warning system.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

It was not clear how radioactive material was disposed of.

3.2 Environmental Site Monitoring.

Environmental site monitoring for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include electrical power and radiation.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include electrical shock and radiation. With the exception of the Cobalt 60, radiation exposures are present only when machines are fired and machines confined to block houses and exposure rooms.

6. SUPPLEMENTAL COMMENTS.

Safety interlocks prevent machines from firing if blockhouses and exposure rooms are not secured. Video cameras and sign in/out procedures in effect.

Large tank to store simulator oil in basement of building.

Building 201

1. DESCRIPTION.

This building is part of the Electrochemistry Department. The building is constructed of wood, concrete block and non-magnetic materials. There are two stories above ground level and none below ground. There is an underground tank which contains fuel oil. The size is unknown. It is on the west side of the building, attached to an above ground overflow tank on the south side of the building. Asbestos is probably present in the building. There are no known PCBs present.

1.1 Location.

This building is located in WO grid number C6.

1.2 Equipment.

There is a glove box for inert atmosphere assembly work in Room 105, used by R Department. There is also a nitramine converter to produce nitrogen gas in this room.

2. OPERATIONS.

2.1 Administration.

This building is administered by the Protection Systems Department, Code H

2.1.1 Facility Operator.

This facility was operated by three users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R33	7	1959	7	LAB, TECHOF
U42	13	7178	4	LAB, COMPUTE, TECHOF, STORAGE
W05	1	0	0	STORAGE
REPORTED TOTALS	21	9137	11	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Not known.

2.1.4 Licenses/Permits.

None known.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

U DEPARTMENT

763 BAY AREA - BUILDING 201

764 FIELD OPERATIONS BY CODE U-42

765 HAZARDOUS OPERATIONS IN CODE U-42

766 LAB AREAS IN CODE U-42E

2.2. Personnel

Eleven personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if necessary, is accomplished by R-12.

2.3.3 Emergency Preparations.

Emergency equipment in the building includes a fire alarm consisting of an annunciator and a light. It is probably connected to a central station. There is a portable fire extinguisher of the CO2, ABC type. The building also has a fire emergency plan.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

If energetic materials are utilized in this facility, they are removed by R-35 and then stored in designated magazines.

3.1 Cleanup Operations.

The waste from operations is handled as routine refuse.

3.2 Environmental Site Monitoring.

Environmental site monitoring for this building is not available.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal energy from the N2 production, which is local to the generator.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures are associated with this facility.

6. SUPPLEMENTAL COMMENTS.

R DEPARTMENT:

The building is scheduled for renovations. It was originally built as non-magnetic for previous studies. The building is generally cramped and in poor repair. There are temperature control problems with the building. Roof leaks are evident and are repaired as needed by the Works Department.

There is an underground storage tank of unknown size at the south west corner of the building. The tank is used for diesel fuel storage. It is buried in the hill side and an overflow line connects to a 200 gallon above ground tank on the level below the hill. The overflow tank has a gauge and air vent pipe approximately three feet long. The above ground tank is diked. The dike has a single drain valve which is currently closed. The dike area contains approximately six inches of rainwater.

Building 205

1. DESCRIPTION.

This two story wood building is a Large Projects Laboratory and is used in support of the Magnetic and CBW Counter Measures Division. It was built in 1945 and contains approximately 3717 square feet.

1.1 Location.

This building is located in WO grid number C-6 .

1.2 Equipment.

Mechanical and electrical equipment used to support the operations noted above.

2. OPERATIONS.

2.1 Administration.

This building is administered by H30.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQ FT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
H32	4	1385	5	TECHOF,.COMPUTE, LAB
U42	1	1613	4	
Reported totals	5	2998	9	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Not known.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

There are nine full time personnel permanently assigned to work in this facility.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no known energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility .

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

Buildings 201-206 and 210

1. DESCRIPTION.

Buildings 201,202,203,204, 205, 206, and 210 are described together as they comprise a single group of buildings (off of Bowditch Road), in close proximity, that comprise the workplace for H32, the Magnetic Fields Branch.

1.1 Location.

These buildings are located in WO grid number C7.

1.2 Equipment.

Building 201 is operated principally by U Department personnel; however, H Department maintains an Amplidyne Motor Generator, in Room 102, that produces 300 Volts/at 90 Amperes.

Building 202 is a computer facility that contains two mainframes. The facility has a new vapor degreaser and a stock of 25 gallons of 1,1,1 Trichloroethane.

Building 203 is the Spherical Coil Facility. This device magnetic device which is co-located with administrative space is "seldom used."

Building 204 is the Long Coil Facility. This magnetic device device which is co-located with administrative space is "seldom used."

Building 205 is reported to contain only administrative personnel with U Department occupying the second floor of this two floor building.

Building 206 is a two story, wood frame building , with a basement, that to the maximum extent possible avoids the use of ferrous materials. This building houses what is essentially a large magnet comprised of three 30' coils to provide three axes. This magnet can generate a magnetic signal of twice the earth's magnetic fields. It also houses a Custom Deperm Solonoid which is a small device capable of generating a magnetic force of 35 times the earth's fields. These devices are powered by 6 Bi-Polar power supplies rated at 150Volts/5 Amperes.

Building 210 is a single story, small space that is located across Bowditch Road from the other facilities. It was reported to contain only administrative activities.

2. OPERATIONS.

2.1 Administration/ Facility Operator

These buildings are administered by H32.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None noted.

2.2. Personnel

Four to five personnel were reported, and observed to work in each of these buildings with several manned on an as needed basis.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount of magnetic energy produced in FY90, however, Branch Chief estimates that the magnets are in operation about 1000 hours per year.

2.3.2 Transportation/Storage.

Not Applicable.

2.3.3 Emergency Preparations.

None related to the magnetic operations. Sprinklers and fire alarm systems being installed at the time of the survey.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records. Ms Whelan recalls seeing a study that had been accomplished 30+ years ago regarding the health affects of magnetic fields on sailors.

3. POST-TEST ACTIVITIES.

Not Applicable.

3.1 Cleanup Operations.

The waste from the new vapor degreaser in Building 202 ,1,1,1 Trichloroethane, had not yet entered the waste stream at the time of the survey.

3.2 Environmental Site Monitoring.

No environmental site monitoring for this building was noted.

4. FACILITY ENERGIES.

Significant energies associated with this building include the magnetic fields generated by the various test magnets.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility includes sensitive mechanical and electronic equipment in close proximity to the magnets. This power drops off very rapidly as a function of distance. The technical personnel believed the magnetic energies to present a very low or no risk to humans.

6. SUPPLEMENTAL COMMENTS.

At the time of the survey, the fire alarms in these buildings had not yet been connected to a central station. Given the all wood construction of several of the buildings, this presents a significant fire risk for management.

A vehicle barrier is in place at Building 206 to protect the tests from the effects of motor vehicles driving to close to the building.

Building 207

1. DESCRIPTION.

This building is the Antenna Range Building. It is a 1271 square foot, one-story building built in 1945.

1.1 Location.

This building is located in WO grid number C6.

1.2 Equipment.

The principal equipment in this building is rf generating equipment , and controls used for the operation of the Antenna Range, facility No. 212, a with a ground plane. The building also houses a laboratory with a laser system.

2. OPERATIONS.

2.1 Administration.

This building is administered by F43.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
F43	3	1017	0	Labs

2.1.2 Approving Authority for Tests.

Tests are conducted by NAVSWC and other personnel. A formalized Approving Process and Authority for NAVSWC Tests/Operations is administered by F43. Tests conducted by others are planned and implemented by others, with review by F43.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6B Occupational Safety and Health

2.1.4 Licenses/Permits.

No t applicable.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

here was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Not applicable.

2.3.3 Emergency Preparations.

No special emergency plans were identified.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or found in Center records.

3. POST-TEST ACTIVITIES.

Not applicable.

3.1 Cleanup Operations.

Not relevant.

3.2 Environmental Site Monitoring.

Not applicable.

4. FACILITY ENERGIES.

Significant energies associated with this building include RF energies and a laser unit in the laboratory.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include exposures to RF fields generated at this facility, in connection with tests on the ground plane associated with this building.

6. SUPPLEMENTAL COMMENTS.

Building 208

1. DESCRIPTION.

This frame building is used as a storage facility for U25. It has three internal spaces and houses a laboratory.

1.1 Location.

This building is located in WO grid number C6.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by U25.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
U25	3	977	0	LAB
REPORTED TOTALS	3	977	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared if required.

2.1.3 Applicable Instructions.

None known.

2.1.4 Licenses/Permits.

None .

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # **SOP TITLE**

None known.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no data regarding the use of energetic materials in this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. There is no current emergency response plan available. (A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first and then security seals off the area. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 217

1. DESCRIPTION.

This is a hydroacoustics facility with approximately 5800 square feet. It has seven internal spaces and houses a lab, pump room, technical offices, and control rooms.

1.1 Location.

This building is located in WO grid number C5.

1.2 Equipment.

Test tanks, transducer equipment, lifting system, acoustical measurement equipment and supporting electrical and mechanical equipment for hydroacoustic operations.

2. OPERATIONS.

2.1 Administration.

This building is administered by U-42.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
U42	7	5856	4	OTHER, PUMP/RM, LAB, CONTROL, TECH

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Not known.

2.1.4 Licenses/Permits.

Not known.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP ID# **SOP TITLE**

270 RESPIRATORY PROTECTION WHEN HANDLING DIATOMACEOUS EARTH

768 HAZARDOUS OPERATIONS/HYDROACOUSTIC FACILITY 217

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Documentation regarding the amount and types of energetic materials, if any, processed through this facility in FY90 was not available.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel next to the north exit door. Emergency lighting is provided throughout the building. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

The Fire Department reacts to an initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 301

1. DESCRIPTION.

This is a one story, 684 square foot facility built in 1946. There are two internal spaces which house laboratories.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Laboratory equipment..

2. OPERATIONS.

2.1 Administration.

This building is administered by R-15, J. Corney.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	2	664	0	LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared.if required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 ,
5100.6B , and
8020.4

2.1.4 Licenses/Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

288 RESPIRATOR FOR R-33 - BLDG 301

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-15 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is not generated in the normal coarse of operations however in the event wastes are generated they are disposed of through the centers waste system as energetic materials destine for OB/OD or hazardous wastes through the centers waste program.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Facility is used to simulate loose cargo transport environment and for the assembly and disassembly of small scale explosives components for tests in other facilities.

Building 303

1. DESCRIPTION.

This building is a temperature and humidity facility built in 1945, containing 1,520 square feet. The building is one story and houses a laboratory. The facility is used to simulate long term storage environments and for the testing of components under varying conditions of temperature and humidity.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-15 J. Corney

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	2	1385	0	LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests / Operations is assumed to be prepared

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses / Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
G DEPARTMENT	
163	CONDUCTING ENVIRONMENTAL TESTS ON THE MK 404 MOD 1 AND MK 404 MOD 2 VT-IR FUZES
R DEPARTMENT	
007	OPERATION OF ENVIRONMENTAL TEMPERATURE TEST CHAMBER AMINCO, MODEL NO. 5-3720S S
123	OPERATION OF ENVIRONMENTAL TEMPERATURE TEST CHAMBER WEBER, MODEL No. AF-30-100-
136	ENVIRONMENTAL TESTING.
415	TEMPERATURE AND HUMIDITY CHAMBER THERMOTRON MODEL SM32C
419	ENVIRONMENTAL TEMPERATURE TEST CHAMBER TENNEY JR. MODELBENCH TOP 1-1/4 CU. FT.
424B	CONDUCTING ENVIRONMENTAL TESTS OF MK 32 STAB ACTUATORS.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as appropriate for the device.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R department magazine spaces when testing is concluded. Tests may run several days .

3.1 Cleanup Operations.

The waste from operations is not generated in the normal course of operations . However, in the event wastes are generated they are disposed of through the centers waste system as energetic materials destined for OB/OD or hazardous wastes through the centers waste program.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 304

1. DESCRIPTION.

This facility consists of a one story , 953 square foot Propulsion System Laboratory which was built in 1948, a 138 square foot chemical storage shed , and a 105 square foot equipment storage area.built in 1959.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-11 R. Brazil

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	6	724	2	LAB, STG/DHM
R12	2	105	0	STG/EQP
R15	1	138	0	STORAGE
REPORTED TOTALS	9	967	2	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
211	DETONATION PRODUCT ANALYSIS BUILDING 304
300	MECHANICAL PROPERTIES TESTING OF ENERGETIC MATERIALS USING UNIVERSAL TENSION/COMPRESSI
301	MECHANICAL PROPERTIES TESTING OF ENGETIC MATERIALS USING THE RSA MACHINE

2.2. Personnel

Two personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility.

2.3.3 Emergency Preparations.

No special procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-department magazine spaces.

3.1 Cleanup Operations.

The waste from operations may consist of hazardous wastes or energetic material wastes. These are handled as appropriate through the center hazardous waste system or bagged and sent to Dahlgren for OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

None.

Building 305

1. DESCRIPTION.

This facility consists of a 1 story, 766 square foot physical properties laboratory and 187 square foot boiler house built in 1948, a test equipment storage facility of 560 square feet built in 1965, and a heating fuel storage tank built in 1948.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by R-13, S. Coffey.

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R10	1	536	0	STORAGE
R13	3	632	0	LAB, STORAGE
W	1	0	0	TANK/FO
REPORTED TOTALS	5	1168	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , 5100.6B , and 8020.4.

2.1.4 Licenses/Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO waiver No. NSWC-WO 1-77 reissued July 3, 1990, expiring Jan 31, 1992. This wavier authorizes continued use of buildings which have overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No full time personnel are permanently assigned to work in this building.Two persons are assigned to the building on a non-full time basis.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility.

2.3.3 Emergency Preparations.

No special procedures identified.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-13 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is seldom generated in the normal course of operations; however in the event wastes are generated, they are disposed of through the Center's

waste system as energetic materials destined for OB/OD or hazardous wastes through the center's waste program.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Facility is used to test shearing behavior of extremely small quantities of energetic material as well as other physical properties of small quantity, solid , energetic material samples.

Building 306

1. DESCRIPTION.

This facility consists of a 1 story, 3,416 square foot Environmental Testing Laboratory built in 1948, a swimmer weapons building which is a one story, 140 square feet propery built in 1949, and a 77 square foot boiler house.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-15 J. Corney

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	6	2202	0	LAB, CONTROL
U24	1	101	0	STORAGE
G41				
G42				
REPORTED TOTALS	7	2303	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

G DEPARTMENT

124 CONDUCTING ENVIRONMENTAL TESTING OF THE ANTIPERSONNEL OBSTACLE BREACHING SYSTEM (

122 CONDUCTING ENVIRONMENTAL TESTS OF MK186 MOD 2 DECOY CARTRIDGE

R DEPARTMENT

133 OPERATION OF ROUGH HANDLING (REPETITIVE IMPACT TEST) MODEL 400 SVMCTI-3.5

140 OPERATION OF RANDOM ROTATIONAL (JUMBLE) IMPACT TESTER.

184 OPERATION OF TENNEY ENVIRONMENTAL TEMPERATURE TEST CHAMBER, MODEL NO. CVT 27-100-250

416 VIBRATION SYSTEM LING CP 10/16 POWER AMP. W/ LING SHAKER MODEL B-300

417 VIBRATION SYSTEM MB SHAKER (MODEL C-25H) W/ WESTINGHOUSE AMP.

418 AUTOMATIC THERMAL SHOCK MACHINE THERMOTRON MODEL TS-8- 32 CO2.

420 JOLT TEST MACHINE STRENGTH OF MATERIALS

2.2. Personnel

No full time personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as appropriate for the device.

2.3.3 Emergency Preparations.

No special procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R department magazine spaces when testing is concluded. Tests may run several days .

3.1 Cleanup Operations.

The waste from operations is not generated in the normal course of operations, however in the event wastes are generated, they are disposed of through the Center's waste system as energetic materials destined.for OB/OD or hazardous wastes through the Center's waste program.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Facility is used to simulate transportation and handling environments ,and for the testing of components under varying conditions of rapid temperature changes. Detonations are considered a mishap in the test process and are not considered normal to the test process.

Building 307

1. DESCRIPTION.

This facility is a technical office building and boiler house. The office building is approximately 1,000 square feet and was built in 1948. There are three internal spaces.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

No special equipment noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-15 J. Corney

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	286	0	TECHOF
R15	2	654	2	TECHOF, LUNCHRM
REPORTED TOTALS	3	940	2	

2.1.2 Approving Authority for Tests.

N/A

2.1.3 Applicable Instructions.

N/A

2.1.4 Licenses/Permits.

N/A

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

744 BUILDING 307

744A OPERATIONS OF BUILDING 307

2.2. Personnel

Two personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

No energetic materials are used in this building.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by : Unknown.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

N/A

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were identified as associated with this facility .

Building 308

1. DESCRIPTION.

This is an explosive development laboratory doing warhead/initiator development. There is also a boiler house in this facility which was built in 1948. The building is approximately 1400 square feet.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by: R-11, T. Spivak.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	6	1205	5	TECHOF, LAB, FIREBAY, XPL/LAB, TECHSH

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is assumed to be prepared.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

175 RESPIRATORY PROTECTION

844-B GENERAL AREA INSTRUCTION FOR BUILDING 308 AND BLDG 392.

845-B TEST FIRING EXPLOSIVE DEVICES IN FIRING CHAMBER #1 BLDG. 308-103

2.2. Personnel

Five personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this structure.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-11 magazine spaces.

3.1 Cleanup Operations.

Materials remaining after a detonation are treated as contaminated with energetic materials, bagged and removed to Dahlgren for OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 309

1. DESCRIPTION.

This facility consists of a 1 story boiler house which was built in 1948, and a blast chamber which was built in 1952. There are five internal spaces which hold technical offices in addition to the blaster chamber and boiler house.

1.1 Location.

This building is located in WO grid number C10 .

1.2 Equipment.

Computer equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by: R15, M. Swisdak.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	3	247	2	TECHOF
R15	1	0	0	LAB
R16	1	420	2	LAB
REPORTED TOTALS	5	667	4	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

Four personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

No energetic materials are handled in this facility.

2.3.2 Transportation/Storage.

N/A

2.3.3 Emergency Preparations.

None unique to the facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

No energetic materials are used in this facility .

3.1 Cleanup Operations.

N/A

3.2 Environmental Site Monitoring.

N/A

4. FACILITY ENERGIES.

No significant energies were identified associated with this building .

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were identified as associated with this facility .

6. SUPPLEMENTAL COMMENTS.

Building 310

1. DESCRIPTION.

This is a chemistry and explosive research lab . The building has approximately 3500 square feet, 15 internal spaces, and was built in 1948. It houses chemical and instrument laboratories, and chemical and test equipment storage.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-11 M. Sitzmann

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	15	3463	10	LAB, TECHOF, STG/EQP

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None.

2.2. Personnel

Ten full time personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility .

2.3.3 Emergency Preparations.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R -11 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is collected and disposed of through the Center's hazardous waste and energetic waste system as appropriate.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Lab spaces are segregated into explosion containment cells within the structure. Chemical work includes some synthesis, characterization, and other projects. No intentional detonations are produced in this area, no one could recall the occurrence of a detonation or fire in recent memory.

Building 311

1. DESCRIPTION.

This is an explosives chemistry lab built in 1948 and a test equipment storage facility which was built in 1948. The lab is approximately 2,000 square feet and has approximately nine internal spaces.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-11 W. Lawrence

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	9	1779	1	LAB, TECHOF, STORAGE, STG/EQP

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

None

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

052 RESPIRATORY PROTECTION

657A STANDARD OPERATING PROCEDURE FOR DETONATION PRODUCT ANALYSIS INBUILDING 311

2.2. Personnel

One person is permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility .

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-11 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is collected and disposed of through the Center's hazardous waste and energetic waste system as appropriate.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Facility is used to formulate and mix small quantities of underwater explosives and general purpose bomb fills.

Building 312

1. DESCRIPTION.

This facility is a 1500 square foot, one story ammunition, explosives and toxics laboratory which handles safety data research on newly designed explosives. The building was built in 1948, and there is also a boiler house which was built in 1952. There are fourteen internal spaces which house a chemical chamber, a storage shed, and heating fuel storage.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by: R-11, P. Thomas.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	13	1244	1	LAB, STG/EQP, TECHOF
W	1	0	0	TANK/FO
REPORTED TOTALS	14	1244	1	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , ssued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
116	EXPLOSIVES SAMPLE PREPARATION FOR SAFETY TESTING OF SOLID EXPLOSIVES IN BLDG 311
141	DIFFERENTIAL SCANNING CALORIMETER FOR EXPLOSIVE COMPATIBILITY TESTING.
189	CHEMISTRY OPERATIONS AT WHITE OAK
438A	SLIDING FRICTION TEST FOR SOLIDS.
849	VACUUM THERMAL STABILITY (OR COMPATIBILITY) TEST WITH EXPLOSIVES.

2.2. Personnel

One personnel is permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility.

2.3.3 Emergency Preparations.

N/A.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

As recalled by laboratory personnel, a large quantity, > 11 b, of liquid mercury was spilled in the past and cleaned up. Historically this was common due to the fragile nature of the vacuum stability test apparatus.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-11 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is is not usually generated but treated in the centers hazardous waste or energetic material disposal plan.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include thermal and pressure exposures in the event of a mishap, lab personnel to spilled mercury in the event of a mishap.

6. SUPPLEMENTAL COMMENTS.

Building 313

1. DESCRIPTION.

This facility is a one story, 400 square foot radiation instrument calibration facility and a boiler house. There are two internal spaces and the building houses a lab and storage.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by R33.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R33	2	416	0	LAB, STORAGE

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

None

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

193 LITHIUM BATTERY TESTING IN BLDG 313.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Facility used to test AA size Lithium battery discharge under varying thermal conditions.

2.3.2 Transportation/Storage.

Energetic materials (batteries) are hand carried to and from this facility .

2.3.3 Emergency Preparations.

Graphite powder for Li fire suppression.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Batteries are removed to R33 storage areas.

3.1 Cleanup Operations.

None, spent batteries disposed of as hazardous wastes if necessary,;not normal to lab function.

3.2 Environmental Site Monitoring.

N/A.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a battery mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Small scale operation, battery venting considered a mishap, not normal.

Building 314

1. DESCRIPTION.

This facility is a 1082 square foot , one story building built in 1948, with a test equipment storage facility built in 1954. The facility has seven internal spaces and houses test equipment storage and a bombproof Warhead Concept Laboratory.

1.1 Location.

This building is located in WO grid number D10 .

1.2 Equipment.

Bombproof bay.

2. OPERATIONS.

2.1 Administration.

This building is administered by R-13, R. Hay.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	7	1082	0	PREP/RM, LAB, DARKRM, TECHOF

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared.if required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
571A	EXPLOSIVE TEST FIRING AT BLDG. 314

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal .

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy .

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 315

1. DESCRIPTION.

This facility consists of a one story boiler house built in 1948 and an explosives temperature controlled magazine built in 1963. It has five internal spaces and houses a lab, technical office, a darkroom, and explosive storage.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by R13, R. Hay.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	5	843	4	TECHOF, LAB, DARKRM, STG/XPL

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared if required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

860 FIRING CONTROL S IN BUILDING 315

2.2. Personnel

Four personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Building is not used in the handling of energetic materials.

2.3.2 Transportation/Storage.

NA

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials are not used in this facility.

3.1 Cleanup Operations.

None noted, no requirement identified .

3.2 Environmental Site Monitoring.

There are no specific environmental site monitoring requirements for this facility.

4. FACILITY ENERGIES.

None noted.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No significant exposures noted.

6. SUPPLEMENTAL COMMENTS.

Building 315-1

1. DESCRIPTION.

This building is the actual explosives, temperature controlled, magazine.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R13 N. Snowden

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	0	100	0	STG/XPL

2.1.2 Approving Authority for Tests.

No tests are conducted in facility.

2.1.3 Applicable Instructions.

Storage and recordkeeping per OP-5, NAVSWCINST 5100.6B.

2.1.4 Licenses/Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO ID-78 is renewed, and authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

None specific to the facility were identified.

2.2. Personnel

No personnel are assigned to this facility.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Building is used for storage of energetic materials used in R13 Bombproofs.

2.3.2 Transportation/Storage.

Transportation of energetic materials is accomplished by hand.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

No tests are conducted in this facility.

3.1 Cleanup Operations.

None noted, no requirement identified .

3.2 Environmental Site Monitoring.

There are no specific environmental site monitoring requirements for this facility.

4. FACILITY ENERGIES.

Explosive energies in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No significant exposures noted.

Building 316

1. DESCRIPTION.

This facility is a 1 story, 572 square foot built in 1948. The facility has two internal spaces and houses a prep room and charge assembly lab .

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by R13, R. Hay.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQ FT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	2	572	0	XPL/LAB, PREP RM

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

103 HAND - LAPPING OF EXPLOSIVES

2.2. Personnel

No full time personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90. Charge assembly is in support of testing conducted in Bldg 314. Building currently has a 50 Lb. explosives limit.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as required.

2.3.3 Emergency Preparations.

No preparations unique to this facility were identified.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-13 magazine areas.

3.1 Cleanup Operations.

The waste from operations is disposed of in accordance with center explosive and hazardous waste procedures.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 317

1. DESCRIPTION.

This facility is a 1164 square foot , one story building built in 1948. The facility has seven internal spaces and houses test equipment storage and a bombproof fragment impact laboratory.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

Pneumatic gun system for impact tests.

2. OPERATIONS.

2.1 Administration.

This building is administered by R-13, R. Lamar.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	7	1164	1	PREP/RM, PHOTGAL, STORAGE, XPL/LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

643A TWO-STAGE GAS GUN CLEANING, BUILDING 317

2.2. Personnel

One personnel is permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by R-12.

2.3.3 Emergency Preparations.

No special procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Post test debris is treated as explosive contaminated and removed to NAVSWC Dahlgren for Open Burning / Open Detonation. Actual quantities of energetic material disposed of are unknown but probably at trace levels , if present in debris at all.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal .

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy and high pressure energies associated with test gun.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 318

1. DESCRIPTION.

This building is the Ammunition and Explosives Pressing and Machining Facility and is used for the processing and machining of explosives charges. Built in 1958, it is constructed of wood. There is one story above ground and no stories below ground. The approximate gross area 3,693 square feet. There are no underground tanks. There is a possibility of the presence asbestos in the building; there are no known PCBs present. There are floor drains in the building. Where they drain was not evident during the survey. The surface runoff in in back of the building. The runoff containment is a floor trench to captive collection. The building is the subject of a major renovation and reconstruction.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

The major equipment used in the building includes saws, presses and lathes. Industrial equipment in this building includes a large pressing machine and ceiling winches.

2. OPERATIONS.

2.1 Administration.

This building is administered by R-12.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	4	2798	2	PUMP RM.

2.1.2 Approving Authority for Tests.

The approving authority for tests conducted in this building was not identified.

2.1.3 Applicable Instructions.

Special applicable instructions for the building are included in NAVSEA OP-5.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

105 BUILDING 318 (GENERAL AREA SOP)
441 REMOVAL AND DISPOSAL OF CONTAMINATED WATER IN ISOSTATICPIT (BAY 7).
442 TREATMENT OF EXPLOSIVE CONTAMINATED WASTE WATER.
443 MACHINING EXPLOSIVES ON THE BAXTER LATHE.
444 MACHINING EXPLOSIVES AND PROPELLANTS USING THE EXCELLO MILL.

2.2. Personnel

The number of personnel regularly assigned to work in this building is two.

No limits to the number of personnel in this building during hazardous operations have been established.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

The level of test activities conducted during FY 1990 were not identified during this survey.

All of the work performed in this building is considered sufficiently hazardous to require special safety or environmental precautions. Activities involving explosives include milling and shaping.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as appropriate for the device.

2.3.3 Emergency Preparations.

There is a site disaster plan prepared by Dahlgren. According to the plan, the fire department responds first, then security seals off the area. In the event of a fire, the premises are to be evacuated.

A hazardous materials hazardous waste spill plan is required for this building. A hazardous materials, hazardous waste spill plan has been prepared for this building. A list describing the hazardous materials in each location in the building is located in

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

None.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Milling debris is collected for disposal by OB/OD at Dahlgren. Process pink water is collected and filtered for testing and treatment/disposal.

3.2 Environmental Site Monitoring.

Wash water escaping outside the building may be explosives contaminated, and should be monitored.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Two candidate environmental exposures exist for this building; the soil around the building and the streams from storm water runoff.

6. SUPPLEMENTAL COMMENTS.

An observed hazard/risk for this building was the wash water escaping the building.

Building 324

1. DESCRIPTION

This building is a bombproof detonation physics laboratory and boiler house built in 1950. It is 1166 square feet and houses a laboratory, storage, boiler house and prep rooms.

1.1 Location

This building is located in WO grid number D9.

1.2 Equipment

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by R-13, R. Lemar.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	5	864	1	CONTROL, PREP/RM, PHOTGAL, XPL/LAB, STG/EQP

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

One personnel is permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Test activities relate to determination of detonation velocities and underwater explosions using high speed camera systems.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by R-12.

2.3.3 Emergency Preparations.

No special emergency preparations were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-13 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal .

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 325

1. DESCRIPTION.

This facility is a bombproof sensitivities studies laboratory built in 1951. It has one story and 1,394 sq. feet. The building uses two internal spaces and houses a firebay and a sensitivities studies laboratory. It is bombproof.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-13 H. Sandusky

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	2	619	0	LAB , FIREBAY

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared

2.1.3 Applicable Instructions.

Operations are conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

155 HANDLING A3L PROPELLANT.

266 FIRING A CONFINED DETONATOR IN BUILDING 325 CORRIDOR.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Test activities involve studies related to the determination of deflagration-to-detonation transition shock to detonation transition, and fragment impact sensitivity.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-13 magazine spaces.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal .

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 326

1. DESCRIPTION.

This facility is a charge preparation building for tests in building 327. It has a materials laboratory and explosives component assembly. The building was built in 1984 and is 307 square feet.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-12 P. Spahn

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	3	307	0	LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

None .

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None.

2.2. Personnel

No.personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as required.

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-12 magazine spaces.

3.1 Cleanup Operations.

N/A

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Activities relate more to characterization of propellants than high explosives. Explosives are used as impetus in propellant characterizations.

Building 327

1. DESCRIPTION.

This facility is a bombproof detonation physic laboratory. It has 5,203 square feet, four internal spaces, and houses a lab, control room, and firebay. It was built in 1984.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-12 P. Spahn

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	4	3425	5	LAB, CONTROL, FIREBAY

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared if required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
041	REMOVAL AND DISPOSAL OF CONTAMINATED WATER IN PINK WATER STORAGE; 327-5
088	SLOW COOKOFF TESTING
089	TWO STAGE GAS GUN TESTS WITH EXPLOSIVE OR INERT TARGETS
	FLASH X-RAY STANDARD OPERATING PROCEDURE FOR BUILDING 327
142	TEMPORARY LIGHT GAS GUN TESTS WITH EXPLOSIVES OR INERT TARGETS, BLDG 327

2.2. Personnel

Five full time personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand.

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-department magazines.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal . Pink water (explosive contaminated) is stored for periodic removal and decontamination in accordi ance with applicapible environmental laws and policies.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy as well as high gas pressure associated with test gun apparatus and X-rays associated with flash X-ray equipment.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 328

1. DESCRIPTION.

This facility consists of a 3,343 square foot ignition research lab built in 1951, a field test staging facility and pad consisting of 903 square feet which was built in 1983. Twenty internal spaces are occupied and the building houses a lab, explosive storage, control room and equipment rooms.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Equipment needed for explosive testing of firing trains and small scale gap test (SSGTs), pressing of explosive booster pellets, development of new explosive hardware and explosive configurations for boosters and main charge explosives.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-12 , M. Ierardi.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	20	3272	9	TECHOF, LAB, CONTROL, XPL STORAGE, EQUIP

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared if required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

008 INSTRUCTION FOR CUTTING AND CRIMPING DETONATION CORDS.

043 SOP INSTRUCTION FOR CUTTING FLEXIBLE EXPLOSIVES

149 INSTRUCTION FOR INJECTION LOADING MOLDABLE EXPLOSIVES

177 PRESSING EXPLOSIVES W/ 30 TON PRESS

281 ASSEMBLY OF THE MARK 35 MOD 0 FIRING DEVICE.

2.2. Personnel

Nine personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is disposed of by open burning open detonation at NAVSWC Dahlgren.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 331

1. DESCRIPTION.

This is a bombproof facility built in 1950. The building is used for testing and evaluation of fire trains. It is 125 square feet, and houses an explosives lab.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

Laboratory equipment

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-12 M. Ierardi

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	125	0	XPL/LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared is required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None

2.2. Personnel

No full time personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal .

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy .

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 332

1. DESCRIPTION.

This building is a charge preparation area in support of Building 331 operations. It is a 176 square foot bombproof control building with a charge preparation and assembly room. The building was built in 1950 and the chemical chamber in 1956.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

Equipment needed for charge preparation.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-12, M. Ierardi.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	2	163	0	CONTROL, STORAGE

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to bombproof for testing or appropriate R-12 magazine area.

3.1 Cleanup Operations.

The waste from operations is not usually generated in this location but is handled as appropriate if generated.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 334

1. DESCRIPTION.

This vacuum tank facility, built in 1950, is a 772 square foot building with three internal spaces housing a lab and storage. This underwater explosive test facility is used to determine gaseous products from underwater explosions.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-12, M. Ierardi.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	3	633	0	LAB, STORAGE

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel is permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is generally inert test stand material which may be contaminated with trace quantities of unconsumed energetic material. Material is bagged for disposal .

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy .

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 335

1. DESCRIPTION.

This facility was built in 1950 and is a small scale explosive processing facility. Processes which are operational at this site include explosive drying, curing, mixing, and sieving. It has 12 internal spaces and approximately 756 square feet.

The area is used to develop small quantities of explosives as part of the scale-up research in manufacturing of materials. According to interviews, materials processed in this facility have already been characterized at the hand mix stage of development. Processes in this facility are designed to provide data on the mechanical manufacture of new materials and compositions.

1.1 Location.

This building is located in WO grid number D9.

1.2 Equipment.

Equipment needed for drying, curing, mixing and sieving explosives.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-11, S. Prickett.

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	12	678	2	CONTROL, LAB
R33	3	78	0	STORAGE
REPORTED TOTALS	15	756	2	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests / Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

164 GRINDING OF ENERGETIC MATERIALS ON A MIKRO-PULVERIZER TYPE SH

399 DRY SIEVING OF ENERGETIC MATERIALS BLDG. 335

403 BAKER PERKINS MIXERS (BUILDING 335)

439 QUICKSTRIKE FUZE ASSEMBLY AND TESTING AT BLDG. 335

396 DRYING HAZARDOUS MATERIAL IN THE STOKES VACUUM OVEN IN BLDG. 335.

2.2. Personnel

Two personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations can be generated in the form of hazardous wastes or energetic wastes. Hazardous wastes are collected and disposed of through the centers hazwaste management system. Explosives wastes are placed in red bags and processed at Dahlgren by OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy released in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 336

1. DESCRIPTION.

This facility serves as the explosives dynamics branch's operational center. Built in 1949, the 7,000 square foot, two story building houses storage , technical offices, a lab, and computer areas. There are 21 internal spaces, as well as a heating fuel storage tank.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-10, B. Bohli.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	21	5562	20	TECHOF, STORAGE, VAULT, COMPUTE, TECHSH, LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

N/A

2.1.4 Licenses/Permits.

None

2.1.5 Applicable SOPs.

None.

2.2. Personnel

Twenty personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

The waste from operations is handled in accordance with center hazardous waste procedures.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 338

1. DESCRIPTION.

This facility is an explosives storage building built in 1950.

1.1 Location.

This building is located in WO grid number D9.

1.2 Equipment.

N/A

2. OPERATIONS.

2.1 Administration.

This building is administered by

R-12/R-13 L. Brown (12), R. Lemar (13)

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	3	145	0	LAB, STG/ XPL

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by vehicle or hand as necessary.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

N/A

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy released in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 339

1. DESCRIPTION.

This facility consists of a 1246 square foot, one story environmental testing lab built in 1950 and a 38 square foot bottle storage shelter built in 1962. There are eight internal spaces housing technical offices and labs.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Equipment necessary for evaluation of explosive properties (fuse/ alignment testing) and quality assurance of detonators and leads.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-15 J. Corney

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	7	730	0	TECHOF
R153	1	336	0	LAB, STORAGE
REPORTED TOTALS	8	1066	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

020 NON-DESTRUCTIVETESTING OF EXPLOSIVES COMPONENTS

099 FUNCTION TESTS OF STAB/PERCUSSION-INITIATED EXPLOSIVE COMPONENTS

185 SALT FOG TEST

423A CONDUCTING "LEAK TEC" TEST OF Mk 32 STAB ACTUATORS.

425 FIRING MK 113 DETONATORS.

426 CONDUCTING "LEAK TEC" TEST OF Mk113-0 ELECTRONIC DETONATORS

434 GENERAL ELECTRIC FERRET LEAK DETECTOR TYPE H-25

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as required.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

Non-destructive testing facility doesn't routinely generate waste materials.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Used salt water brine solutions are dumped behind the building as replaced. Not a hazardous waste, the practice should be reviewed. It may have no consequence as the area has been intentionally salted to improve ground conductivity for safety grounding systems.

Building 340

1. DESCRIPTION.

This facility consists of a high pressure physics and specifications laboratory which is a one story, 952 square foot building built in 1953, and an 80 square foot storage shed built in 1964. The lab tests high pressure sensitization and evaluates explosive compounds.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-13 P. Miller

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	4	952	3	XPL/LAB, STORAGE

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

Three personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is disposed of by open burning open detonation at NAVSWC Dahlgren.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 343

1. DESCRIPTION.

This building is a pyrotechnics laboratory built in 1953. It has approximately 3600 square feet, and is a one story building with eleven internal spaces occupied. The building houses the laboratory, technical offices, and storage. The type of explosive operation at this building includes synthesis and lob scale-up of novel energetic chemicals, and determination of physical and chemical properties of energetic compounds.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-11W W. Koppes

2.1.1 Facility Operator.

This facility was operated by two.users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	5	1026	2	XPL/LAB, STORAGE
R41	6	1188	4	TECHOF, LAB
REPORTED TOTALS	11	2214	6	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None

2.2. Personnel

Six personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is disposed of by open burning open detonation at NAVSWC Dahlgren.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 344

1. DESCRIPTION.

This one story, 861 square foot building is a chemistry and explosive research lab built in 1953. The lab does infra-red evaluation of impacted surfaces during explosive initiations. There are three internal spaces which house the laboratory and technical offices.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Laboratory equipment .

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-13 H. Sandusky

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	3	605	0	TECHOF, LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None

2.2. Personnel

No full-time personnel are assigned to this building. Three people are assigned to this building on a non full-time basis.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials to and from this facility are hand carried in small quantities to and from department magazines.

2.3.3 Emergency Preparations.

No special emergency preparations noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to departmental magazines.

3.1 Cleanup Operations.

The waste from operations is disposed of by open burning open detonation at NAVSWC Dahlgren.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 345

1. DESCRIPTION.

This facility is a one story, 646 square foot biotechnology laboratory conducting chemistry research.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Standard laboratory equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-30 J. Jones

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R30	1	450	1	LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

N/A

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

169 BIOTECHNOLOGY LABORATORY

2.2. Personnel

One personnel is permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as needed.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

The waste from operations is handled in accordance with center hazardous waste procedures.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal from steam system, noise from sonicator.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Work focuses on degradation of oil products in-situ via natural bacterial populations. No etiologic agents are used in the laboratory. Lab contains small quantities of chemical reagents typical to a bacteriological lab.

Building 348

1. DESCRIPTION.

This facility consists of a technical office and test equipment storage of approximately 1000 square feet. This is a one story building which was built in 1950 and has five internal spaces.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Standard office and storage equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-13 H. Sandusky

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	5	976	3	LAB TECHOF, DARKRM

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

N/A

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

227 INERT MACHINING & CUTTING IN BLDGS. 348,348-2

2.2. Personnel

Three personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

N/A.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

No special procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

The waste from operations is hand led in accordance with center hazardous waste procedures.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

N/A.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 351

1. DESCRIPTION.

This is a 266 square foot magazine built in 1951. This is the main storage magazine in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

N/A

2. OPERATIONS.

2.1 Administration.

This building is administered by: R-12, L. Brown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	204	0	STG/XPL

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store fuses.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

Building 352

1. DESCRIPTION.

This is an explosive storage magazine built in 1951. It contains approximately 266 square feet. It is the main storage magazine in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by: R-12, L. Brown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	204	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store bulk high explosives

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

Building 353

1. DESCRIPTION.

This is a 266 square foot explosives storage magazine built in 1951. It is one of the main storage magazines in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-12, L. Brown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	266	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No.

E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store Bulk high explosives.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

Building 354

1. DESCRIPTION.

This facility is an explosives storage magazine. It was built in 1951 and has approximately 266 square feet. It is one of the main storage magazines in the Monroe loop of the magazine area.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by : R-12, L. Brown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	204	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store bulk high explosives.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

Building 355

1. DESCRIPTION.

This facility is an explosives storage magazine. It was built in 1951 and has approximately 266 square feet. It is one of the main storage magazines in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

N/A

2. OPERATIONS.

2.1 Administration.

This building is administered by: R-12, L. Brown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	204	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store cast charges.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A

3.1 Cleanup Operations.

N/A

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

Building 356

1. DESCRIPTION.

This is an explosives storage facility. The building is approximately 266 square feet and was built in 1951.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by: R-12, L. Brown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	70	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store primers and detonators.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures notes.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

None.

Building 357

1. DESCRIPTION.

This facility is a one story explosives storage mazagine, built in 1945. The building has approximately 150 square feet. Main storage magazine is in Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	140	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store smokeless powder.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

Building 358

1. DESCRIPTION.

This building is a one story Magazine, built in 1945. It contains approximately 108 square feet. The main storage magazine is in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

None.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	70	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store wet high explosives.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

Building 359

1. DESCRIPTION.

This building is a one story Magazine, built in 1945. It contains approximately 108 square feet. The main storage magazine is in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	70	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store wet initiating explosives.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

None.

Building 360

1. DESCRIPTION.

This building is a one story Magazine, built in 1945. It contains approximately 192 square feet. The main storage magazine is in the Monroe loop magazine area.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	140	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store pyrotechnics and small arms ammunition.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

None.

Building 362

1. DESCRIPTION.

This facility is a High Explosive Magazine in which miscellaneous scrap explosives and liquid explosives are stored for authorized users. The limit for the facility is 4,000 lbs of Class 1.1. The main storage magazine is in Monroe loop magazine area It was built in 1953 and contains approximately 186 square feet.

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

Unknown.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	120	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store miscellaneous scrap and liquid explosives.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

N/A.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

Building 363

1. DESCRIPTION.

This is a one story 2700 square foot environmental testing facility which has 9 internal spaces and houses a laboratory which does explosive fuze and warhead machining and testing.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

Laboratory test equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-15 J. Corney

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	9	2703	0	LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
255	M732 FUZE BREAKDOWN
091	CONDUCTING THE 76MM PRV EXPLOSIVE TRANSFER TEST IN THE SPIN-FIRE MACHINE
135	OPERATION OF SPIN-FIRE TEST SET
167	DEBOOSTERING THE MK 71 MOD 15 VARIABLE TIME-RADIO FREQUENCY FUZE
092A	DISASSEMBLY/ASSEMBLY OF THE MK 404, 417, 418, AND 71-15 FUZES BOOSTER
178A	PRIMARY EXPLOSIVE COMPONENT SAFETY TEST FOR THE ANTI-PERSONNEL OBSTACLE BREACHING SYS.
181	DISASSEMBLY/ASSEMBLY OF THE ANTI-PERSONNEL OBSTACLE BREACHING SYSTEM (APOBS) FUZE
261	CONDUCTING OPERABILITY TESTS ON THE ANTI-PERSONNEL OBSTACLE BREACHING SYSTEMS (APOBS)
154B	ASSY/DISASSY OF POINT DET./DELAY MK 399 & MK 407
191	EMP TESTING OF EED'S IN BLDG 363
090	DISASSEMBLY AND MODIFICATION OF THE MK 420 MOD 0 FUZE
101	MAKING TORQUE & ELECTRICAL MEASUREMENTS ON EX 37 ARMING DEVICES
108	THE OPERATION OF THE MONTEREY INPAC 66 DROP TESTER.
139	BUILDING 363 EXPLOSIVE COMPONENT AND FUZE DISASSEMBLY
158	VHG IMPACT TEST SET
412	FUNCTION TESTING OF ELECTROEXPLOSIVE DEVICES

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand or vehicle as required.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to assigned magazine spaces.

3.1 Cleanup Operations.

Explosives waste is removed to Dahlgren for processing by OB/OD. Hazardous waste if generated is processed through the WO hazardous waste program.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 364

1. DESCRIPTION.

This building is a 150 square foot explosives storage depot. It is used for shipping and transferring explosives, and is a constant temperature building. It is a temporary hold point.

1.1 Location.

This building is located in WO grid number D10.

1.2 Equipment.

N/A

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	152	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store Primers and detonators.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

Building 366

1. DESCRIPTION.

This is a 456 square foot high explosives magazine with three internal spaces.

1.1 Location.

This building is located in WO grid number B10

1.2 Equipment.

N/A

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R-12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	3	456	0	STG/XPL

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC WO E1-76, issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Used to store explosives components and fuzes.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by delivery vehicle to and from magazine area.

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

Significant energies associated with this building include thermal and explosive pressure in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

Building 371

1. DESCRIPTION.

This is a gun turret explosive testing facility built in 1951.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

No unique equipment noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R33 J. Barnes

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	1	213	0	XPL/LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76, issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Facility is used in testing lithium batteries.

2.3.3 Emergency Preparations.

None unique to the facility noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-department magazine spaces.

3.1 Cleanup Operations.

The waste from operations may consist of hazardous wastes or energetic material wastes. These are handled as appropriate through the center hazardous waste system or bagged and sent to Dahlgren for OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

Building 373

1. DESCRIPTION.

This building is a 144 square foot control house for building 372. It was built in 1955 .

1.1 Location.

This building is located in WO grid number C9.

1.2 Equipment.

No special equipment noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R15 J. Corney

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	1	186	0	CONTROL

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared if required.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

No energetic materials used in this facility.

2.3.3 Emergency Preparations.

None noted unique to facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

No significant energies noted.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations this facility were identified.

6. SUPPLEMENTAL COMMENTS.

None.

Building 382

1. DESCRIPTION.

This building is used as an Explosives Component Assembly Facility, in which the building up and conditioning of explosive shots takes place. It contains approximately 250 square feet and was built in 1960.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

Unknown.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R13 E. Lemar

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	1	250	0	XPL/LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared if required.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

No energetic materials used in this facility.

2.3.3 Emergency Preparations.

None noted unique to this facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

No significant energies noted.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 386

1. DESCRIPTION.

This is an Explosive Component Assembly Laboratory, used to build up and condition explosive shots in support of Building 325 bombproof facility. It is a one story building which contains approximately 304 square feet and was built in 1962.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

No unique equipment noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R13 M. Clairmont

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	1	304	0	XPL/LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
232	PERMITTIVITY MEASUREMENTS OF ENERGETIC MATERIALS AT MICROWAVE FREQUENCIES IN BLDG. 386

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility.

2.3.3 Emergency Preparations.

None unique to the facility noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-department magazine spaces.

3.1 Cleanup Operations.

The waste from operations is may consist of hazardous wastes or energetic material wastes. These are handled as appropriate through the center hazardous waste system or bagged and sent to Dahlgren for OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 387

1. DESCRIPTION.

This building is used as a High Gravity Tank Centrifuge Pit. It was built in 1963.

1.1 Location.

This building is located in WO grid number C11.

1.2 Equipment.

None noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R33 J. Barnes

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R33	2	0	0	TANK, STORAGE
R41	2	48	0	TANK, STORAGE
REPORTED TOTALS	4	48	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

N/A.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

None noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

N/A.

4. FACILITY ENERGIES.

None.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

Building 388

1. DESCRIPTION.

This facility is a high gravity tank centrifuge control area. It was built in 1963 and contains approximately 65 square feet. The facility is used as temporary storage; the control room is not used for its original purpose. Centrifuge is no longer an active facility.

1.1 Location.

This building is located in WO grid number C11.

1.2 Equipment.

None unique to the facility. The centrifuge system is not functional.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R33 J. Barnes

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R33	1	0	0	LAB
R41	1	65	0	LAB
REPORTED TOTALS	2	65	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

None.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

None unique to the facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

None.

4. FACILITY ENERGIES.

None.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None noted from present activity.

6. SUPPLEMENTAL COMMENTS.

Building 389

1. DESCRIPTION.

This facility is an Environmental Testing Facility, used for Lithium Battery testing and storage. It is a one story building, consisting of approximately 640 square feet. It was built in 1963.

1.1 Location.

This building is located in WO grid number C11.

1.2 Equipment.

No unique equipment was noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R33 J. Barnes

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R33	1	640	0	LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

This facility is used in conjunction with the lithium battery test program.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by vehicle and hand.

2.3.3 Emergency Preparations.

None unique to the facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

None.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a battery mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations at this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 390

1. DESCRIPTION.

This building is a Chemistry and Explosive Development Facility. It is used for chemistry and explosives research, and explosive conditioning prior to mechanical and physical properties testing in Building 304. It was built in 1948 and contains approximately 40 square feet.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

No unique equipment was noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R13 K. Kim

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R13	1	40	0	STG/XPL

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared **

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Energetic materials are hand carried to and from this facility .

2.3.3 Emergency Preparations.

None unique to the facility noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R-department magazine spaces.

3.1 Cleanup Operations.

The waste from operations may consist of hazardous wastes or energetic material wastes. These are handled as appropriate through the center hazardous waste system or bagged and sent to Dahlgren for OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations at this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 391

1. DESCRIPTION.

This facility is an RDT & E Storage Laboratory and was built in 1964. It contains one story and is approximately 169 square feet in size.

1.1 Location.

This building is located in WO grid number C10.

1.2 Equipment.

None noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R15 M. Swisdak

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R15	1	169	0	STORAGE

2.1.2 Approving Authority for Tests.

None.

2.1.3 Applicable Instructions.

None.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

N/A.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

No special emergency procedures noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

N/A

4. FACILITY ENERGIES.

None.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

None.

6. SUPPLEMENTAL COMMENTS.

Building 392

1. DESCRIPTION.

This facility, built in 1948, is a Firing Shield. t contains approximately 150 square feet. It is used as a test chamber for evaluating performance of warhead components and slapper initiation.

1.1 Location.

This building is located in WO grid number B10.

1.2 Equipment.

N/A.

2. OPERATIONS.

2.1 Administration.

This building is administered by:

R12 T. SPIVAK

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	150	0	XPL/LAB

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4 .

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand.

2.3.3 Emergency Preparations.

None noted as unique to the facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R department magazines.

3.1 Cleanup Operations.

The waste from operations is not generally created, however in the event it is, waste is bagged and removed to Dahlgren for OB/OD.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations at this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 402.

1. DESCRIPTION.

This building is a 50,715 square foot, nominal two story building with basement, built in 1947. The building houses the supersoninc wind tunnes and supporting systems. It is part of a complex designed to support wind tunnel operations.

1.1 Location.

This building is located in WO grid number B6.

1.2 Equipment.

Equipment in the building includes a small supersoninc wind tunnel, large vacuum tank, related pressure and vacuum piping systems, driers, compressors (surplused) , liquefied nitrogen and nitrogen gas systems, and a nearby cylinder pit. A battery charging facility is located in the basement of the building.

Lasers were in use in one of the laboratories.

An LPG storage tank (413) and vaporizer system (414)were surplused and not in use, although the tank contained an undetermined quantity of LPG.

2. OPERATIONS.

2.1 Administration.

This building is administered by ?.

2.1.1 Facility Operator.

This facility was operated by several users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
Unspecified	16	-	-	STEAM, HVAC, XFORMER, MECHAN, SWG/EJC, TELEPHO, UTILITY,
E142	3	315	2	TECHOFF, TECHSHOP, STORAGE
K20	4	77	1	OFFICE, STORAGE
K205	1	219	1	OFFICE
K209	1	190	2	OFFICE

K22	6	430	12	TECHOFF
K23	25	91	6	STORAGE, BATTERY, LAB, CONTROL, LAB, COMPRES, SPHERM, MECHAN, WORKRM, CADD, COMPUTE, TECHOF, COPYRM
K24	14	646	25	LAB, STORAGE, TECHOF, COPYRM, COMPUTE, PWSHOP,
W72	2	287	2	PWSHOP
TOTALS	**72**	**39206**	**51**	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared .

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6B Occupational Safety and Health

2.1.4 Licenses/Permits.

Not applicable.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

107 TUNNEL 8A HYPERVELOCITY RESEARCH TUNNEL.

406 VACUUM CALIBRATION LAB FACILITY.

2.2. Personnel

51 personnel are assigned to work in this building, according to property records.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished at direction of test support personnel.

2.3.3 Emergency Preparations.

The facility has a low oxygen signal system. It was not tested during the site visit. No special preparations were observed. Occupants of offices above machine shop planned to exit onto roof in the event of fire.

2.3.4 Flow Chart References.

Flow chart references were not observed during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.**

3. POST-TEST ACTIVITIES.

Not applicable.

3.1 Cleanup Operations.

The waste from operations is handled IAW Center instructions.

3.2 Environmental Site Monitoring.

Environmental site monitoring for this building is not performed.

4. FACILITY ENERGIES.

Significant energies associated with this building include very high pressure gases, vacuum, reciprocating machinery, chemical driers, battery chemicals, compressor lubricants.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include building occupants of building located near supersonic tunnel equipment that might experience pressure ruptures; exposures to fire in upstairs offices adjacent to vacuum tank; potential etiologic agents in wet basement; spills of shop lubricants and oils; potential nitrogen releases in basement; laser exposures.

6. SUPPLEMENTAL COMMENTS.

Surplused compressors were leaking oils (very slight) that apparently flowed into a diked catch basin.

Stagnant water was observed on floor in basement, which when combined with poor housekeeping and high humidity, created an environment conducive to growth of algae and bacteria.

Adequacy of means of egress in fire for 7 to 11 occupants of tech offices on second floor above machine shop should be verified.

Wet leaves were observed in cylinder pit on cylinders and high pressure lines, subjecting system to potential accelerated corrosion.

Building 405

1. DESCRIPTION.

This is the Combat Systems Integration Lab Facility. Rooms 006, 007, 1001 of this building are used as a pilot hydroballistics facility. The building is constructed of brick, concrete block, and concrete. The approximate gross area per floor is 1100 square feet. The building has two above ground stories and was built in 1948. There are no underground tanks. No asbestos was evident during the survey. There are no known PCBs present.

1.1 Location.

This building is located in WO grid number A6.

1.2 Equipment.

Part of this building is a hydroballistics facility, used for low velocity missile water entry. The water tank and test vehicle launcher (air gun) are unique, but do not present a hazard when used as designed. A small amount of mechanical equipment is present to support test operations. A laser is in these spaces. It is not being used, but being stored for another group. Building is also used as storage and as tech office spaces.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility was operated by nine different users at the time of the survey, with spaces allocated as shown in the Table below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACE TYPES
D22	3	0	8	OFFICE
K22	3	2033	0	TECHOF
N15	39	13200	37	LAB, TECH OFF, KIT/HAP, COPY RM, LIBRARY, COMPUTER, CONFER, CADD, VAULT, EQP RM
R13	2	1959	1	CONTROL, LAB
R41	5	5282	5	LAB, TECH OFFICE
TNRR	1	0	0	STORAGE

USER/BLDG SVCS	SPACES OCCUPIED	SQ FT OCCUPIED	FULL TIME PERSONNEL	SPACE TYPES
U08	1	667	0	VAULT
U12	3	1136	0	EQP/RM, LAB
U25	2	618	0	STORAGE
U41	1	0	0	STORAGE
W92	1	715	0	STORAGE
REPORTED TOTALS	61	25610	51	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted.

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76, issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building are prepared as necessary for test.

2.2. Personnel

Personnel in this building are shown in Section 2.1.1. During hazardous operations, the number of personnel in rooms 006, 007, and 1001 is limited to the number needed to support the test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if necessary, is accomplished by R-12.

2.3.3 Emergency Preparations.

The building contains no emergency eye wash or emergency shower areas. There were no sprinklers noted in the surveyed spaces. No dry chemical fixed extinguishing system was noted

during the survey. There are dry chemical portable fire extinguishers available. No fire alarms were noted during the survey. No panic/shutdown buttons were observed. No emergency lighting is provided. Because there are no known explosives in the building, no blast shields, barriers, lock outs or interlocks are necessary, nor were any observed. These rooms are under the control of the Site Disaster Plan. The Fire Department reacts to the initial call. Security seals off the area as necessary. Safety participates as required in accident investigations. A hazardous materials hazardous waste spill plan is not required for these rooms.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. No employees have any memory of accidents, injuries or mishaps.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Prior to test, water is monitored for clarity. The filter use diatomaceous earth and algacide (powdered chlorine). OSH monitoring is done by the NWSC White Oak Safety Office.

4. FACILITY ENERGIES.

Significant energies include overpressure from the water tank and expanding volume from compressed gas air gun.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

Building 406

1. DESCRIPTION.

This is an 18836 square foot, nominal 2 story building built in 1957. It house two hypersonic wind tunnels and associated control facilities. Officers were being added on the second floor at the time of the site visit.

1.1 Location.

This building is located in WO grid number B6.

1.2 Equipment.

The primary equipment in this building is two relatively small hypersonic wind tunnels. One was idle but serviceable, and the second was idle and inoperable. Equipment associated with the wind tunnels included high pressure piping, vacuum lines, control rooms and controls of various types.

2. OPERATIONS.

2.1 Administration.

This building is administered by ?.

2.1.1 Facility Operator.

This facility was operated by one department at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
K23	8	6069	6	LAB, CONTROL, STORAGE, LAB, TECHOF
K24	1	394	0	CONTROL
REPORTED TOTALS	9	6463	6	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared when the wind tunnels are used.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6B Occupational Safety and Health

2.1.4 Licenses/Permits.

Not applicable.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None.

2.2. Personnel

Six personnel are permanently assigned to work in this building, according to facility records.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90. It is believed the facility was idle during the year.

2.3.2 Transportation/Storage.

Not applicable.

2.3.3 Emergency Preparations.

No special preparations were observed.

2.3.4 Flow Chart References.

Flow chart references were not observed during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to the atmosphere after tests.

3.1 Cleanup Operations.

The waste from operations would be handled IAW Center instructions.

3.2 Environmental Site Monitoring.

Environmental site monitoring for this building is not performed.

4. FACILITY ENERGIES.

Significant energies associated with this building include high gaseous pressures, potential mechanical energy, electrical energy, and vacuums.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include exposures to effects of high pressure rupture in abnormal events.

6. SUPPLEMENTAL COMMENTS.

None.

Building 409

1. DESCRIPTION.

This is a 90 ft. water tower tank which was built in 1956 and is used for test and training purposes.

1.1 Location.

This building is located in WO grid number B6 .

1.2 Equipment.

No special equipment noted.

2. OPERATIONS.

2.1 Administration.

This building is administered by U-12.

2.1.1 Facility Operator.

The building operator is U-12.

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

None identified.

2.1.4 Licenses/Permits.

None .

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOPTITLE
023	Conducting Development Tests of Explosive Payloads. R-12
276	Testing Test Vehicle in Bldg. 409. U-11
009	The Handling of the BCS Buoy at the Undersea's Weapon Tank at W O. U12
565A	Undersea Weapon Tanks, Bldg 409 & 410. U-12
125B	Testing Mark 45 Mod 1 Firing Device in Bldg. 409. U-24

2.2. Personnel

The number of personnel are permanently assigned to work in this building varies. It is usually around eight. Two military swimmers also regularly use the building during tests.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Documentation regarding the amount and types of energetic materials, if any, processed through this facility in FY90 was not available.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There were no portable fire extinguishers noted. (A classified experiment was going on during the time of the survey and entry was not possible) There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

The significant energy energy associated with this building is the quantity of water present in case of a catastrophic failure. No other significant energies are associated with the building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

A hazardous materials hazardous waste spill plan is not required for this building.

Building 410

1. DESCRIPTION.

This frame building is the operational support building for the 409 test facility (90 ft. water tank).

1.1 Location.

This building is located in WO grid number B7.

1.2 Equipment.

This building is used as support and storage of equipment. No special equipment was present. Routine mechanical and electrical equipment in support of test operations. Filters for cleaning tank water, pumps and bags of diatomaceous earth were present.

2. OPERATIONS.

2.1 Administration.

This building is administered by U-12.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
U12	1	575	0	EQP/RM

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required to support testing in building 409.

2.1.3 Applicable Instructions.

None known.

2.1.4 Licenses/Permits.

None known.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

None.

2.2. Personnel

No personnel are permanently assigned to work in this building, but do so during testing in building 409.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

Documentation regarding the amount and types of energetic materials, if any, processed through this facility in FY90 was not available. None was thought to have been used.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available(dry chemical). Emergency lighting was not noted. There is no current emergency response plan available.(A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility.

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

A hazardous materials hazardous waste spill plan is not required for these rooms.

Building 427

1. DESCRIPTION.

This building is a Hydroballistics Facility. The building is primarily constructed of concrete (honey comb construction) with some cinder block. There are five stories above ground and four stories below ground level. The approximate gross area per floor is 11,000 square feet. This does not include hallways and jointly occupied space. There is a 1.75 million gallon water tank, which is lined with stainless steel. No underground fuel tanks were noted. Asbestos is present in the building. During the survey it was observed that some of the asbestos was being removed. There are no known PCBs present. The building is generally well maintained. All building drains go to the basement sump. Surface runoff is handled by a storm sewer.

1.1 Location.

This building is located in WO grid number A6.

1.2 Equipment.

The water tank is used to measure the effects of water entry by missiles, torpedoes and other underwater systems. The facility has numerous cranes for lifting test equipment and systems to be tested. A power substation is present. There is a machine shop located below ground level. A test control room is also located below ground level. Compressed helium is used as a power source for test fixtures.

2. OPERATIONS.

2.1 Administration.

This building is administered by multiple users.

2.1.1 Facility Operator.

This facility was operated by three different users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R42	2	0	0	TECHOF
R44	23	2960	20	COPYRM,KIT/HAF,TECHOF, STORAGE, LIBRARY, COMPUTE
U12	221	30786	24	EQP/RM, STORAGE, HYDRLAB, VIEWCUB, LAB, TECHSH, LOCKER, FIREBAY, COPYRM, KIT/HAF, WORKRM, PHO/LAB, CONFER., ELEC, TOOLRM, STG/EQP, SHOWER, HALLWAY, MECHAN
REPORTED TOTALS	246	33746	44	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary.

2.1.3 Applicable Instructions.

None noted.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

082 THE HYDROBALLISTICS FACILITY BUILDING 427

2.2. Personnel

The number of personnel regularly assigned to work in this building is 25 for the U-12 Department. Of this number, 24 are NSWC civilian employees, and no Military personnel. No other personnel for the U Department are permanently assigned to work in this building. R Department has office space and employees present in the building. There were contractors present for the removal of asbestos. During hazardous operations the number of personnel in this building are limited to those personnel needed for supporting test operations.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

The level of test activities conducted during FY 1990 were not identified by the building contact person. The building is used approximately 60% of the time for underwater test operations.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by R-12.

2.3.3 Emergency Preparations.

The building contains no emergency eye wash or emergency shower areas. There are sprinkler heads and smoke detectors located in the offices and work spaces. No dry chemical fixed extinguishing system was noted during the survey. There are portable fire extinguishers available, both water and dry chemical types. There is a fire alarm which is connected to an Annunciator panel in the main lobby. There are also smoke alarms in the building. No panic/shutdown buttons were observed during the survey. Emergency lighting is provided throughout the building. In the case of an emergency, the fire department responds first, followed by security which seals off the area. Safety participates as required in SOP preparation. Safety is also involved in any accident investigation. A hazardous materials hazardous waste spill plan is not required for this building.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

There have been some minor employee injuries. Early in the building's use, a view port cracked and some water was released.

3. POST-TEST ACTIVITIES.

Energetic materials, if used in this facility are removed by R-12 and stored in appropriate magazines.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

The water used in the building is constantly filtered for clarity and chlorine is added as an algae control.

4. FACILITY ENERGIES.

The major energy that exists is the pressure exerted by the volume of water in the test tank. The failure of a viewing port could cause a major energy release.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

Building 428

1. DESCRIPTION.

This building is used as a water tank and pump room. The building is constructed of concrete. The pump room is above ground, and the water tank is above and below ground level. There are no underground tanks. The storage tank holds up to 1.75 million gallons of water. No asbestos is present in the building. There are no known PCBs present.

1.1 Location.

This building is located in WO grid number A7.

1.2 Equipment.

The equipment in this building provides pumping capability to move water from the storage tank to the test tank located in Building 427. The volume of the storage tank is the only significant equipment in this building.

2. OPERATIONS.

2.1 Administration.

This building is administered by U12.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
U12	2	120	0	TANK
REPORTED TOTALS	2	120	0	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as necessary. This facility is a support operation and not part of the actual tests.

2.1.3 Applicable Instructions.

None noted.

2.1.4 Licenses/Permits.

None.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP # SOP TITLE

None.

2.2. Personnel

No personnel are regularly assigned to work in this building . The building is only occupied when water is being transferred from storage to test tank or from test tank to storage.

Limits to the number of personnel in this building during hazardous operations were not specified during the survey.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

No test activities are conducted in this building.

2.3.2 Transportation/Storage.

No energetic materials are transfered to and from this facility.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. No panic/shutdown buttons were observed. No emergency lighting is provided. In an emergency, the Fire Department responds to the call, then Security Department secures the area. Safety is involved in any accident investigations.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. No employees have any memory of accidents or mishaps.

3. POST-TEST ACTIVITIES.

No energetic materials utilized in this facility.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

N/A.

4. FACILITY ENERGIES.

The volume of water present in the tank exerts significant pressure.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

Building 430

1. DESCRIPTION.

This is a nominal "two story" 26308 square foot building with a large servicing bay, machinery pits in the basement. The building houses the current ly operational large hypervelocity wind tunnel operations. The facility was built in 1972. In addition to the wind tunnel, it houses a battery charging station operated by W.

A component of the this facility is a retaining wall serving as a barrier between the high pressure equipment and Dahlgren Road.

1.1 Location.

This building is located in WO grid number B7.

1.2 Equipment.

The building contains two wind tunnels with support machinery , equipment and computers, large high-capacity compressors, high pressure gas and vacuum lines, overhead cranes, control rooms, and office spaces..

2. OPERATIONS.

2.1 Administration.

This building is administered by K Department.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
K20	1	0	0	WALL
K23	15	19057	9	LAB, COMPRES, DISPLAY, COPYRM, TECHOF, COMPUTE, STORAGE
K24	5	1225	8	TECHOF, CONTROL,
REPORTED TOTALS	21	20282	17	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared by K department personnel.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6B Occupational Safety and Health

2.1.4 Licenses/Permits.

Not applicable.

2.1.5 Applicable SOPs.

Approved SOPs applicable to the operations in this building include:

SOP #	SOP TITLE
109C	HYPERVELOCITY WIND TUNNEL (TUNNEL # 9)
188	MINI SOP FOR THE USE OF EXPLOSIVE SQUIB IN TUN.9
239	STANDARD OPERATING PROCEDURES FO CLASS "C" EXPLOSIVES USE IN TUNNEL #9
386	MAGNETIC PARTICLE TESTING (MT) OF UNITS FROM WIND TUNNELS.

2.2. Personnel

Seventeen personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90. Hour estimates were offered.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by the motor pool.

2.3.3 Emergency Preparations.

Posted in control room.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to magazines.

3.1 Cleanup Operations.

Nitorgen gas is vented to air. Compressor oils are turned in as hazardouse wastes.

3.2 Environmental Site Monitoring.

Not applicable.

4. FACILITY ENERGIES.

Significant energies associated with this building include high pressure gases, liquefied flammable pressurized gas, vacuums, electrical energies, and high-velocity gas flows; mechanical energy during set up and tear-down operations.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include nitrogen gas, machinery lubricants, and dessicants.

6. SUPPLEMENTAL COMMENTS.

Potential for rupture of high-pressure equipment with severe consequences is recognized, and protective barriers and procedures are provided.

Building 506

1. DESCRIPTION.

This facility is an explosives storage magazine of approximately 150 square feet built in 1951.

1.1 Location.

This building is located in WO grid number B11.

1.2 Equipment.

Standard equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R12 L. Brown

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R12	1	100	0	STGXPLW

2.1.2 Approving Authority for Tests.

N/A.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

None

2.1.5 Applicable SOPs.

None.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by transport vehicle and by hand.

2.3.3 Emergency Preparations.

None unique to the facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A.

3.1 Cleanup Operations.

N/A.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

None.

Buildings 609, 611, 612, 617, and 618

1. DESCRIPTION.

The Shock Testing Facility building is a reinforced concrete building. Related, unmanned but numbered facilities that are located immediately adjacent to 611 include:

609 - Projectile Impact Tunnel

612 - Pendulum Tester

617-Shock Tester

618-Drop Test

1.1 Location.

These buildings are located in WO grid number D8.

1.2 Equipment.

Equipment in these buildings includes :

A 6000 pound bridge crane;

A 26" Air Gun (10,000 PSI breech Pressure);

Two Helium-Neon Lasers (Class IIIB) portable; and

A 15,000 PSI air compressor.

2. OPERATIONS.

2.1 Administration.

This building is administered by: Unknown.

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
H141	5	4092	2	LAB, COMPRES, TECHOF,

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations was not noted.

2.1.3 Applicable Instructions.

Unknown.

2.1.4 Licenses/Permits.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

An explosives permit was posted with the following data:

	Class	Weight
Building	1.1	5 lbs
Building	1.4	20 lbs
Exp Limit	1.1	1.5 lbs
Exp Limit	1.4	6 lbs

Personnel Limit - Two Persons

2.1.5 Applicable SOPs.

SOP # SOP TITLE

012 SHOCK TESTING OF THE MK13 SEPARABLE COVER.

395 THE NSWC/WO LIGHTWEIGHT SHOCK MACHINE

715 THE 26" AIR GUN

716 HIGH VELOCITY IMPACT LAUNCHER (5.6-INCH AIR LAUNCHER)

717 THE TARGET IMPACT LAUNCHER

726 WOL LOW DISPLACEMENT TESTER MEDIUM AND HEAVY WEIGHT

728 THE WOX-7B SHOCK TESTER

2.2. Personnel

Two persons were reported as permanently assigned to work in these buildings.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility was reported as inactive.

2.3.3 Emergency Preparations.

None observed.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Not Applicable.

3.1 Cleanup Operations.

Not Applicable.

3.2 Environmental Site Monitoring.

No environmental site monitoring for these buildings was reported.

4. FACILITY ENERGIES.

Significant energies associated with this building include:

10,000 PSI Airgun.

Two portable Class IIIB Lasers.

15,000 PSI Compressor.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted with these facilities.

6. SUPPLEMENTAL COMMENTS.

The light weight shock tester apparatus appeared capable of coming into contact with the electrical leads in the 6000 lb. bridge crane.

Building 613

1. DESCRIPTION.

This facility consists of a 560 square foot storage and shop area built in 1985, heating fuel storage built in 1979, a weather enclosure and solvent , oxidizer, and fuel storage which was built in 1966, and an explosives mixing and casting laboratory which is approximately 2800 square feet. The lab is used for mixing, casting, drying and curing of explosive charges.

1.1 Location.

This building is located in WO grid number C8, with the heating fuel storage area in C9.

1.2 Equipment.

Equipment necessary for the mixing, casting, curing, and drying of explosives.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R11 S. Prickett

2.1.1 Facility Operator.

This facility was operated by one user at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	15	2997	5	XPL/LAB, STORAGE, STGFUEL, STG/CHM, LAB, STG/SOL, TECHSH, CONTROL
REPORTED TOTALS	15	2997	5	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4

2.1.4 Licenses/Permits.

CNO Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1-77, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from para. 4-4 of reference (b) to permit continued use of a building which has overhead electrical wires passing within 50 feet of the buildings.

2.1.5 Applicable SOPs.

SOP #	SOP TITLE
022	VACUUM CASTING (BUILDING 613)
083	GRINDING OF ENERGETIC MATERIALS ON A MIKRO-PULVERIZER TYPE SH IN BLDG 613, WHITE
286	HAAKE RV 100 ROTATIONAL VISCOMETER.
410	REMOVAL OF EXPLOSIVE-CONTAMINATED DUCT WORK FROM ROOF &INTERIOR
411	THE ROLL MILLING OF EXPLOSIVES ON THE ROSS LAB. MILL MODEL 52M IN 613, W/O
427B	BAKER PERKINS MIXERS

2.2. Personnel

Five personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by hand

2.3.3 Emergency Preparations.

No special emergency procedures were noted.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R department magazine spaces.

3.1 Cleanup Operations.

The waste from operations is generally classed as explosives, is bagged and removed to Dahlgren for OB/OD. Pinkwater from casting operations is collected and treated offsite for subsequent disposal as wastewater.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building .

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 620

1. DESCRIPTION.

This facility consists of an explosive casting building, and transformer building for 620, and heating fuel storage. The casting building is approximately 2800 square feet and was built in 1973. The laboratory is used for mixing, casting, drying and curing explosives.

1.1 Location.

This building is located in WO grid number B9.

1.2 Equipment.

Steam melt casting equipment.

2. OPERATIONS.

2.1 Administration.

This building is administered by :

R11 T. Fillman

2.1.1 Facility Operator.

This facility was operated by two users at the time of the survey, with spaces allocated as shown below. The user is the organization using the space. The spaces occupied represents the rooms or designated spaces occupied by the user. The square feet occupied indicates the total floor area of the spaces by each organization. Full time personnel shows the total number of people considered to be located in the spaces on a full time basis for the purposes of the property records. The space types are abbreviated references to the types of spaces occupied by the using organization.

USER	SPACES OCCUPIED	SQFT OCCUPIED	FULL-TIME PERSONNEL	SPACE TYPES
R11	8	2848	4	LAB, CONTROL, STG/EQP, EQP/RM, TECHOF
W	2	0	0	XFORMER, TANK
REPORTED TOTALS	10	2848	4	

2.1.2 Approving Authority for Tests.

A formalized Approving Process and Authority for Tests/Operations is prepared as required.

2.1.3 Applicable Instructions.

Operations conducted in accordance with OP-5 , NAVSWCINST 5100.6B , and NAVSWCINST 8020.4.

2.1.4 Licenses/Permits.

None noted.

2.1.5 Applicable SOPs.

SOP #	SOP TITLE
R DEPARTMENT	
086A	PBX PROCESSING BUILDING 620-100
093	USING LIGHTNIN MIXER TO PREPARE COATED EXPLOSIVES.

2.2. Personnel

Four personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by vehicle and by hand.

2.3.3 Emergency Preparations.

None noted unique to the facility.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps).

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility are removed to R department magazines.

3.1 Cleanup Operations.

The waste from operations is generally classed as explosives, is bagged and removed to Dahlgren for OB/OD. Pinkwater from casting operations is collected and treated offsite for subsequent disposal as wastewater.

3.2 Environmental Site Monitoring.

No environmental site monitoring requirements were identified for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include explosive and thermal energy in the event of a mishap.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures associated with normal operations of this facility were identified.

6. SUPPLEMENTAL COMMENTS.

Building 0T01(T-14)

1. DESCRIPTION.

This frame garage like structure is used for storage of equipment and supplies used in past and for future test operations. It is approximately 960 square feet in size and was built in 1945.

1.1 Location.

This building is located in WO grid number C4.

1.2 Equipment.

Some mechanical equipment associated with the storage operations.

2. OPERATIONS.

This space is used primarily for storage.

2.1 Administration.

This building is administered by U13 Department

2.1.1 Facility Operator.

The building operator is U-13.

2.1.2 Approving Authority for Tests.

No formalized Approving Process and Authority for Tests/Operations is prepared associated with this building.

2.1.3 Applicable Instructions.

None known.

2.1.4 Licenses/Permits.

None known.

2.1.5 Applicable SOPs.

There are no SOPs applicable to the operation of this building.

2.2. Personnel

No personnel are permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no information to document that any energetic materials were processed through this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility, if required, is accomplished by R-12.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. There is no current emergency response plan available (A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references were not available during the survey.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Other than normal clean up operations, there is nothing unique or environmentally significant concerning activities in this building.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

No significant energies are associated with this building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

Building T-35

1. DESCRIPTION.

This two room frame structure is used for office operations and as the receiving and transporting point for explosives and hazardous materials being received at White Oak. It also is the location used for transferring explosives to user locations at White Oak. Preparation of explosives and hazardous materials for shipment off base is done at this location.

1.1 Location.

This building is located in WO grid number D9.

1.2 Equipment.

Equipment associated with the transfer and packaging of explosives exists at this location.

2. OPERATIONS.

This space is used primarily for receiving, handling and shipment of explosives and hazardous materials.

2.1 Administration.

This building is administered by the R Department (R-12).

2.1.1 Facility Operator.

The building operator is R-12.

2.1.2 Approving Authority for Tests.

Not applicable.

2.1.3 Applicable Instructions.

SOP's 100, 120 and 550-A in addition to NAVSWCINST 8020.4 control operations at this location.

2.1.4 Licenses/Permits.

Exemption No. NSWC-WO E1-76 , issued Sept. 22, 1987, expiring Dec. 31, 1991. This exemption authorized deviations from paragraph 4-9 of reference (b) to permit use of those buildings which do not meet primary and/or secondary lightning protection criteria.

CNO Waiver No. NSWC-WO 1D-78, reissued July 3, 1990, expiring Jan. 31, 1992, authorizes deviations from the inhabited building separation requirements of Table 5-4 of reference (b) to permit continued use of explosives storage magazines.

2.1.5 Applicable SOPs.

SOP#	SOP TITLE
120	TRANS.WET EXPLOSIVES FROM SHIPPING CONTAINERS

550A TRANSPORTATION OF EXPLOSIVES

2.2. Personnel

There are at least 4 full time personnel permanently assigned to work in this building.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There is hard copy and computer records to document all energetic materials that were processed through this facility in FY90.

2.3.2 Transportation/Storage.

R-12 transports all White Oak energetic materials to and from this facility.

2.3.3 Emergency Preparations.

There are portable fire extinguishers available. There is no current emergency response plan available (A plan is now in the early stages of preparation). In the case of an emergency, the fire department responds first, then security seals off the area. Safety is also involved in any accident investigation.

2.3.4 Flow Chart References.

Flow chart references are available.

2.4. Performance History (Mishaps) .

There is no record of facility accidents or mishaps. Employees contacted have no memory of any accidents, injuries or mishaps occurring during operation of this facility or attributable to tests conducted in this facility

3. POST-TEST ACTIVITIES.

3.1 Cleanup Operations.

Clean up operations are required after handling or transfer of explosives materials.

3.2 Environmental Site Monitoring.

Environmental and OSH monitoring is done by the NWSC White Oak Safety and Environmental Office.

4. FACILITY ENERGIES.

Significant energies are associated with this building because of its processing of explosives.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

No candidate environmental exposures were noted during this survey.

6. SUPPLEMENTAL COMMENTS.

Electromagnetic Roll Facility

1. DESCRIPTION.

This facility consists of two trailers, a permanent electrical sub station and the electromagnetic (EMR) coil fields.

1.1 Location.

This facility is located in WO grid number B11.

1.2 Equipment.

The major equipments used in this facility include:

Trailer containing mainframe computer;

Motor generators; and

EMR coils buried in ground.

2. OPERATIONS.

2.1 Administration.

This facility is administered by H Department

2.1.1 Facility Operator.

The building operator is H32.

2.1.2 Approving Authority for Tests.

The approving authority for tests conducted in this facility is H Department.

2.1.3 Applicable Instructions.

N/A.

2.1.4 Licenses/Permits.

The document that serves as the authority to proceed with a planned test or operation in this building is the test plan.

2.1.5 Applicable SOPs.

None found.

2.2. Personnel

Information not available.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of energetic materials processed through this facility in FY90.

2.3.2 Transportation/Storage.

N/A.

2.3.3 Emergency Preparations.

Emergency equipments include fire extinguishers.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be recalled by personnel familiar with the facility or in Center records.

3. POST-TEST ACTIVITIES.

N/A

3.1 Cleanup Operations.

There is no significant hazardous waste generated at this facility.

3.2 Environmental Site Monitoring.

A Preliminary Environmental Assessment was performed and a survey of field strengths was performed.

4. FACILITY ENERGIES.

Significant energies associated with this building include :

Field Coils carry up to 160 Amps of DC current and produce about 1G magnetic field.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include:

Pacemakers and biological organisms - EPA predicted no significant effects.

6. SUPPLEMENTAL COMMENTS.

Warning lights and road barriers used to exclude personnel during tests.

Mainframe computer in an unprotected trailer produces significant fire loss risk.

Facility has been struck by lightning.

Building T-48

1. DESCRIPTION.

This building is located in the storage yard north of Building 25. It is a 576 square foot temporary building housing cutting, burning and welding operations for metals.

1.1 Location.

This building is located in WO grid number C2.

1.2 Equipment.

This facility is equipped with cutting and burning table and fixtures, and cutting and burning equipment for iron, steel and aluminum plates, bars, rods, etc.

2. OPERATIONS.

2.1 Administration.

This building is administered by E142.

2.1.1 Facility Operator.

This facility was operated by E142 personnel at the time of the survey.

2.1.2 Approving Authority for Tests.

Work is performed under E Department work requests.

2.1.3 Applicable Instructions.

NAVSWCINST 5100.6b Occupational Safety and Health Program

2.1.4 Licenses/Permits.

None applicable.

2.1.5 Applicable SOPs.

No approved SOPs applicable to the operations in this building were on file in the Safety Department.

2.2. Personnel

No personnel are permanently assigned to work in this building. The building is occupied by up to two persons about every other day.

2.3. Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of activites at this facility in FY90.

2.3.2 Transportation/Storage.

Transportation of energetic materials to and from this facility is accomplished by W Transportation personnel. Gases are connected to the system by the building occupants.

2.3.3 Emergency Preparations.

No special emergency presparation or plans were noted. The building has no telephone available for emergencies.

2.3.4 Flow Chart References.

Not applicable.

2.4. Performance History (Mishaps) .

No mishaps occurring during the operation of this facility or attributable to tests conducted in this facility could be identified in Center records, or recalled by personnel familiar with the facility or its operatrions.

3. POST-TEST ACTIVITIES.

Energetic materials utilized in this facility create debris and airborne dusts and gases.

.1 Cleanup Operations.

The gaseous and particulate waste from operations is vented through vents in the roof of the building. No routine cleanup of residues from burning and cutting is performed.

3.2 Environmental Site Monitoring.

No environmental site monitoring is performed for this building.

4. FACILITY ENERGIES.

Significant energies associated with this building include high voltage electrical energy and flammable compressed gases and oxygen in cylinders. Cutting gases are alos manifolded at the building. A 10-ton crane is used by the occupants for handling materials associated with the building.

5. CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include adjacent facilities which may be downwind of the fumes from burning operations released unfiltered through the roof of the building.

Another exposure would be personnel in the building exposed to the same fumes. Gas released from cylinders stored near the facility would likely dissipate before exposing other parties.

6. SUPPLEMENTAL COMMENTS.

Operators run the 10-ton yard crane when required to satisfy their material handling needs

INDEX TO DESCRIPTIONS OF SIGNFICANT BUILDINGS

Appendix B contains descriptions of attributes of buildings visited during the site-visiting phase of the study. The buildings listed below were judged sufficiently significant to justify inclusion in this Appendix. A list of the buildings in Appendix B follows.

Liquid Fuel Storage Tanks

1 DESCRIPTION.

This Station has at least 32 storage tanks for fuel oil, gasoline and diesel fuel located near the power house and in other areas of the station. Tanks supplied with bulk deliveries are diked as shown in the remarks section of Table 1.

1.1 Location.

Underground tanks at White Oak are located as follows:

Table 1 Liquid Fuel Storage Tanks at White Oak

FacNum	Grid	Type	Contents	Remarks
1		275 g	gasoline	Removed '89
96	B4	41,000 g Steel	#2 Fuel oil	partial vehicle dike
97	B4	41,000 g steel	#2 fuel oil	partial vehicle dike
98	B4	41,000 g steel	#2 fuel oil	partial vehicle dike
99	B4	41,000 g steel	#2 fuel oil	partial vehicle dike
100	B3	500	Waste Oil	replace w above gnd
119	B3	?	unleaded gasoline	
120	B3	?	unleaded gasoline	
121	B3	1,000 g	diesel	
123	B3	4,000 g steel	#2 fuel oil	
124	B3	1,500 g	#2 fuel oil	
126	B3	41,000 g steel	#2 fuel oil	
127	B3	41,000 g steel	#2 fuel oil	
128	B3	4,500 g	#2 fuel oil	
131	B3	10,000 g steel	#2 fuel oil	
136	D5	10,000 g steel	# 2 fuel oil	i
137	B10	10,000 g steel	#2 fuel oil	
139	B10	10,000 g	gasoline	
201-1	C7	1,500 g	#2 fuel oil	mw
201-2	C7	1,500 g	#2 fuel oil	
217	D5	500 g	#2 fuel oil	
305	B10	1,000 g	#2 fuel oil	Repl FY 92
312		5,000 g	#2 fuel oil	Removed '89
323		5,000 g	#2 fuel oil	Removed '89
335	C9		#2 fuel oil	
336	C10	1,500 g	#2 fuel oil	
343	B10	5,000 g	acids	to be removed
346	D9		Pink water storage	
363	C9	500 g	#2 fuel oil	mw
368		10,000 g #2 FO	Out of service	
387	C11	500 g	gasoline	to be removed
409	B7	Undersea weapons tank	water	
413	B7	est 10,000g	LPG	high pressure
428	B7	Water storage tank	water	
432	B6	13,200 g LN2 tank		
611	D8	500 g	#2 fuel oil	
613		1,500 g	#2 fuel oil	Removed '89 -mw
620-2	B9	1,000 g	#2 fuel oil	

mw = monitoring wells

1.2 Equipment.

Special equipment associated with these tanks includes a gas heating system associated with 413. Tanks 409 and 428 are part of the undersea weapons testing tank systems. Special processing equipment is associated with Tank 346, a pink water treatment tank.

2 OPERATIONS.

2.1 Administration.

The tanks in this list are administered by Supply.

2.1.1 Facility operator(s)

The tanks are operated by the Departments using the contents. They are filled by contractors delivering the contents. Some is redistributed by the Transportation Branch.

2.1.2 Approving Authority for Tests.

n/a

2.1.3 Applicable Safety and Environmental Instructions.

See Appendix for applicable safety and environmental instuctions applicable in this building.

2.1.4 Licenses/Permits.

Not applicable

2.1.5 Applicable SOPs.

No SOPs for the operation of these tanks was identified.

2.2 Personnel

The tanks are not occupied.

2.3 Building Activities.

2.3.1 Test Activities, FY90.

There was no readily available data to document the amount and types of hazardous materials processed through these tanks in FY90. No inventory balance for contents of these tanks was available at the time of this study.

2.3.2 Transportation/Storage.

Fuel is redistributed from some tanks by the transportation branch in a station fuel truck to individual building fuel storage tanks for oil-fired building heaters.

2.3.3 Emergency Preparations.

Specific emergency procedures in the event of an emergency involving these tanks could not be identified

2.3.4 Flow Chart References.

Not applicable.

2.4 Performance History (Mishaps) .

No mishaps occurring during the operation of these tanks could be recalled by personnel familiar with the facility and none were found in Center records

3 POST-TEST ACTIVITIES.

Not applicable

3.1 Cleanup Operations.

Spills during transfers would be handled in accordance with the Center's Hazardous Materials spill plan.

3.2 Environmental Site Monitoring.

Environmental monitoring for these tanks is not performed.

4 FACILITY ENERGIES.

The primary energies associated with these tanks are gasoline and fuel oil. Other energy sources include the vehicle and operator which are associated with the fuel transfers, and environmental energies which can affect the tanks, such as ground water.

5 CANDIDATE ENVIRONMENTAL EXPOSURES.

Candidate environmental exposures associated with this facility include the inadvertant dumping of chemicals present in the building into sewers, and exposures to residues from the terminated plating shop operations.

6 SUPPLEMENTAL COMMENTS.

The White Oak underground stoarge tanks have been tested and a program for replacement is in progress.

APPENDIX C

TABLES

APPENDIX C-1 LIST OF SPACES INITIALLY CONSIDERED FOR STUDY

Bldg	Spaces	SqFt	Occupants	Bldg	Spaces	SqFt	Occupants
0001	276	74751	452	0135	1	369	0
0002	137	34020	182	0140	1	2848	0
0003	115	38175	177	0150	1	4794	0
0004	225	63349	421	0201	20	9137	17
0005	45	29222	29	0202	5	1156	4
0007	1	70	0	0203	2	3724	1
000A	1	3738	0	0204	1	2663	0
000B	1	3738	0	0205	5	2998	11
000C	1	3729	0	0206	5	4200	10
000M	1	3392	0	0207	3	1027	0
0016	1	60	1	0208	3	977	0
0017	1	102	0	0209	1	636	0
0019	2	495	0	0210	1	964	3
0020	136	59937	172	0214	1	86	0
0021	1	102	1	0215	1	67	0
0022	1	25	0	0217	7	5856	5
0023	1	60	1	0301	2	664	0
0024	33	16491	36	0302	1	648	0
0025	150	110305	231	0303	2	1385	0
0026	2	893	2	0304	9	967	2
0027	4	4323	0	0305	4	1168	2
0028	23	24228	11	0306	7	2303	0
0029	12	3228	13	0307	3	940	3
0030	69	16441	55	0308	6	1205	5
0035	1	1407	0	0309	3	667	4
0040	9	3104	11	0310	15	3463	14
0041	7	949	6	0311	9	1779	1
0048	1	224	0	0312	13	1244	1
0052	1	1100	0	0313	2	416	0
0068	1	28	1	0314	7	1082	1
0070	34	16822	20	0315	5	843	5
0071	16	22168	41	0316	2	572	0
0072	3	3553	0	0317	7	1164	1
0073	1	700	0	0318	14	2798	2
0075	1	816	0	0319	8	2165	8
0076	3	1368	0	0321	2	811	0
0077	1	576	0	0323	43	7606	45
0078	1	162	0	0324	5	864	1
0079	1	926	0	0325	2	619	0
0090	98	20037	105	0326	3	307	0
0092	1	89	0	0327	4	3425	8
0100	40	21723	37	0328	18	3272	10
0101	10	7327	17	0329	2	365	0
0104	2	244	0	0331	1	125	0
0108	1	950	0	0332	2	163	0
0109	4	2628	0	0333	2	618	1
0110	1	2956	0	0334	3	633	0
0111	1	4680	0	0335	15	756	2
0112	1	4000	0	0336	21	5562	20
0113	1	4000	0	0338	3	145	0
0115	3	738	0	0339	8	1066	0
0118	1	42	0	0340	4	890	3
0125	1	4860	0	0343	11	2214	7
0130	39	11887	33	0344	3	605	4
0132	35	23060	36	0345	1	450	1

APPENDIX C-1 LIST OF SPACES INITIALLY CONSIDERED FOR STUDY

Bldg	Spaces	SqFt	Occupants
0348	6	1576	7
0351	1	204	0
0352	1	204	0
0353	1	204	0
0354	1	204	0
0355	1	204	0
0356	1	70	0
0357	1	140	0
0358	1	70	0
0359	1	70	0
0360	1	140	0
0362	1	120	0
0363	9	2703	0
0364	1	152	0
0366	3	456	0
0369	4	766	0
0371	1	213	0
0372	1	168	0
0373	1	186	0
0379	1	172	0
0382	1	250	0
0385	1	164	0
0386	1	304	0
0387	1	48	0
0388	1	65	0
0389	1	640	0
0390	1	40	0
0391	1	169	0
0392	1	150	0
0393	1	12	2
0402	54	39206	51
0403	1	6432	3
0405	75	37315	53
0406	15	12615	8
0410	1	575	0
0411	20	7619	19
0414	1	210	0
0424	5	2334	0
0427	244	33746	53
0428	1	120	0
0430	20	20282	20
0433	1	482	0
0501	1	160	0
0506	1	100	0
0508	1	259	0
0510	3	2210	0
0611	5	4092	2
0613	15	2997	5
0615	1	140	0
0619	3	787	0
0620	8	2848	4
0700	1	800	0
0T01	1	940	0
0T05	6	997	6
0T14	1	1504	2
0T17	1	565	0
0T18	1	66	0
0T24	4	1779	0
0T26	1	476	0
0T27	1	476	0
0T28	1	79	0
0T29	1	960	2
0T30	2	7879	1
0T32	1	169	1
0T33	1	870	0
0T35	2	800	5
0T48	1	576	0
380T	2	1060	0
Totals:	**2441**	**955858**	**2537**

Note 1:

Facilities with 0 sq ft were not included initially. This left out facilities like storage tanks, which became of interest.

Note 2:

Space include closets and other spaces that would not be expected to have energetic materials or directed energies present.

Source: W Dept. FMDS 9/90

Appendix C- 2.1 White Oak Space Types Considered for Project.

Space/facility type	Total Sq Ft	Full-time personnel	Total Personnel	Spaces/ units
ANTENNA	0	0	0	2
BATTERY	286	0	0	1
BOILER	4394	0	0	20
CADD	1461	4	4	4
CLEAN RM	768	0	0	2
COMPRESSOR	18790	3	5	11
COMPUTER	16736	10	28	56
CONICAL TUBE	0	0	0	1
CONTROL RM	6721	10	11	22
DARK RM	782	0	0	7
DIKE	0	0	0	2
DISPLAY	44	0	0	1
DISPATCH	172	1	1	1
EQUIPMENT RM	3047	0	0	18
FIREBAY	5752	0	0	14
GUNRANGE	0	0	0	1
HORIZONTAL PIT	0	0	0	1
HYDR LAB	3500	0	0	1
LAB, NOT SPECIFIED	248462	277	409	478
MAGAZINE	228	0	0	3
N PIT	0	0	0	1
PHOTO LAB	818	0	0	4
PHOTO GALLERY	442	0	0	3
PREP RM	1540	1	1	5
PUMP RM	341	0	0	5
POWER SHOP	36581	59	79	20
RADAR RANGE	0	0	0	1
RECEIVING AREA	5831	4	11	3
SERVMART	7427	0	7	3
SHIPPING	400	0	0	1
SPE	4000	0	0	1
SPHERE	0	0	0	1
SPHERM	3895	0	0	2
STG/CHM	434	0	0	5
STG/CLD	895	0	0	3
STG/EQP	2459	0	0	18
STG/OPN	11056	0	0	3
STG/REF	816	0	0	1
STG/SOL	124	0	0	2
STG/XPL	2421	0	0	20
STGFUEL	320	0	0	2
STGXPLW	100	0	0	1
STORAGE	101520	1	1	287
SWG/PMP	0	0	0	1
TANK	0	0	0	6
TANK/D	0	0	0	1
TANK/FO	0	0	0	19
TANK/G	0	0	0	2
TANK/P	0	0	0	1
TECHOF	148817	1018	1156	634
TECHSH	48872	52	56	50
TOOLRM	720	0	0	2
TOWER	0	0	0	3
VAULT	36	0	0	1
VERTPIT	0	0	0	1
VIEWCUB	8670	0	0	92
WALL	0	0	0	3
WORK RM	487	0	0	4
WW XPFRM	368	0	0	1
XCHANGE	79	0	0	1
EXPLOSIVES LAB	3720	4	5	19
EXPLOSIVES OPN	0	0	0	1
XRAY	3715	0	1	8
Totals	708047	1444	1775	1888

Note: See Abbreviation Explanations on following page

APPENDIX C-2.2 EXPLANATION OF ABBREVIATIONS

Abbreviation	Explanation
amplant	ammonia plant
antenna	antenna
battery	battery room
blkhead	bulkhead
boiler	boiler room
CADD	Computer Aided Design
chemshw	chemical shower
chlor	chlorine room
cleanrm	clean room
cmd/ctr	command center
cold/rm	cold room
com/eqp	communication equipment/
comm	communications room
compres	air compressor
compute	computer room
conictb	conical shock tube
control	control room/firing bridg
darkrm	dark room
disptch	dispatcher's office
draftrm	drafting room
duty/rm	duty room
elec	electric panels
elec/ln	electrical distribution l
eleva	elevator
epwr	emergency power
eqp/rm	equipment room
fire/pi	fire protection pipelines
fire/tk	fire protection tank
firebay	firing bay
flngsta	filling station
garage	garage
gasgenr	gas generator vaporizer
genrtor	generator
gunrnge	gun range
heattmt	heat treatment room
holdtnk	holding tank
horzpit	horizontal pit
hosetwr	hose tower
hvac	Heating, Ventilation, Air
hydrlab	hydroballistics lab
lab	laboratory
magazin	magazine
monorl	monorail
npit	nitrogen bottle pit
office	office
PC&H	packing crating handling
pho/lab	photo lab
photgal	photo gallery
power	power plant
prep/rm	preparation room
pressrm	press room
primerm	priming room
pump/rm	pump room
pumphse	pump house
pwshop	Public Works shop
radrng	radar range
rcvg	receiving
rest/g	restroom/generic
rest/h	handicap restroom
rest/l	ladies restroom
rest/ll	ladies restroom lounge
rest/m	mens restroom
rest/ml	mens restroom lounge
restrm	restroom
san/sew	sanitary sewer
sep/tnk	septic tank
servmrt	Servmart
shelter	shelter
shpng	shipping
spe	stored program elements
sphere	vacuum sphere
spherm	sphere room
sprnklr	sprinkler
stg/chm	chemical storage
stg/cld	cold storage
stg/eqp	equipment storage
stg/flm	flammable storage
stg/oil	oil storage
stg/opn	open storage
stg/ref	refrigerated storage
stg/sol	solvent storage
stg/xpl	explosives storage/magazi
stgfuel	fuel storage
stgxplw	explosives waste storage
storage	general storage
swg/pmp	sewage pump station
tank	tank
tank/d	diesel tank
tank/fo	fuel oil tank
tank/g	gasoline tank
tank/p	propane tank
tank/pw	pinkwater tank
tank/wo	waste oil storage tank
tank/wt	water tank
techof	technical office
techsh	technical shop
test/st	test site
toolrm	tool room
vault	vault
vertpit	vertical pit
viewcub	viewing cubicle
vlv/hs	valve house
wall	retaining wall
workrm	work room
wwxpfrm	waste water explosives
xpl/lab	explosives lab
xray	x-ray

APPENDIX C-3.1 BUILDINGS OCCUPIED BY DEPARTMENTS INVOLVED WITH ENERGETIC MATERIALS AND DIRECTED ENERGIES AS OF 9/1/90

Building	User	Sq ft	Spaces
0001	E	4364	9
0001	G	649	3
0001	H	537	3
0001	R	9580	40
0001	U	8560	43
0002	E	200	1
0002	N	6157	30
0002	R	4581	14
0002	U	16305	76
0003	G	5728	28
0003	R	2735	12
0003	U	4777	22
0004	E	5329	7
0004	G	5092	24
0004	N	376	1
0004	R	10689	45
0004	U	22443	98
0005	U	624	4
0012	W05		1
0020	G	6654	19
0020	H	28799	47
0020	R	1972	6
0020	U	7409	25
0024	R	16491	36
0025	E	5633	14
0025	G	2778	6
0025	U	368	1
0026	R	893	2
0027	E	2003	2
0027	R	1160	1
0027	U	1160	1
0028	U	24228	24
0029	R	1108	6
0029	U	2120	6
0030	G	1888	6
0030	N	5122	17
0030	R	9431	46
0040	G	3104	9
0041	U	949	7
0070	R	16822	34
0071	E	10563	5
0071	R	1096	4
0076	R	1368	3
0090	R	12743	56
0090	U	247	1
0125	U	4860	1
0130	H	11887	41
0132	H	23060	35
0135	H	369	1
0201 3	W05		1
0201	R	1959	7
0201	U	7178	13
0202	H	1156	5
0203	H	3724	2
0204	H	2663	1
0205	H	1385	4
0205	U	1613	1
0206	H	4200	5
0208	U	977	3
0209	U	636	1
0210	H	964	1
0215	R	67	1
0217	U	5856	7
0301	R	664	2
0302	U	648	1
0303	R	1385	2
0304	R	967	9
0305	R	1168	4
0306 A	U	101	1
0306	R	2202	6
0307	R	940	3
0308	R	1205	6
0309	R	667	5
0310 A	R	3463	15
0311	R	1779	9
0312	R	1244	13
0313	R	416	2
0314	R	1082	7
0315	R	843	5
0316	R	572	2
0317	R	1164	7
0318	R	2798	14
0319	R	2165	8
0320	R		1
0321 1	R	61	1
0323	E	637	1
0323	R	6969	42
0324	R	864	5
0325	R	619	2
0326	R	307	3
0327	R	3425	4
0328	R	3272	20
0329	R	365	2
0330	R		1
0331	R	125	1
0332	R	163	2
0333	R	618	2
0334	R	633	3
0335	R	756	15
0336	R	5562	21
0338	R	145	3
0339	R	1066	8
0340	R	890	4
0343	R	2214	11
0344	R	605	3
0345	R	450	1
0348	R	1576	6
0351	R	204	1

APPENDIX C-3.1 BUILDINGS OCCUPIED BY DEPARTMENTS INVOLVED WITH ENERGETIC MATERIALS AND DIRECTED ENERGIES AS OF 9/1/90

Building	User	Sq ft	Spaces
0352	R	204	1
0353	R	204	1
0354	R	204	1
0355	R	204	1
0356	R	70	1
0357	R	140	1
0358	R	70	1
0359	R	70	1
0360	R	140	1
0362	R	120	1
0363	R	2703	9
0364	R	152	1
0366	R	456	3
0369	R	766	4
0371	R	213	1
0372	R	168	1
0373	R	186	1
0375	R		1
0379	G	172	2
0380	H		1
380T	H	1060	2
0382	R	250	1
0383	R		1
0385	R	164	1
0386	R	304	1
0387	R	48	4
0388	R	65	2
0389	R	640	1
0390	R	40	1
0391	R	169	1
0392	R	150	1
0393	R	12	1
0401	R		1
0402	E	2602	3
0402	K	35990	51
0405	K	2033	3
0405	N	13200	39
0405	R	7241	7
0405	U	2421	7
0406	K	6463	9
0407	K		1
0408	K		1
0409	U		1
0410	U	575	1
0411	K	2892	18
0411	R	3280	1
0412	K		1
0413	K		1
0414	K	210	1
0427	R	2960	25
0427	U	30786	221
0428	U	120	2
0429	K		1
0430	K	20282	21
0431	K		1
0432	K		1
0436	K		1
0501	W05	160	1
0503	R		1
0506	R	100	1
0508	W05	259	1
0510	R	2210	3
0609	H		1
0611	H	4092	5
0613	R	2997	15
0619	R	787	3
0620	R	2848	8
0630	R		1
0700	W05	800	1
0T01	U	940	1
0T17	G	565	1
0T18	R	66	1
0T26	R	476	1
0T27	R	476	1
0T28	R	79	1
0T29	R	960	1
0T35	R	800	2
0T48	E	576	1
	Totals	563778	1785

SOURCE: W Dept. Facility Management Data System 9/90

APPENDIX D

SYSTEM DEFINITION CHARTS

D-1 EXPLOSIVES HANDLING OPERATIONS FLOW CHART

OFF SITE GENERATED EXPLOSIVES

NAVY EXPLOSIVES OR ORDNANCE

DOD COMPONENT GENERATED EXPLOSIVE OR ORDNANCE

CONTRACTOR GENERATED EXPLOSIVE OR ORDNANCE

NSWC SECURITY

TRANSPORT VEHICLE STOPPED AT NSWC GATE.

SECURITY CHECKS SEALS ON TRUCK AGAINST MANIFEST.

SECURITY CONTACTS R-12 AND REPORTS SHIPMENT ARRIVAL.

SECURITY PROVIDES ESCORT TO VEHICLE.

ESCORT VEHICLE RETURNS TO SECURITY

R-12 OR BUILDING T-35

R-12 AGREES TO RECEIVE THE EXPLOSIVE,. CHECKS RECORDS TO DETERMINE STATUS OF SHIPMENT.

EXPLOSIVE VEHICLE ARRIVES AT T-35 RECEIVING AREA

R-12 RELEASES THE SECURITY ESCORT

ESCORT IS RELEASED AS SOON AS VEHICLE REACHES RECEIVING AREA AT BUILDING T-35

R-12 CHECKS MANIFEST ACCOMPANYING EXPLOSIVES.

SHIPPING WEHICLES ARE RELEASED WITHIN TWO HOURS OF ARRIVAL AT T-35

R-12 OFF LOADS VEHICLE IN T-35 PARKING AREA. MAXIMUN IS 200 LBS

R-12 PICKS UP FROM NSWC LOCATION.

PAPER WORK RE EXPLOSIVE SHIP-MENT IS PROCESSED AS REQUIRED.

R-12 INPUTS DATA RE EXPLOSIVE SHIPMENT INTO COMPUTER RECORD.

R-12 CALLS NSWC USER TO INFORM THEM OF ARRIVAL OF THE EXPLOSIVE.

NEED TO DETERMINE WHERE IN THIS PROCESS A WEAPON OR A PORTION OF A WEAPON WOULD BE INSPECTED AGAINST THE MANIFEST OR AGAINST THE ORIGINAL REQUEST FOR HARDWARE. SAFETY PROBLEM EXISTS WHEN LIVE ORDNANCE IS PRESENT AND SHOULD EITHER BE INERT OR HAVE BEEN DEMILITARIZED.

R-12 STAFF TAKES EXPLOSIVES TO MAGAZINE STORAGE PER APPLICABLE SOP.

R-12 STAFF LOADS EXPLO- SIVES INTO MAGAZINE ACCORDING TO SOP AND OP-5 REQUIREMENTS.

R-12 STAFF SECURES MAGAZINE ACCORDING TO OP-5 AND SOP REQUIREMENTS.

R-12 DETERMINES THE INVENTORY AND MAGAZINE LOCATION OF THE REQUESED MATERIAL/EXPLOSIVE.

R-12 CONTROLS ABOUT 13 MAGAZINES WHERE EXPLOSIVE MATERIALS MAY BE STORED

R-12 STAFF(2 PEOPLE) GO TO MAGAZINE AND REMOVE THE DESIGNATED MATERIAL OR EXPLOSIVE FROM THE MAGAZINE.

R-12 AND EXPLOSIVE TEST OPERATORS ARE REQUIRED TO HAVE YEARLY UPDATE OF EXPLOSIVES TRAINING. THIS ALSO INCLUDES DRIVERS LICENSES.

MOTOR POOL MAINTAINS EXPLOSIVE TRANSPORT VEHICLE

R-12 STAFF TAKES EXPLOSIVE TO WEIGHING / COUNTIN ROOM IN BUILDING T-28.

?

PROCEDURAL DIFFERENCES BETWE SOP 100 & 120 EXIST REGARDING CLEAN U AFTER WEIGHING AN HANDLING.

25 LBS MAXIMUM FOR BLA 100 LBS MAXIMUM FOR SM "WET" EXPLOSIVES REQU

NSWC USER OR DEVELOPER

NSWC DEVELOPED OR MANUFACTURED EXPLOSIVE.

NSWC USER REVIEWS/ DETERMINES NEEDS. (IMMEDIATE OR AT SOME FUTURE TIME).

NSWC USER REQUESTS R-12 TO PROVIDE THE DESIGNATED MATERIAL.

NSWC USER NOT READY OR CANNOT USE EXPLO-SIVES AT THIS TIME.

NEED TO DETERMINE WHERE IN THIS PROCESS A WEAPON OR A PORTION OF A WEAPON WOULD BE INSPECTED AGAINST THE MANIFEST OR AGAINST THE ORIGINAL REQUEST FOR HARDWARE. SAFETY PROBLEM EXISTS WHEN LIVE ORDNANCE IS PRESENT AND SHOULD EITHER BE INERT OR HAVE BEEN DEMILITARIZED

MOTOR POOL

SERVICES AND MAINTAINS THE NAVY EXPLOSIVE HANDLING VEHICLES

SAFETY OFFICE

REVIEWS STANDARD OPERATING PROCEDURES (SOP'S) FOR COMPLETNESS AND ACCURACY

EOD

DISPOSES OF EXPLOSIVES THAT CANNOT BE SHIPPED TO DAHLGREN

AFTER MEASUREMENT
IMPORTANT STEP. IF
MATERIAL IS HAZARDOUS
OVED AND TAKEN TO
362.

STAFF COUNTS OUT
/WEIGHS OUT THE
NT OF EXPLOSIVE
ESTED BY NSWC

STAFF RETURNS
SED MATERIAL BACK
AGAZINE.

WHERE POSSIBLE THE ORIGINAL PACKAGING CONTAINER IS USED.

R-12 STAFF PACKS THE MATERIAL INTO APPROVED CONTAINERS PER SOP.

R-12 PREPARES THREE PART EXPLOSIVES RECEIPT TO GO TO USER WITH THE MATERIAL.

PER SOP THE BUILDING LOCATION SUPERVISOR HAS TO AGREE TO ACCEPT EXPLOSIVES BEFORE VEHICLE CAN BE UNLOADED.

R-12 STAFF DELIVERS REQUESTED EXPLOSIVE OR DEVICE TO NSWC USER/ ENGINEER.

USING ENGINEER RECEIVES REQUESTED EXPLOSIVE OR MATERIALS.

USER SIGNS THREE PART RECEIPT TICKET. ONE PART IS RETURNED TO R-12. THE ORIGINAL RECEIPT STAYS WITH THE MATERIAL.

USER PERFORMS TESTS, ANALYSIS OR OTHER OPERATION WITH THE EXPLOSIVE OR MATERIAL.

NSWC USER COMPLETES HIS USE OF THE EXPLOSIVE OR MATERIAL

EXPLOSIVES OR MATERIAL IS UNCHANGED FROM ORIGINALLY DELIVERED.

USER/EXPERIMENTER CALLS R-12 FOR PICK UP OF EXPLOSIVE OR OTHER MATERIAL.

USER HAS MODIFIED EXPLOSIVE OR MATERIAL IN SOME MANNER. NOTE IS MADE AS TO CHANGE.

USER/EXPERIMENTER CALLS T-35 FOR PICK UP OF EXPLOSIVE OR OTHER MATERIAL.

USER OR EXPERIMENTER HAS COMPLETELY CHANGED ORIGINAL EXPLOSIVE OR MATERIAL. EX. HMX-PBX

USER/EXPERIMENTER CALLS T-35 FOR PICK UP OF NEW EXPLOSIVE OR MATERIAL.

USER OR EXPERIMENTER HAS USED UP EXPLOSIVE OR MATERIAL AND NONE REMAINS.

EXPERIMENTER RETURNS ORIGINAL THREE PART TICKET TO T-35. NO FURTHER ACTION BY EXPERIMETER.

USER OR EXPERIMETER HAS DEBRIS OR OTHER MATERIAL LEFT FROM TEST OR ANALYSIS.

USER COLLECTS DEBRIS TOGETHER IN APPROPRIATE MANNER.

USER CALLS T-35 ABOUT DEBRIS AND REQUESTS PICK UP.

R-12 STAFF GOES TO USER LOCATION AND PICKS UP EXPLOSIVE OR RELATED MATERIAL. ORIGINAL FOUR PART RECEIPT IS PICKED UP WITH MATERIALS.

R-12 TREATS THE RETURNED MATERIAL AS A NEW ITEM AND DEVELOPS A NEW INVENTORY DESIGNATION AND COMPUTER LISTING.

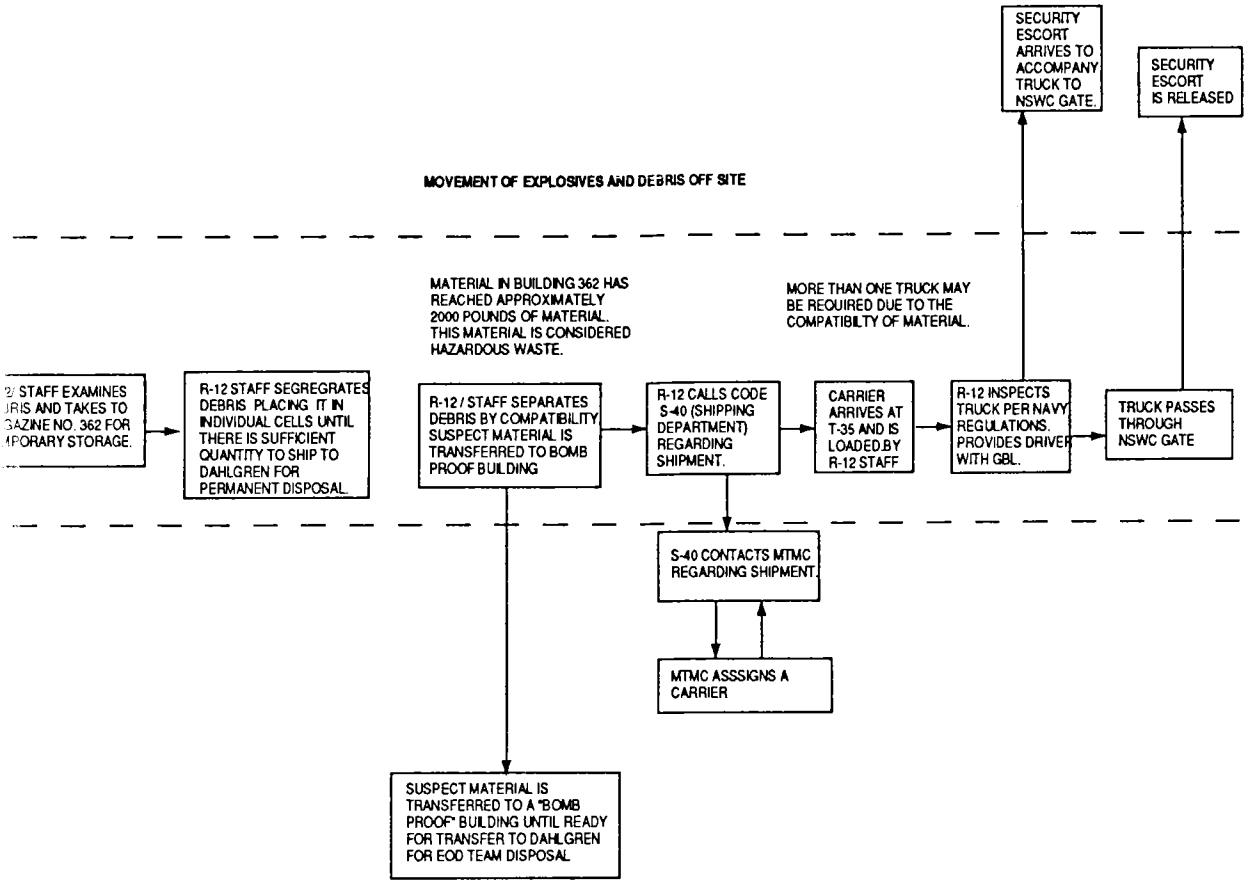
R-12 STAFF RETURNS EXPLOSIVE OR OTHER MATERIAL TO RECEIVING AREA AT T-35 LOCATION.

R-12 COMPLETES ALL INVENTORY AND COMPUTER RECORDS FOR RETURNED MATERIAL.

R-12 ENSURES THAT MATERIAL IS PROPERLY PACKAGED.

R-12 STAFF RETURNS EXPLOSIVE MATERIAL TO THE APPROPRIATE MAGAZINE.

R-12 STAFF COLLECTS THE DEBRIS FROM THE USER/ EXPERIMENTER.



APPENDIX D

NAVAL SURFACE WARFARE CENTER
WHITE OAK, MARYLAND

AMMUNITION AND EXPLOSIVES TRANSPORT FLOW CHART

Rev 4 7/31/91

APPENDIX E

EXAMPLES OF DEPARTMENT OF NAVY S&E DIRECTIVES

H

S

APPENDIX F

PRELIMINARY PHYSICAL FACILITY ENVIRONMENTAL SUMMARY,

R DEPARTMENT

SEPTEMBER 1990

PRELIMINARY PHYSICAL FACILITY ENVIRONMENTAL SUMMARY
R - DEPARTMENT,
NAVSWC WHITE OAK
SEPTEMBER 1990

I. GENERAL OBSERVATIONS

Awareness of safety and environmental responsibilities and duties was observed among the persons met during the site visits. These persons seem genuinely concerned about protecting the environment against insults by materials being used in the facilities, and about achieving safe operations. The level of individual sensitivity to risks posed in chemically oriented operations is highly variable.

Efforts to satisfy these responsibilities and address the concerns were evidenced by numerous past actions by R and others to improve compliance levels, and to reduce risks of accidental harm to personnel, Recent initiatives such as the building electrical ground upgrading project, drum inventory management, burying of electrical lines, reduction in explosives magazine inventories reflect a desire to ensure that facilities, hardware and the environment are in compliance during operation of these facilities. The absence of citizen complaints for the past four years, according to the Public Information Officer, suggests that NAVSWC's neighbors have not been stimulated to action by recent events at NSWC, and that the initiatives may be having a desirable effect from that perspective.

While environmental concern is universal, a desensitization of the professional staff to chemical risks was also observed. This appears to stem from the fact that many common chemical materials carry such strong manufacturers warnings (for liabilities purposes) that they are not credible to professional staff. The level of concern exhibited by several professional staff members seems to be based primarily on their familiarity with the product and personal experience, rather than MSDS information.

Generally, R department is observed to be compliant with environmental regulations per se. The mechanism of compliance, however, was observed to involve a heavy reliance on individual effort and seems to be conducted in a manner promoting quick fixes to immediate problems rather than systematic solutions. This approach is highly vulnerable to changes in regulations and difficult to evaluate for cost and effectiveness.

II. SPECIFIC OBSERVATIONS

II.1 AIR EMISSIONS

SOURCES:
- Bomb Proofs
- Laboratory Spaces
- Mix houses

NOTES:

BOMB PROOFS - explosive gas products
- secondary explosives - N, NOx, CO, CO2, H2O,CN
- primary explosives - Pb, Hg, As, residue depending

Entirely dependent upon the explosive components and completeness of detonation. Estimates could be provided concerning emission profiles however more data is necessary. Estimates would be provisional due to the lack of data characterizing actual emission products but could be derived empirically. Emissions result from explosives detonation and decomposition.

LABORATORY SPACES - solvent vapors
exhaust from instrumentation

Vapor evolution from laboratory spaces result from chemical operations carried out under the exhaust hood such as solvent drying, chemical storage, distillation and recrystalization operations and sample preparation. Volume at any one time is expected to be extremely small.

MIX HOUSES - solvent vapors
vapors from explosive compounds
dust from explosives compounds

Emissions from mix, casting, and milling operations will generally come in the form of solvent vapors driven from explosive mix compositions. Small amounts of dust can be generated and are usually controlled by water sprays as a matter of safety. Actual vapors released from explosive compounds used will be small due to the vapor pressure of the materials used. The majority of gas created will come in the form of the solvents used in creating, blending, and storing explosive materials.

REGULATORY COMMENTS:

Air emissions probable from White Oak should be estimated and compared with the states requirements. Because air regulations involve trade-off possibilities within a given facility, air inventories should also consider automotive usage, paving operations, incinerators, and other sources on site not related to explosives operations. If controls are necessary, simple procedures or changes in operation may suffice to reduce the emission base's emission profile in leu of the construction of new containment and capture systems.

II.2 HAZARDOUS WASTES:

SOURCES:
Bomb Proofs
All laboratory spaces
Mix houses
Magazines
Storage areas
Test and Evaluation areas

NOTES:

White Oak, as an installation, supports a unified hazardous waste management program. This program is conducted in conjunction with Dahlgren and includes both explosive and non-explosive hazardous waste management. At Whiteoak, The system essentially begins with the deposition of waste non-explosive materials at the waste storage site. Prior to that delivery, the responsibility for hazardous waste management rests with the individual who generates the waste. While the program is effective in complying with the regulatory requirements at the base level, vulnerability to regulatory infractions exists at the department level.

No R department management system was identified to assure compliance with the waste management plan. Further, short of personal experience, no method for assessing waste disposal needs the department level or for that matter at the building level was identified. Since waste management and disposal costs will soon become the burden of the department, assured compliance and effective cost management can only be guaranteed through adequate department level programs. As operations are defined and procedures established, there is no doubt that some modification of the physical facility will be required.

Explosive wastes are disposed of via open burning/open detonation (ob/od) at Dahlgren. This activity is currently permitted but is also a source of study and controversy at the local, state, and federal level. There exists strong reason to believe that in the next few years, the practice will be severely limited or curtailed. While not an immediate problem, the disposal of energetic materials is a basic requirement of R department. Loss of the capability or serious, unplanned increases in disposal costs could threaten the R departments basic ability to conduct business. Planning activities should be undertaken to identify destruction, disposal, and reclamation options to the ob/od method of waste treatment.

II.3 ASBESTOS:

SOURCES: Probably all R department Buildings

NOTES:

No concerted effort was made to identify all locations where asbestos is used in this effort. However, there is a strong likelihood that asbestos has been used extensively in the construction of all R department buildings. Warning signs posted on several buildings suggest the existence of an asbestos management program and no obvious friable asbestos was observed.

II.4 POLYCHLORINATED BIPHENOLS (PCBs)

NOTES:

PCB labeled transformers were noted in the R department area; however these are on utility poles and already the subject of an ongoing PCB management program conducted by W department. No PCB containing devices were observed in R department buildings.

II.5 WATER POLLUTION:

NOTES:

No direct discharges were observed from any R department building to any stream, ditch, or culvert. Two areas were observed where contaminated water could result in contaminated runoff. These were the 314 bombproof and bldg. 318. Both buildings are hosed out with water for cleanup.

In bldg. 318 explosive waste is hosed out of the work areas into floor trenches along the rear floor of the building. Water was observed behind the building indicating that it is possible to loose some contaminated water to the environment. Whether or not this is the case or to what degree, if any, runoff may be contaminated should be assessed.

The 314 bombproof is washed regularly and is used to conduct underwater tests. While no drains were observed in the shelter, water drains freely out the entrance. The level or even presence of contamination should be assessed.

II.6 SPILL CONTROL AND PREVENTION

NOTES:

All R department buildings are possible spill sites. No unified spill control plan was identified and, in the case of a large spill, county fire and hazmat units are relied upon to provide emergency response. While the quantities of materials are low and the likelihood of a spill of over 55 gallons (a drum quantity) is likewise, low the diversity and nature of the materials stored at Whiteoak indicate the need for response expertise beyond the communities capability.

Spill control and response require investments in equipment and training and these should be considered. R department planning efforts should be implemented to assure that adequate spill control is available. Depending on the results of spill planning efforts, some building modifications may be indicated to effect containment and facilitate clean-up. These may take the form of diking, captive drainage systems, etc.

III. OBSERVED NON-COMPLIANCE

The following were observed instances of non-compliance during walk-throughs of R 10 facilities

1. Non-compliance recognized by waivers.

a. NSWC E1-76 Lightning protection waivers

Need: Options: (1) continue to apply for and hope to get waivers, or (2) provide protection for all required buildings. Progress is being made to reduce the number of buildings requiring waivers. Refusal to renew waivers in the future is reasonably foreseeable.

Cost: (1) minimal for time spent on renewals; if not renewed, could seriously disrupt operations in affected buildings, greatly increasing cost of this option.

(2) $_____

b. NSWC-WO- 1C-78 Minimum fragment distance waiver for 17 locations.

Need: Options: (1) continue to get waivers renewed or (2) reduce quantity limits for each location, or (3) move storage. T35 operation particularly should be moved since the potential for violations of quantities is particularly high because of the transportation activities in the area.

Cost: (1)

(2)

(3)

c. NSWC WO-1-77 Building distance to utility Lines, waiver for 32 locations.

Need: To bury or protect utility lines to those buildings. Substantial progress has been made with electricity lines; phone lines remain a problem.

Cost: $3,800,000

2. Instances within R not covered by waivers include

a. Hoods and hood ducts

Need: 13 hood and duct-related instances not conforming to NFPA standards were observed. Correction would require actions ranging from significant building modifications to minor procedural changes, depending on which and how many hoods are kept in service..

Cost.

b. absence of a complete chemical emergency response plan for chemical spills.

Need: To develop and implement emergency response plan.

Cost:

c. Potential for contribution to a violation of Maryland Air Pollution control law limits

Need: Air pollution emissions need to be inventoried for entire Center, including R; based on findings, emission controls may or may not have to be instituted in R, depending on where most cost-effective controls can be established to meet Center shortcomings, if any..

Cost: Emission control study: $

Emission controls: Contingent on study findings.

III. OBSERVED CIRCUMSTANCES THAT INCREASE THE PROBABILITY OF FUTURE NON-COMPLIANCE, OR INCREASE FUTURE RISKS,

During the facility visits, a number of circumstances which pose uncertain safety and environmental risks were identified. These risks involve included low probability and potentially high consequence events, given present operations. The risks include

a. performance of older buildings in a mishap involving currently rated explosive quantities.

Need: review explosive-rated buildings to verify predicted performance, as was done with 335. Also need to review explosion effects on aging buildings exposed to blast effects.

Cost:

b. anecdotal information raising uncertainty about the seismic isolation of facilities in which explosions of rated quantities either take place or could take place.

Need: Determine seismic coupling characteristics of locations where over x lb of explosives weight are found.

Cost:

c. inadvertent discharges of chemicals or hazardous wastes into drains and lines whose termination was uncertain for some buildings.

Need: To identify terminations and determine if contamination has occurred in those locations. May include excavation or new wells, depending on findings. (Not previously studied)

Cost:

d. actions that might be precipitated by the closing of open burning and open detonation facilities. Some work on this problem has been done at Indian Head, and other options may be available..

Need: To examine alternative explosives waste recovery or treatment options to replace open burning/open detonation.

Cost:

e. the loosely controlled acquisition, redistribution, storage and disposal of chemicals in the absence of a sound chemical supply and inventory management system.

Need: To implement a sound chemical management and inventory control plan Inventory control to reduce variety, quantity, hazards of chemicals used. Will be addressed in E&S Master Plan project. Some improvements initiated. Options may require new chemical storage facility, distribution service and inventory tracking system; if so, see cost below.

Cost:

f. unpredictable spill cleanup performance and uncertainties about cleanup responsibilities.

Need: To develop plan to define responsibilities and expected performance, and produce it reliably.

g. safe performance problems introduced by future work force turnover.

Need: The heavy reliance on individual initiatives for environmental and safety compliance, and reported reliance on OJT for training suggest a potential increase in risk, especially in high turnover elements of the organization (50% in 3 years in one group handling explosives.) and a need to find alternative employee task preparation.

Cost: $

h testing of uncharacterized energetic materials in these facilities

Need: Increased risks suggest need to explore alternative methods for processing and testing, including possibility of remote or robotic equipment.

Cost: $

i. damages due to seismic coupling during accidental magazine explosion

Need: Anecdotal report of past experience and observed outcrops near magazine sites suggest need to identify seismic coupling risks

Cost: $

j. process for introducing new hazardous operations into explosives areas.

Need: History of lithium battery testing experience suggests need for improved process for risk assessment and control for the introduction of new materials into explosives testing areas. Issue will be addressed in E&S Master Plan study.

Cost: $

k. dry deluge system sensor response and charging time delays and shutoffs.

Need: Reported sensor and startup timing suggests need for review of energetic materials handled in each bay, scenarios for ignition and spread of fires, fire suppression timing, and deluge run-off capacity and control to determine adequacy of present systems.

l. Firing Chamber Exhausts.

Need: In several laboratories in Building 30 (Room 124 for example), firing chamber exhausts had been manifolded into the hood exhaust systems. This raises the question - Will the pressure from the firing gases overpower the hood exhaust system and direct the gases down and out of the laboratory hoods? This concern can be laid to rest by tests during use.

m. Asbestos dispersion potential in mishap.

Need: Better understanding of asbestos dispersion potential in an explosion in a bay that would pulverize transite/asbestos roof or piping insulation and effects on response personnel and others was suggested by observed materials of construction in bays for explosives handling; might require asbestos replacement in bays where explosives are being processed.

n. Chemical Hygiene Plan

Need: OSHA-required chemical hygiene plan should be established for some of the laboratories handling prescribed hazardous chemicals, particularly in Bldg 30 and 343.

o. Water pollution

Need: Need to review potential water pollution from runoff from 314, where underwater tests are conducted in bombproof with floor that "pumps" water when floor plates are loaded.

III.2 ,a. Hoods and Hood Exhausts:

1. Manifolded hoods.

Need: The hoods in Buildings B343 and B310A are manifolded together and exhausted downward, at a 45 degree angle, from the side of a "Mansard Facade Roof" instead of exhausting in a vertical direction above the roof. With heavier than air fumes, this will expose individuals below to the exhausted vapors and increase the probability of drawing the exhausted vapors back into the building. We were told that the snow melts rapidly in the areas under these exhausts which tends to support the exposure hypothesis. NFPA 45 6-9.7 requires the hoods to exhaust vertically, above the roof line. The Appendix to this reference sites 7' above the roof as a minimum height.

Cost: $60,000

2. Hood Exhaust outlet location.

Need: Several hoods in Buildings 30 exhaust on the side of the building instead of above the roof. When heavier than air fumes are exhausted, this will expose individuals below to the exhausted materials and increases the probability of drawing the exhausted vapors back into the building. The

requirement to exhaust the hoods vertically, above the roof line is at NFPA 45 6-9.7. The Appendix to this reference sites 7' above the roof as a minimum height.

Cost: $50,000

3. Pressurized hood ducts.

Need: Numerous instances of laboratory hoods with pressurized exhaust ducts were observed. The pressurized ducts result from the exhaust fans being in or next to the hood instead of at or near the end of the exhaust system (See Buildings 344, 328, 318,348, 312, and Room 021 in 30). The risk here is that any leaks in the ducts will result in the exhausted chemicals being blown into occupied spaces inside the building. The NFPA requirement to maintain the ducts at a negative pressure relative to occupied spaces is contained in NFPA 45-6-5.4.

Cost: $5000 per hood for roof mounted exhaust fan system

4. Hood spill airfoils.

Need: Almost without exception, the hoods surveyed did not have airfoils, to direct the air flow, or spill containment capabilities. The majority were simply mounted on a flat stone surface. The lack of airfoils coupled with in some cases a high face velocity (one was labeled as 312FPM) increases the probability of turbulence when the scientist stands in front of the hood which can result in the hood contents mixing with the laboratory atmosphere.(NFPA 45 6-9.1.3)

Cost: Airfoils and spill containment are estimated to cost $1000 per hood.

5. Hood low airflow alarms.

Need: The only low airflow devices noted were in Building 343 and the bulbs had been removed from these warning devices. (NFPA 45 6-9.7) A low airflow warning device will alert the scientists to such failures as belt failure which would not otherwise be apparent.

Cost: Low airflow warning devices are estimated to cost between $265-550 per hood, plus installation, depending on model.

6. While not observed during the building inspections, it was reported that ducts in some buildings had examined and found to have accumulations of explosive material (NFPA 45 a-7-2.2.2). The ducts were going to be replaced by NSWC personnel..

7. Room air pressure differentials.

Need: Although not quantified, observations suggest that the laboratory rooms in Building 30 are at a higher pressure than the halls. (NFPA 45 6-4.2) This can result in air movement from the laboratories to common spaces when the doors are opened. In Building 30, this is exacerbated, by the existence of personnel not related to the laboratory functions(N14). Very difficult to cost out without air balancing testing; can be a major cost item if the HVAC system needs to be modified or if ducting has asbestos if ducting has to be modified. Also, Building 30 should be examined to determine what functions are best carried out there and where those functions should be located, e.g., required flow of hazardous materials through the floors, fire suppression capabilities, exit paths, etc.

8. Glovebox usage.

Need: A LABCONOCO glove box was located in the hall of Building B310A. (NFPA 45 A-6.5.1) This box has no external exhaust and relies on filters. It should be used for nuisance fumes only. No use limitations were observed.

9. Canopy hood.

Need: In Building 620 what is basically a canopy hood has been jury rigged into a fume hood by the addition of a Plexiglass shield on the front. (NFPA 45 6-3) Re-examine the use of this hood and as appropriate limit its use to nuisance fumes.

10. Blocked hoods.

Need: The area directly in front of fume hoods has been blocked in some cases by furniture or large pieces of laboratory equipment (example 343-Room102). (NFPA 45 3-5) This can result in turbulence at the face of the hood.

11. Chemical storage in hood.

Need: It appears that several hoods are used for the storage of chemicals, contrary to NFPA 45 A-7-2.3. . This is based on the appearance and condition of the bottles standing in the hoods.

12. Explosion-resistant hoods.

Need: While not confirmed, given the locations involved, fume hoods that are not explosion resistant may be being used to handle explosive materials. (NFPA 45 5-2) If this is so, and an explosion occurs, the fume hood components may be a contributor of shrapnel.

13. Second fire exit from lab.

Need: Although it needs to be confirmed during the fire survey by an FPE, none of the laboratory rooms in Buildings 30 and B343 had a second exit (NFPA 45 3-4.1 requires a second means of access to an exit when an explosion hazard exits that could block escape or access.) The location of the fume hoods adjacent to the doors in some rooms exacerbates this apparent problem.