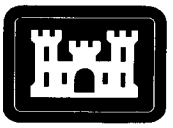


US Army Corps of Engineers®
Wilmington District

Safety and Occupational Health Program

District Regulation 385-1-1

8 June 1999

CESAW-SO

29 January 2001

MEMORANDUM FOR DISTRIBUTION B

SUBJECT: Implementation of Risk Management

1. Last year we were tasked by the Chief of Staff, Army to focus on safety and use the Five-Step Risk Management (RM) Process to aid in reducing or preventing accidents. Achievement of this goal required the development of a written risk management program. This program is contained in Appendix DD of CESAW-DR 385-1-1 (enclosed). The risk management process contained in the appendix will be used in all phases of our missions (e.g. planning, design, and construction).

2. I ask that you ensure that all TEAM members are made aware of the risk management process, and most importantly, that they use the process. I am confident that risk management will aid in reducing or preventing accidents. The objective is simple – reduce or eliminate accidents by managing risk.

3. Please insert the enclosed appendix into DR 385-1-1. If you have any questions, please call the Safety Office.

JAMES W. DELONY
COL, EN,
Commanding

Encl

APPENDIX DD
RISK MANAGMENT

1. Purpose. This appendix establishes policy and procedures for implementing the Risk Management Process into safety for all activities accomplished by government and contractor personnel within the Wilmington District.

2. References.

a. EM 385-1-1, U.S. Army Corps of Engineers, Safety and Health Requirements Manual. Sep 96

b. AR 385-10, Department of the Army, Army Safety Program. Feb 00

c. FM 100-14, Risk Management. Apr 98

3. General. Risk management is the process of identifying, assessing and controlling risks arising from operational factors and making decisions that balance risk costs with mission or task benefits. Proficiency in applying risk management is critical in reducing injuries, illness or death of personnel, damage or loss of equipment or property, and damage to the environment.

a. Risk Management is fundamental in developing a confident and competent workforce. Risk management should be integrated into every task that is undertaken.

b. All Wilmington District personnel, including new hires, will be chain taught the risk management process.

c. **Risk Management is not a substitute for applicable safety regulations and does not justify bypassing risk controls required by law.**

d. Risk management assists in complying with regulatory and legal requirements by:

(1) Identifying applicable legal standards that affect the mission, task, or activity.

(2) Identifying alternatives, standards, or SOPs that meet the intent of regulatory and legal requirements.

(3) Ensuring better use of limited resources through establishing priorities to correct known hazardous conditions.

4. Definitions.

a. Hazard. A hazard is an actual or potential condition that can cause injury, illness, or death of personnel, damage to or loss of equipment, and property, or damage to the environment.

b. Risk. Risk is the probability and severity of loss from exposure to a hazard.

c. Risk Assessment. Risk assessment is the probability and severity of a mishap that could result from the hazard and determines the exposure of personnel, equipment, property or the environment to that hazard.

5. The Risk Management Process.

a. Risk Management is a systematic five-step process that can be applied to all aspects of a mission, task, or activity that identifies, assesses, and controls hazards.

b. Steps 1 and 2 together comprise the risk assessment. In Step 1, the hazards that may be encountered in executing a mission, task, or activity are identified. In Step 2, the direct impacts of each hazard on that mission, task, or activity are determined. The risk assessment provides for enhanced situational awareness and the awareness allows management and staff to take timely, efficient and protective measures to reduce or eliminate the potential for accidents.

c. Steps 3 through 5 are the essential follow-through actions to effectively manage risk. In these steps, appropriate actions are taken to reduce or eliminate risks. During planning, design, and execution, management continuously assesses the risk to the overall mission, task, or activity and evaluates the effectiveness of controls and provides lessons learned so that others may benefit from the experience.

6. The Five Steps Applied.

a. Step 1 - Identify hazards. The objective is to identify those hazards most likely to result in personal injury, damage to property, or the environment. The ability of personnel to identify hazards is key. One reality of any mission is the potential for a hazard to form while the mission is underway. Management and staff should be aware of this possibility. Complacency to the fact that existing controls may not continue to control hazards in rapidly changing situations should be viewed as a hazard in itself. Hazards are identified in the following manner:

(1) Experience or lessons learned.

(2) Brainstorming.

(3) Safety inspections.

(4) Publications.

(5) Accident information.

(6) Scenario thinking - what if?

b. Step 2 - Assess hazards. This step completes the risk assessment. This step examines each hazard in terms of probability and severity to determine the risk level of one or more hazardous incidents that can result from exposure to the hazard. Assessing the hazards is conducted in three substeps.

(1) Substep A. Management and staff assess each hazard in relation to the probability of a hazardous incident. The probability levels estimated for each hazard may be based on the activity and frequency of a similar event. The five degrees of hazard probability are defined below (the letters in parentheses following each degree (A through E) provide a symbol for depicting probability):

(a) **Frequent (A).** Occurs very often, continuously experienced.

(b) **Likely (B).** Occurs several times.

(c) **Occasional (C).** Occurs sporadically.

(d) **Seldom (D).** Unlikely, but could occur at sometime.

(e) **Unlikely (E).** Can assume it will not occur.

(2) Substep B. This substep addresses the severity of each hazard. The degree of severity estimated for each hazard may be based on knowledge of similar past events. The four degrees of hazard severity are defined below (the Roman numerals in parentheses following each degree (I through IV) provide a convenient symbol for depicting severity):

(d) **Catastrophic (I).** Death or permanent total disability, and significant property damage ($1,000,000 or more) or mission failure.

(e) **Critical (II).** Permanent partial disability, temporary total disability in excess of 3 months, significant property damage ($200,000 but less than $1,000,000), or significant mission, task or activity degradation.

(f) **Marginal (III).** Minor injury, lost workday/lost time incident, minor system damage, minor property damage ($10,000 but less than $200,000), or mission, task, or activity degradation.

(g) **Negligible (IV).** First aid or minor medical treatment, minor system impairment ($2,000 but less than $200,000), or little/no impact on mission, task or activity accomplishment.

(3) Substep C. In this substep, management and staff expand what is understood about probable hazardous incidents into estimates of levels of risk for each identified hazard and an estimate of the overall risk for the operation. Estimating risk follows from examining the outcomes of Substeps A and B, that is, both the probability and severity of hazardous incidents. Much depends on the use of tools such as:

(a) Historical accident/injury data.

(b) Intuitive analysis of the task.

(c) Judgment.

(d) Activity hazard analysis.

Uncertainty can arise in the assessment of both the probability and severity of a hazardous incident. Uncertainty results from unknowns about a situation; from incomplete, inaccurate, undependable, or contradictory information; and from unforeseen circumstances. Therefore, assessment of risks requires good judgment.

Annex I provides a standardized matrix that can be used to assist in this process. Management and staff enter the estimated degree of severity and probability for each hazard in Substeps A and B from the severity row and probability column, respectively. The point where the severity row and probability column intersects defines the level of risk. For example, if the hazard is estimated to have a *critical* severity (II) and a *likely* probability (B), the level of risk is high (H).

c. Step 3 - Develop controls and make risk decisions. Step 3 is accomplished in two substeps: develop controls and make risk decisions.

(1) Substep A - Develop controls. After assessing each hazard, management develops one or more controls that either eliminate the hazard or reduce the risk (probability and/or severity) of a hazardous incident. When developing controls, consideration is given to the reason for the hazard, not just the hazard itself.

(a) Types of controls. Controls fall into five basic categories: engineering, safety regulations, educational, physical, and avoidance.

(1) Engineering controls. These controls are implemented through the use of engineering (redesign), where feasible, to reduce or eliminate the hazards. New facilities should always use engineering to reduce or eliminate known hazards.

(2) **Safety regulations. Compliance with all applicable safety regulations is required by law.**

(3) Educational controls. These controls are based on the knowledge and skills of personnel. Effective control is implemented through training that ensures performance to standard.

(4) Physical controls. These controls may take the form of barriers and guards or signs to warn individuals that a hazard exists. Additionally, special controller or oversight personnel responsible for locating specific hazards fall into this category. Other physical controls include personal protective equipment such as hearing protection, respirators, etc.

(5) Avoidance. These controls are applied when management takes positive action to prevent contact with an identified hazard.

(b) Criteria for Controls. To be effective, each control must meet the following criteria:

(1) Suitability. It must remove the hazard to an acceptable level.

(2) Feasibility. The capability to implement the control must exist.

(3) Acceptability. The benefit gained by implementing the control must justify the cost in resources and time. The assessment of acceptability is largely subjective. Annex II gives criteria for determining acceptability of controls for each identified hazard.

Examples of controls:

- Engineering or designing to eliminate or controls hazards.
- Control of hazardous energy (lockout/tagout), and confined space entry programs.
- Selecting or developing a SOP that avoids identified hazards.

- Limiting the number of people and the amount of time they are exposed to hazards.

- Selecting personnel with appropriate mental, emotional, and physical capabilities.

- Providing protective clothing, equipment, and safety devices.

(c) Residual risk. Once management develops and accepts controls, residual risk associated with each hazard and the overall residual risk for the task is determined.

(1) Residual risk is the risk remaining after controls have been selected for the hazard. **Residual risk is valid only if the controls for it are implemented.** As controls for hazards are identified and selected, the hazards are reassessed as in Step 2 and the level of risk is then revised. This process is repeated until the level of residual risk is acceptable or cannot be further reduced.

(2) Overall residual risk of a task must be determined when more than one hazard is identified. The residual risk for each of these hazards may have a different level, depending on the assessed probability and severity of the hazardous incident. Overall residual mission risk should be determined based on the incident having the greatest residual risk. **Determining overall task risk by averaging the risks of hazards is not valid.** If one hazard has high risk, the overall residual risk of the mission is high, no matter how many moderate or low risk hazards are present.

(2) Substep B - Make risk decisions. A key element of the risk decision is determining if the risk is justified. Management, at the appropriate level, must compare the risk against the benefit. Management decides if controls are sufficient and acceptable and whether to accept the resulting residual risk. If the determination is made that the risk level is too high, additional or alternate controls will have to be developed. The risk decision matrix (Annex III) can be used in the planning process to make risk decisions for non-routine missions, tasks or activities. For contractors, the decision matrix should be based on the company's organizational structure.

d. Step 4 - Implement controls. Management must ensure that controls are in place that eliminate or reduce the hazards. Implementation methods include the following:

(1) Coordination and communication with all affected personnel prior to executing the task.

(2) Regulations and policy letters.

(3) Standard operating procedures (SOP's)

(4) Tool-box safety meetings.

(5) Activity hazard analysis.

(6) Orientation and training.

(7) Exercises.

e. Step 5 - Supervise and evaluate. During task preparation and execution, management must ensure that all understand how to execute risk controls. The effectiveness of the controls implemented should be continually evaluated and adjusted or updated as necessary.

(1) Supervise. Management must supervise task execution to ensure standards, and controls are enforced. Techniques may include spot-checks, inspections, situation reports, brief-backs, buddy checks and close supervision. During the task, management continuously monitors controls to ensure they remain effective. Controls may be modified as needed to keep risk at an acceptable level. Management and staff anticipate, identify, and assess new hazards to implement controls. They continually assess variable hazards such as fatigue, equipment serviceability, and the environment.

(2) Evaluate. After a task is complete, management and staff evaluate how well the risk management process was executed. They determine how to:

(a) Ensure that successes are continued to the next task.

(b) Capture and disseminate lessons learned so that others may benefit from the experience.

(c) Consider the effectiveness of the risk assessment in identifying and accurately assessing the probability and severity of hazards.

(d) Determine whether the level of residual risk of each hazard and of the overall mission were accurately estimated.

(e) Evaluate the effectiveness of each control in reducing or removing risk. Including whether controls were effectively communicated implemented and enforced.

Management and staff should determine, if applicable, why some controls were ineffective and what should be done when the hazard is encountered again. A control may be altered; the way it is implemented or supervised may be changed to make it effective; or a completely differently control may be more effective.

6. Examples. Examples of the Risk Management Process are contained in Annex IV.

ANNEX I
RISK ASSESSMENT MATRIX

RISK ASSESSMENT MATRIX

		Frequent	Likely	Occasional	Seldom	Unlikely
		A	B	C	D	E
Catastrophic	I					
Critical	II					
Marginal	III		Moderate			
Neglible	IV					

CATASTROPHIC Death or permanent total disability, total property damage of $1,000,000 or more, mission failure.

CRITICAL Permanent partial disability, property damage of $200,000, but less than $1,000,000, or potential for 3 or more to be admitted to the hospital.

MARGINAL Minor injury, lost workday incident, property damage between $10,000 and $200,000.

NELIGIBLE First aid or minor medical treatment, property damage between $2,000 and $10,000.

FREQUENT Occurs often or continuously experienced.

LIKELY Occurs several times.

OCCASIONAL Occurs sporadically

SELDOM Unlikely, but could occur at some time.

UNLIKELY Can assume it will not occur.

ANNEX II
CRITERIA FOR DETERMINING ACCEPTABILITY OF CONTROLS

SUPPORT Availability of adequate personnel and supplies necessary to implement suitable controls.

STANDARDS Guidance and procedures for implementing a control are clear, practical, specific, and in compliance with applicable safety regulations.

TRAINING Knowledge and skills are adequate to implement a control.

LEADERSHIP Leaders are competent to implement a control.

TEAM MEMBER Team members are sufficiently self-disciplined to implement a control.

ANNEX III
RISK DECISION MATRIX

RISK DECISION MATRIX

		Frequent	Likely	Occasional	Seldom	Unlikely
		A	B	C	D	E
Catastrophic	I					
Critical	II					
Marginal	III		Ops Mgr/Res Engr			
Neglible	IV					

Notes: 1. The use of this matrix is optional for routine procedures.
2. The use of this matrix is required for non-routine procedures.
3. The use of this matrix is optional for contractors and it should be adjusted accordingly to fit their organizational structure

ANNEX IV
EXAMPLES

NOTE: THE EXAMPLES PRESENTED IN THIS ANNEX DO NOT INCLUDE ALL HAZARDS ASSOCIATED WITH THE TASKS THAT ARE LISTED

RISK MANAGEMENT WORKSHEET

A. Mission/Activity: Hydraulic Dredging Operations	**B. Prepared By:** Xxxx Y. Zzzzz	**C. Date:** 7 Sep 2000

D. Task	**E. Identify Hazards**	**F. Assess Hazards**	**G. Develop Controls**	**H. Determine Residual Risk**	**I. Implement Controls (How To)**
Transferring between floating plant	Drowning from falling overboard.	High (H)	• All personnel and visitors are required to wear a Type III or better PFD. • Advise all to wait for safe signal from boatman to embark/disembark.	Low (L)	SOP requiring that all personnel be briefed prior to commencement of work and visitors prior to visiting the site. Written SOP for embarking and disembarking. **Enforcement.**
	Pinching between equipment.	High (H)	• Wait until launch is completely against equipment before transferring. • Transfers will be made on the lee side of the equipment. • Transfers will be made during safe weather conditions with conditions being determined by the Captain. • Prohibit jumping from one vessel to another.	High (H)	SOP requiring that all personnel be briefed prior to commencement of work and visitors prior to visiting the site. Written SOP for embarking and disembarking. **Enforcement.**

J. EQUIPMENT TO BE USED	**K. INSPECTION REQUIREMENTS**	**L. TRAINING REQUIREMENTS**
Dredge and tending plant	N/A	Indoctrination training, weekly safety meeting

M. Determine overall activity/task risk level after controls are implemented (circle one)

LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)

RISK MANAGEMENT WORKSHEET

A. Mission/Activity: Hydraulic Dredging Operations	B. Prepared By: Xxxx Y. Zzzzz	C. Date: 7 Sep 2000

D. Task	E. Identify Hazards	F. Assess Hazards	G. Develop Controls	H. Determine Residual Risk	I. Implement Controls (How To)
Transferring between floating plant (cont)	Pinching between equipment (cont.)	High (H)	• Use an anchored ladder to transfer between vessels where there is an elevated surface. • When transferring between vessels over rubber tires, ensure that the deck and surface of the tires are free from oil, grease and other substances that could create a slippery condition.	(H)	SOP requiring that all personnel be briefed prior to commencement of work and visitors prior to visiting the site. Written SOP for embarking and disembarking. **Enforcement.**

J. EQUIPMENT TO BE USED	K. INSPECTION REQUIREMENTS	L. TRAINING REQUIREMENTS
Dredge and tending plant	N/A	Indoctrination training, weekly safety meeting

M. Determine overall activity/task risk level after controls are implemented (circle one)

LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)

RISK MANAGEMENT WORKSHEET

A. Mission/Activity: Hydraulic Dredging Operations	**B. Prepared By:** Xxxx Y. Zzzzz	**C. Date:** 7 Sep 2000

D. Task	**E. Identify Hazards**	**F. Assess Hazards**	**G. Develop Controls**	**H. Determine Residual Risk**	**I. Implement Controls (How To)**
Working in areas without guardrails.	Drowning as a result of falling overboard.	High (H)	• Require all personnel working in areas without guardrails to wear a PFD.	Low (L)	SOP requiring that all personnel be briefed prior to commencement of work and visitors prior to visiting the site. Written SOP directing when to wear PFDs. **Enforcement.**
Working in areas with guardrails.	Drowning as a result of falling overboard due to guardrail failure.	High (H)	• Require all personnel working in areas with guardrails to wear a PFD.	Low (L)	SOP requiring that all personnel be briefed prior to commencement of work and visitors prior to visiting the site. Written SOP directing when to wear PFDs. **Enforcement.**

J. EQUIPMENT TO BE USED	**K. INSPECTION REQUIREMENTS**	**L. TRAINING REQUIREMENTS**
Dredge and tending plant	N/A	Indoctrination training, weekly safety meeting

M. Determine overall activity/task risk level after controls are implemented (circle one)

LOW (L) MODERATE (M) HIGH (H) EXTREMELY HIGH (E)

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
P.O. BOX 1890, WILMINGTON, N.C. 28402

District Regulation
No. 385-1-1

8 June 1999

SAFETY AND OCCUPATIONAL HEALTH PROGRAM

GENERAL POLICY

1. Purpose. This regulation prescribes policy of the District Commander for the administration of a comprehensive accident prevention program. It identifies the various responsibilities of management, and provides guidance and procedures for policy compliance.

2. Applicability. The policies and procedures herein are applicable to all Wilmington District activities.

3. References.

a. AR 385 Series.

b. ER 385 Series.

c. EM 385 Series.

d. AR 40-14.

e. AR 600-55.

f. Parts 1910, 1926, and 1960, Title 29, Code of Federal Regulations.

g. ER 672-1-13.

h. ER 1125-2-309.

i. ER 1130-2-400.

j. SADvR 385-1-1.

k. 40 CFR Parts 300-399.

l. DOD Directive 1010.10, Health Promotion.

m. AR 1-8, Smoking in DA Occupied Buildings and Facilities.

This regulation supersedes SAWDR 385-1-1 dtd 01 May 85 and all changes thereto.

n. 41 CFR 101.10.109.10, Regulation of Smoking.

o. U.S. Army Tobacco Cessation Game Plan.

p. Executive Order 12196.

4. Objectives. The objective of this regulation is to keep all personnel and material losses resulting from mishaps to the absolute minimum by eliminating or effectively controlling conditions and personal actions through the application of the following:

a. By integrating safety into all engineering, construction, operating, administrative, and supply procedures and activities to create and maintain safe and healthful conditions of employment.

b. By requiring acceptable safety performance on all jobs from start to finish by all Corps and contractor employees. Token efforts are not acceptable.

c. By producing finished facilities and projects that provide an inherently safe environment, especially for the visiting public.

5. General Safety Policy. No person shall be required or instructed to work in surroundings or under conditions that are unsafe or dangerous to his or her health. It shall be the responsibility of each employee to work safely.

6. Basic Requirements.

a. Managers and supervisors are directly responsible for the safe conduct of all work under their control. Those responsible for management and supervision are responsible for protecting persons, equipment, and property by eliminating or effectively controlling mishaps, fires, and health hazards and providing protective equipment, facilities, and apparel appropriate for the hazards encountered. Higher authority shall be notified of hazards that extend beyond the jurisdiction of the immediate supervisor.

b. Managers and supervisors shall be familiar with and assure that all recognized codes, standards and regulations relevant to their work are strictly enforced. These include all applicable OSHA Act Standards; Parts 1910, 1926, 1960, APPENDIX 29 of the Code of Federal Regulations, as well as EM 385-1-1 and this regulation.

n. 41 CFR 101.10.109.10, Regulation of Smoking.

o. U.S. Army Tobacco Cessation Game Plan.

p. Executive Order 12196.

4. Objectives. The objective of this regulation is to keep all personnel and material losses resulting from mishaps to the absolute minimum by eliminating or effectively controlling conditions and personal actions through the application of the following:

a. By integrating safety into all engineering, construction, operating, administrative, and supply procedures and activities to create and maintain safe and healthful conditions of employment.

b. By requiring acceptable safety performance on all jobs from start to finish by all Corps and contractor employees. Token efforts are not acceptable.

c. By producing finished facilities and projects that provide an inherently safe environment, especially for the visiting public.

5. General Safety Policy. No person shall be required or instructed to work in surroundings or under conditions that are unsafe or dangerous to his or her health. It shall be the responsibility of each employee to work safely.

6. Basic Requirements.

a. Managers and supervisors are directly responsible for the safe conduct of all work under their control. Those responsible for management and supervision are responsible for protecting persons, equipment, and property by eliminating or effectively controlling mishaps, fires, and health hazards and providing protective equipment, facilities, and apparel appropriate for the hazards encountered. Higher authority shall be notified of hazards that extend beyond the jurisdiction of the immediate supervisor.

b. Managers and supervisors shall be familiar with and assure that all recognized codes, standards and regulations relevant to their work are strictly enforced. These include all applicable OSHA Act Standards; Parts 1910, 1926, 1960, APPENDIX 29 of the Code of Federal Regulations, as well as EM 385-1-1 and this regulation.

c. The integration of accident prevention measures in all activities and operational procedures is the basic concept of the Corps of Engineers' accident prevention program. Safety personnel will provide technical supervision and advisory service. All personnel will apply the accident prevention program to provide for the maximum utilization of accident prevention controls in engineering, operational, and administrative procedures.

d. Emphasis will be given to prevention of damage to property and injury to persons as a result of negligent or wrongful acts or omission by Corps or contractor employees. In no instance will the general public, or non-essential Corps employees be admitted to hazardous areas, or areas where their presence could create interference with safe operations. When members of the public are admitted to Corps operations, they must be given a safety briefing and be accompanied by a responsible employee of the government familiar with operations. Personal protective equipment commensurate with the operation must be provided. All non-government or non-contractor service personnel, such as tire repairers, mechanics, etc performing services will be required to comply with all applicable Corps safety requirements, including a safety briefing. They must be accompanied by a responsible government employee if for government operations, or a responsible contractor employee if for contractor operations. Contractors will be informed of this requirement at preconstruction conferences and the requirement will be included in the contractor's Accident Prevention Plan.

e. Imminent danger use of "Stop Work Order". It is the policy of the Commander that construction personnel as representatives of the Contracting Officer, shall have authority to issue a "Stop Work Order" to a contractor if a condition on the site presents an imminent danger to life or property. Use of the "Stop Work Order" provisions of the accident prevention article of "Construction Contracts" will be enforced if necessary to achieve corrective action on unsafe acts or conditions. Care must be taken to secure complete evidence that the provisions of the contract have been and are being violated prior to issuance of such an order. It is the policy of the Corps to suspend work when all attempts to secure compliance has failed, noncompliance has been discussed with the contractor's chief representative on the project, and it is evident that suspension of work is the only means through which compliance can be secured. The Contracting Officer has the authority to withhold payment and to assign an unsatisfactory safety evaluation to contractors who fail to comply with safety requirements.

f. Smoking is prohibited in all District occupied space. Employees and visitors who wish to smoke must do so outside and not within 50 feet of any entrance. Smoking is not permitted in any Wilmington District motor vehicle. Carrying a lit cigar, cigarette, or pipe in any area where smoking is prohibited is considered a violation of the no smoking policy and is prohibited. Failure to comply with this policy may subject military and civilian personnel to corrective administrative action. Immediate supervisors will ensure that all employees in their respective area of responsibility will comply with this policy.

7. Procedures.

a. Prior to their approval for implementation, all plans, designs, specifications, designs, technical publications, and operating and training procedures will be reviewed for conformance with established safety codes and regulations by the District Safety and Occupational Health Office (SOHO).

b. Radiological safety matters will be executed in strict compliance with ER 385-1-80. Deviations from ER 385-1-80 are prohibited without approval of the Division Engineer and the Chief of Engineers. The SOHO will be kept informed of all matters involving radioactive materials.

c. Explosives and Other Dangerous Articles. The SOHO will coordinate matters involving the application of safety regulations, codes, and standards issued by other agencies that apply to Corps missions involving explosives and other dangerous articles. This includes those issued by the Department of Transportation, the US Coast Guard, and the Armed Services Explosion Safety Board (Reference AR 75-1, AR 75-14, AR 75-15, AR 385-63 and AR 55-228). A plan will be submitted to the SOHO prior to the beginning of any operation requiring the use of explosives or any other dangerous materials, outlining the method of operation and precautions taken to control hazards. Prior to lease, change of status, or disposal of real estate, a careful inspection will be made to ensure the property is not contaminated with radioactive, toxic, or explosive materials (Reference AR 405-90).

d. Health Hazards. Potential health hazards from toxic materials, noise, waste disposal, or work environment will be thoroughly evaluated, and special preventive measures, surveys, and inspections will be required to control such hazards. Proposed plans, designs, operations, or use of new materials that involves

potential health hazards not previously evaluated will be brought to the attention of the SOHO, which will coordinate investigation and evaluation of the hazards. Special assistance on environmental hygiene and research into health hazards by the Surgeon General will be coordinated with the District SOHO and requested through the Safety and Occupational Health Office, USACE.

e. Hazardous Materials Review. Managers and Contracting personnel shall provide for review, procurement documents to ensure that hazardous materials which when introduced into the workplace are identified and that proper precautions are taken during their use. As a minimum, prior to use a Material Safety Data Sheet (MSDS) is required for all recognized toxic materials, e.g., chemicals, pesticides, explosives, carcinogens (asbestos), etc.

f. Safety Surveys and Inspections. Each element of the district headquarters, when making inspections of subordinate offices and projects will evaluate safety performance within their areas of responsibility. All observed deficiencies will be discussed and corrected.

g. Safety Plans. Each field project manager or supervisor will develop a safety plan. The plan will include safety procedures covering Government activities and, when applicable, contractor activities and members of the public.

h. Loan of Plant and Personnel. The responsibility for accident prevention on loaned plant will remain with the loaning district when its personnel are performing the operation. The responsibility for accident prevention of personnel detailed to another office within the District will be with the receiving office.

8. Responsibilities.

a. Safety and Occupational Health Office. The District's Safety and Occupational Health Office is responsible for managing the District's Safety and Occupational Health Program, providing safety and occupational health technical services, and evaluating the overall safety and occupational health activities within the District.

b. Safety and Occupational Health Council. The Safety and Occupational Health Committee provides advice to the District Commander relative to his responsibilities under the District's Safety and Occupational Health program. The committee consists of personnel as listed in Appendix C and will meet as called by the chairperson.

c. District Managers and Supervisors. All District managers and supervisors are responsible for accomplishing the District's safety and occupational health objectives. District managers and supervisors will constantly work toward the establishment and maintenance of safe and healthful working conditions for employees; the elimination of unsafe acts by employees; and the conscientious observance of all Department of the Army, Corps of Engineers, and District safety requirements. Additional responsibilities are as follows:

(1) Manage the District's Safety & Occupational Health Program as it applies to their element. The manager is also expected to take action to supplement the District's basic safety program according to the specific needs of his element.

(2) Establish and manage a program for the initial safety orientation and job instruction of employees new to a hazardous position or occupation. The manager is expected to see that the program is effectively applied.

(3) Develop proper attitudes of safety-mindedness in their supervisory and non-supervisory employees. They are expected to convey a personal concern for employee safety and occupational health and to back up that concern by personal example.

(4) Establish and personally conduct a program of regular safety meetings with their subordinate supervisors. The meeting should be a two-way communication for the discussion of safety and occupational health problems, and accident prevention activities. As needed, the meeting should stress such topics as recent near misses, accidents, inspection findings, safety observations, progress in job safety analysis, and similar matters.

(5) Install and control a planned safety inspection program in their element. They should analyze the inspection requirements

of the element, assign areas of inspection responsibility and see that the inspection program is applied. In addition, they should conduct a formal semi-annual inspection of their organizational areas, giving particular attention to fire, explosion and housekeeping hazards. They shall also develop a control procedure to ensure that hazardous conditions are corrected.

(6) Install and manage an activity and position hazard analyses program for their element. They should approve positions selected for analysis, establish schedules for the completion of position hazard analyses and review those completed by their subordinate supervisors. In addition, after such analyses are completed, they are responsible for ensuring that they are used for employee instruction. Position Hazard Analyses shall be reviewed semi-annually by all employees that work in hazardous positions.

(7) Establish an employee personal protective equipment program in their element and enforce District personal protective equipment requirements. The program should include determining requirements, indoctrinating and training employees, enforcing use of required equipment and the salvage and replacement of defective equipment.

(8) Maintain safety discipline among employees, and assure that subordinate supervisors apply approved measures of preventive and corrective discipline to assure employee compliance with safety rules and regulations and recommended safe job procedures.

(9) Personally participate in the investigation of disabling injury accidents and major equipment damage accidents. Review, approve, and sign reports of such accidents and direct any action necessary to prevent recurrence of such accidents. A follow-up procedure must be adopted to ensure that ordered corrective actions are implemented. Also review, approve and sign non-disabling injury accident reports that originate with their subordinates. If corrective actions indicated on such reports are insufficient, or the report is poorly written, they should take steps to ensure adequate correction at the source.

(10) Cooperate with other elements where there is a mutual responsibility for the safety and occupational health of employees. Major repairs, maintenance or construction work should always be preceded by consultation and planning with the other elements.

(11) Ensure that safety responsibilities are an item in performance standards.

(12) Supplement the basic accident prevention training given their supervisory force with personal and group instruction as required. They must see that supervisors have the knowledge and skill necessary to carry out their assigned safety duties. They must also assure that their supervisors understand the safety rules.

(13) Conduct regular safety meetings with their supervisors to keep them informed on safety and occupational health matters and to discuss safety and occupational health problems concerning their operations.

(14) Be alert for temporary or chronic physical or mental conditions of the employees under their supervision that may cause such employees to be safety risks. When such conditions are observed, the supervisor must act in accordance with approved District procedure, contained in letter dated 10 June 83, Statement of Civilian Personnel Policy.

(15) Know how to operate emergency equipment installed in area of responsibility. This includes the operation of fixed and portable fire fighting equipment, self-contained breathing apparatus, and other emergency equipment and procedures.

d. All Employees.

(1) Use or wear protective equipment and clothing as required for the protection of self, co-workers, and property from accidents.

(2) Observe safe working practices as established in EM 385-1-1, District Regulations, and supervisory instructions.

(3) Promptly eliminate or report unsafe or unhealthful conditions, equipment, or practices.

(4) Report all injuries and accidents to supervisor at time of occurrence. Seek immediate medical treatment.

9. Accountability. Management is responsible for measuring the effectiveness of safety performance of line managers. The District will use the following tools for measuring safety performance:

a. Accountability for Results.

(1) Accidents will be charged to the element, branch or project in which the employee is assigned.

(2) Performance appraisals of managers will include an evaluation of their safety activities and results.

b. Accountability for Activities. In addition to results as a method of measurement, management will also measure the safety activities of its subordinate managers. This will require techniques to be developed by line management to perform the measurement. The activities to be considered are the following:

(1) Safety meetings.

(2) Tool box meetings.

(3) Inspection results.

(4) Accident investigation and reporting.

(5) Employee safety orientations.

(6) Position hazard analysis.

(7) Planned safety inspections.

10. Evaluating Safety Performance. Safety effectiveness, like other management responsibilities, must be measured. Outstanding safety performance must be recognized, and those with less than acceptable performance must be counseled. Activities to be considered are the following:

a. Management attitude and safety awareness.

b. Planned safety inspections.

c. Accident investigation and reporting.

d. Identification and correction of safety deficiencies.

e. Accident statistics.

f. Occupational health and medical surveillance efforts.

g. Employee safety orientations and training (including weekly toolbox meetings).

h. Standard operating procedures.

11. Occupational Safety and Health Act (OSHA) Programs for Federal Employees.

a. Executive Order 12196, Occupational Safety and Health Programs for Federal employees, makes each Federal agency head responsible for establishing and maintaining an effective and comprehensive Occupational Safety and Health Program. The Occupational Safety and Health Act is, therefore, applicable to all elements of the Wilmington District and will be complied with in applicable workplaces. The rights and responsibilities of employees as developed in Title 29 CFR, Part 1960; Federal Employee Safety and Occupational Health will be implemented. The Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, is consistent with OSHA Construction Safety and Health Regulations, 29 CFR 1926, and will be complied with in all applicable workplaces.

b. Corps of Engineers personnel have implied authority to require Contractor compliance with OSHA Standards. Department of Labor (OSHA) compliance personnel may visit Corps facilities or contractor sites for a compliance inspection and are to be extended full cooperation when requested.

c. Design of new construction, modification, and rehabilitation projects will incorporate the OSHA standards set forth in the Occupational Safety and Health Act, Code of Federal Regulations, Title 29, Parts 1910 and 1926, as applicable.

d. The following paragraph is to be inserted in all Architect-Engineer design contracts where appropriate:

Health and Safety Standards. The facilities, systems, and equipment design standards of the Occupational Safety and Health Act, Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926 as applicable will be incorporated by the Architect-Engineer into all engineering design and analyses furnished pursuant to this contract. Any problems in incorporating these standards due to conflict with other technical criteria will be promptly submitted to the Contracting Officer for decision.

FOR THE COMMANDER

TERRY R. YOUNGBLUTH
COL, Corps of Engineers
Commanding

TABLE OF CONTENTS

APPENDIX A
SAFETY INDOCTRINATION AND SAFETY MEETINGS

1. Employee Indoctrination. All new Wilmington District employees will be given an initial indoctrination of the District's Safety and Health Program by their respective supervisor. They also will be given such additional continuing instructions as will enable them to do their work safely. As a minimum, paragraph 01.B.02 of EM 385-1-1, Safety and Health Requirements will be reviewed. When the Safety and Health item on ENG Form 3529, Employee Orientation Checklist, is checked by the supervisor, he or she certifies that the employee has been properly indoctrinated.

2. Safety Meetings.

a. Government. Supervisors of all hired labor forces under the jurisdiction of the District Engineer shall assure compliance with the requirements for safety meetings contained in paragraph 01B.03 of EM 385-1-1 and SAD DvR 385-1-1. These meetings are the responsibility of the immediate supervisor and will discuss the hazards being encountered or contemplated during work activities. An outline report of each meeting will be prepared on SAW Form 297, with copies forwarded to the Safety Office.

b. Contractor. The Contracting Officer's Representative (COR) shall assure compliance with the requirements for safety meetings contained within EM 385-1-1 and the contract specifications. When feasible, these meetings will be attended by a Government representative.

APPENDIX B
ORGANIZATION AND STAFFING RESPONSIBILITIES

1. Organization Responsibilities. Efficient implementation of the Accident Prevention Program requires that every element of the Wilmington District assume continuous accident prevention techniques in all of its operations. Practical means for the promotion of accident prevention will be applied in all criteria, guidance, assistance, facilities, and equipment provided to users. Below are some specific safety responsibilities:

a. Safety and Occupational Health Office (SOHO):

(1) Provide safety and health advisory services and data necessary for achieving the objectives of the program.

(2) Maintain a state-of-the-art safety and health program, and coordinate all safety activities within the District.

(3) Make continuous studies of anticipated operations to preplan for safety.

(4) Act as the Safety and Occupational Health designer for the District. Provide leadership, direction, and accountability to assure a meaningful Safety and Health Program.

(5) Study, survey, and evaluate the efforts expended toward the prevention of accidents on all phases of the activities being conducted.

(6) Keep the commander advised of findings and, where conditions warrant, make recommendations for changes or improvements.

(7) Review plans and specifications, and other solicitations for potential safety hazards and compliance with all safety standards, codes and regulations.

(8) Act as technical advisor to Boards of Investigation and the District Safety and Health Council.

b. Technical Services Division.

(1) Construction Branch personnel:

(a) The Chief of Construction has the primary responsibility to ensure that the requirements of the General Provisions of all contracts are met on all work under his jurisdiction. This includes the requirements that Accident Prevention Plans and Activity Hazard Analyses are submitted and updated as conditions change. Such plans shall be submitted to the SOHO for review and comment. Additionally, the Chief is responsible for identifying, scheduling, and funding all training required by regulation to meet the functional requirements of each employee's job.

(b) Keep abreast of safety policies, procedures, and requirements applicable to their work.

(c) Identify hazards likely to be encountered by the actions or movement of persons, equipment, and materials.

(d) Ensure that appropriate Activity Hazard Analyses (AHAs) are prepared for work performed by contract.

(e) Observe work methods during field surveys to ensure that acceptable safety standards are maintained.

(f) Act as safety inspectors in the field. Note unsafe conditions and report in writing to the contractor and Administrative Contracting Officer (ACO) with a copy to the SOHO. The Daily Log of Construction (ENG Form 2538-1) shall include a list of unsafe conditions noted.

(g) Responsible Construction Field Office Managers (RCFOM). Safety responsibilities of RCFOMs are included in Part X of the Resident Engineers' Management Guide, EP 415-1-260, dated December 1990. In general, it is the RCFOM's responsibility to ensure that all operations are performed in a safe manner and IAW EM 385-1-1. Safety responsibilities of dredging and construction inspectors are included in the Dredge Inspector's Instruction Manual, EP 1130-2-310, and the latest of volumes I through IV of the Construction Inspector's Guide.

(2) Engineering Branch personnel:

(a) The Chief of Engineering has the primary responsibility to ensure that the requirements of the General Provisions of all contract are met on all work under his jurisdiction. This includes the requirements that Accident Prevention Plans and Activity Hazard Analyses are submitted and updated as conditions change. Such plans shall be submitted to the SOHO for review and comment. Additionally, the Chief is responsible for identifying and scheduling safety training (HTRW, PPE, HAZCOM, etc) required by regulation to meet the functional requirements of each employee's job.

(b) Keep abreast of safety policies, procedures, and requirements applicable to their work.

(c) Apply the same analytical approach as are applied to engineering problems to eliminate all potential safety hazards.

(d) Incorporate in plans and specifications all applicable safety standards, codes, and regulations applicable to the facilities being designed.

(e) When in the field, office personnel will act as safety inspectors and note all unsafe conditions. All unsafe conditions will be reported in writing to the responsible government employee with a copy to the SOHO.

(f) Drill crews, technicians, and survey crews will comply with all applicable safety standard, codes and regulations.

(3) Operations Branch personnel:

(a) The Chief of Operations has the responsibility to assure that the requirements of the General Provisions of all contracts are met on all work under his jurisdiction. This includes the requirements that Accident Prevention Plans and Activity Hazard Analyses are submitted and updated as conditions change. Such plans shall be submitted to the SOHO for review and comment. Additionally, the Chief is responsible for identifying, scheduling, and funding all training required by regulation to meet the functional requirements of each employee's job.

(b) Keep abreast of safety policies, procedures, and requirements applicable to their work.

(c) Identify hazards likely to be encountered by the actions or movement of persons, equipment, and materials.

(d) Ensure that appropriate Activity Hazard Analyses are prepared for work performed by Corps employees and by contract.

(e) Observe work methods to ensure that acceptable safety standards are maintained.

(4) First Line Supervisors.

(a) Be responsible for the safety of all their employees. This means the supervisor should take any reasonable action required to prevent an accident where an immediate danger exists.

(b) Share responsibility for personnel not assigned who may be working in the area. The supervisor should become acquainted with the nature of work and see that they take precautions to protect any employees in the are from hazards associated with their work. When such employees work without immediate supervision, the supervisor is still responsible for their adherence to safe working procedures and District safety rules.

(c) Ensure that assigned personnel know District and site safety rules and regulations, established safe job procedures, and all major hazards associated with their work and work areas. Toward this objective, the supervisor is responsible for the initial safety orientation and job instruction of subordinate employees newly assigned to job positions.

(d) Develop a cooperative safety attitude in subordinate employees through the application of approved methods of preventative and corrective discipline. Supervisors will rely on education, leadership, or whatever appropriate means necessary to instill safety awareness.

(e) Apply approved methods of preventative and corrective discipline to enforce compliance with District and element safety rules and approved safe working procedures.

Under no circumstances are unsafe practices to be ordered or condoned.

(f) Carefully prepare all position hazard analyses assigned to their area of jurisdiction. The supervisor is responsible for using the approved results in safety studies and meetings for accident prevention. The supervisor is responsible for discussing the position hazard analysis with each employee.

(g) Conduct planned safety inspections in the assigned area of responsibility. The supervisor is expected to maintain inspection records. When confronted with an unsafe condition, the supervisor must order correction or report the condition, together with recommendations, to the next level of management. If necessary, the supervisor must take suitable temporary precautions to remedy unsafe conditions until corrective measures are implemented.

(h) Maintain satisfactory standards of housekeeping in the assigned area.

(i) Employees injured while on duty are entitled to emergency medical treatment. When such an injury occurs, the supervisor's primary duty is to see that adequate medical treatment is immediately provided. Regardless of duty location, the employee must be given the chance to be examined and treated by a hospital or private doctor in the area. When possible, the immediate supervisor should accompany the injured employee to the medical facility of his or her choice.

(j) Investigate all accidents brought to their attention. Supervisors are also expected to investigate and report potentially serious near-misses occurring in their assigned areas. Accidents shall be reported on the approved forms in accordance with Appendix I of this regulation.

(k) See that all employees are issued safety apparel and equipment and are trained in the proper use and maintenance of the equipment. Additionally, supervisors are expected to inspect all equipment periodically for defects.

(l) Ensure that appropriate personnel know how to operate emergency equipment installed in their area of responsibility. This includes the operation of fixed and portable

fire fighting equipment, self-contained breathing apparatus, and other emergency equipment and procedures.

(m) Ensure that applicable employees are placed on the District's Medical Surveillance Program and monitored in accordance with applicable regulations.

(n) Regularly schedule, attend and document safety meetings for all employees under his or her supervision.

(o) Provide Material Safety Data Sheets (MSDS) for all hazardous materials in his or her area of responsibility. The MSDS will be posted where they are readily available to employees.

(5) Employee Responsibilities. All employees will:

(a) Comply with safety and occupational health standards in accordance with EM 381-1-1, CESAWDR 385-1-1 and all other applicable safety and occupational health regulations.

(b) Report suspect hazards and unsafe conditions in accordance with Appendix J of this regulation.

(c) Promptly report occupational injuries and illnesses.

(d) Obtain medical care when an injury or illness occurs.

(e) Cooperate with Safety and Occupational Health personnel during inspections, surveys, and investigations.

(f) Utilize appropriate personal protective equipment when prescribed or otherwise directed.

APPENDIX C
OCCUPATIONAL SAFETY AND HEALTH COUNCIL

1. Purpose. The Occupational Safety and Health Council provides advice and support to the Commander on matters of Safety and Health for all Government and contract operations within the Wilmington District.

2. Reference. AR 385-10, The Army Safety Program.

3. Responsibilities and Duties.

a. Discusses and formulates policy that, with the Commander's approval, is adopted for District use.

b. Analyzes the District safety posture in order to pinpoint problems and recommend corrective action.

c. Formulates, develops, and forwards to the commander for approval, promotional programs aimed at reducing accidents. This may include special incentive programs for contractor and government operations.

d. Decides criteria for safety awards within the scope of existing regulations.

e. Membership will be by appointment letter from the District Commander based on recommendations by the Safety and Occupational Health Office. The council should consist of equal representation from management and non-management. One individual must be grade 13 or higher who will serve as chairperson. The council shall consists of the following personnel:

(1) Chairperson, Grade 13 or above.

(2) One representative, Engineering Branch.

(3) One representative, Construction Branch.

(4) Two representatives, Operations Branch.

(5) One representative, Planning Branch.

(6) One representative, Regulatory Division.

(7) Chief, Safety and Occupational Health, Technical Advisor (non-voting)

4. Meetings will be on call of the chairperson.

5. Minutes of the meeting shall be recorded and submitted to the commander.

APPENDIX D
SAFETY AND OCCUPATIONAL HEALTH AWARDS

1. Purpose. This Appendix establishes policy and procedures for recognizing exemplary achievement in accident prevention. It is applicable to all activities accomplished by government and contractor forces within the District.

2. Reference.

a. AR 672-20, Incentive Awards

b. AR 672-74, Army Accident Prevention Awards Program

c. CESAW Supplement 1 to CESADvR 690-1-16, Incentive Awards Program Policies and Procedures.

d. DvR 385-1-24, South Atlantic Division Safety and Occupational Health Awards Program

3. Policy. The District Commander's Safety and Occupational Health Awards provide recognition for outstanding safety achievement. Team members, organizations and contractors are recognized for exemplary achievements and contributions to efficiency, economy, and/or improvement through accident prevention.

4. Types of Awards and Criteria.

a. Certificate of Merit for Safety, SAW Form 356. This certificate may be presented to the following:

(1) Office, branch, or groups of employees based on completion of one year of accident-free experience or an outstanding contribution to the District Safety and Occupational Health Program. The nominating official will submit nominations for this award to the Safety and Occupational Health Office on a memorandum by 15 November of each year. Examples of nominations for this award may be obtained from the Safety Office. This award is applicable to the following offices:

(a) Construction Branch Field Offices

(b) Construction Branch

(c) Engineer Repair Yard

(d) Locks and Dams

(e) Powerhouses

(f) Regulatory Division

(1) Asheville Office

(2) Raleigh Office

(3) Washington Office

(4) Wilmington Office

(g) Survey Crews

(h) Dredge Currituck

(i) Dredge Fry

(j) Dredge Merritt

(k) Dredge Schweizer

(l) Debris Boat Snell

(2) Individual operators of self-propelled equipment, or other mechanical equipment, and to individuals who make outstanding contributions to the District Safety and Occupational Health Program. Examples are performing a life saving act, development of a new safety SOP, and outstanding results on a specific safety inspection. Nominating officials will submit nominations to the Safety Office by 15 November of each year. Examples of nominations for this award may be obtained from the Safety Office.

(3) Contractors may receive this award for completing a quality and timely project without a recordable accident. To be eligible for consideration, the contractor must have a minimum of 25,000 exposure hours. The Contracting Officer's Representative will make nominations for this award. Nomination packages will be forwarded to the Safety Office on a memorandum at the completion of the project, but not later than 15 November. Examples of nominations for this award may be obtained from the Safety Office.

If nominees meet the criteria, a certificate will be prepared by the Safety Office and forwarded to the District Commander for approval and signing. Once signed, the award will be presented to the contractor.

b. Safety and Occupational Health Program Management Award. The element(s) receiving the highest rating on their annual Safety Management Evaluation, will be presented this award. The Safety Office will make nominations for these awards. This award is presented as a plaque. The following elements are eligible for this award:

(1) Falls Lake Project

(2) Jordan Lake Project

(3) J.H. Kerr Project

(4) Philpott Project

(5) W. Kerr Scott Project

(6) Cape Fear Project

(7) Navigation Section

c. Incentive Award.

(1) This award may be presented to motor vehicle or mechanical equipment operators and to other deserving personnel upon completion of three consecutive accident-free years of work. Refer to Table below for monetary award scale.

(2) Employees' immediate supervisor is responsible for initiating nominations on DA Form 1256 through their chain of command to the Safety Office by 10 December of each year. The nomination must include a justification statement, job description, and citation for certificate.

(3) Monetary award can progress each consecutive year up to ten years. Monetary award for consecutive years of accident free performance after ten years will remain at the same level.

(4) A lost time or property damage accident places the employee back to year one on the Table.

MONETARY AWARD TABLE

YEARS:	SCALE:
1	Certificate
2	Certificate
3	Up to $ 50 and certificate
4	Up to $100 and certificate
5	Up to $150 and certificate
6	Up to $200 and certificate
7	Up to $250 and certificate
8	Up to $300 and certificate
9	Up to $350 and certificate
10	Up to $400 and certificate

(Table was prepared in accordance with scale for Awards based on Intangible Benefits, CESADvR 690-1-16)

d. On-the-Spot Cash Award (OTS). This award should be utilized to instantly recognize deserving employees in the area of Safety and Occupational Health. Criteria for the OTS Cash Award are found in reference 2.a above. A copy of the award nomination shall be provided to the SOHO.

e. Time Off Award (TOA). This award is appropriate for employee achievement or performance that contributes to the District's mission in the area of Safety and Occupational Health. This award may be used alone or in combination with monetary or non-monetary awards and may be granted in amounts ranging from one hour to 40 hours for a single contribution. Criteria and guidance for the TOA is found in reference 2.a above. A copy of the nomination shall be provided to the Safety Office.

f. Commander's Safety and Occupational Health Performance Award for Government Employees.

(1) This annual award is presented as a Commander's plaque to an office with the best government safety and occupational health record in the District. Nominations will be submitted to the Safety Office by 15 November of each year and forwarded to the Safety and Occupational Health Council. The council will

review the nominations and submit its recommendations to the Commander. Nominations will contain the following information:

(a) Name of office and person in charge.

(b) Period of time covered by award.

(c) Man-hours of exposure.

(d) Amount and number of property, equipment, and vehicle damage losses.

(e) Nature of work activities, major hazards, safety program, cooperativeness, number and content of office safety meetings, special initiatives in safety and occupational health, training, and any other pertinent information necessary to provide a sound justification as the overall assessment of the office's safety program accomplishments.

(2) Review.

(a) Upon receipt of the nomination, the Safety Office will review each nomination to verify that each meets the above requirements. Nominations failing to meet requirements will be returned to the nomination official for revision.

(b) Nominations meeting requirements will be forwarded to the District Safety and Occupational Health Council for consideration. The council will review all award nominations and submit its recommendations to the District Commander for approval.

(3) Approval. The approving official for this award is the District Commander. The award will be presented at an appropriate ceremony.

h. Commander's Safety and Occupational Health Performance Awards for Contractors. This annual award is presented as a Commander's plaque to the Contractor with the best safety record in the District. Nominations will be submitted to the Safety Office by 15 November of each year and will be forwarded to the Safety and Occupational Health Council for review. The committee will submit its recommendations to the District Commander for approval. Nominations will contain the following information:

(1) Contractor name.

(2) Person in charge.

(3) Period of time covered by the award.

(4) Man-hours of exposure.

(5) Injury frequency rate.

(6) Amount and number of property/equipment/vehicle damage losses.

(7) Nature of work activities, major hazards, safety program, cooperativeness, special initiatives in safety and occupational health, safety and occupational training, and any other pertinent information necessary to provide a sound justification to properly evaluate the nominees.

5. Division Commander's Safety and Occupational Health Awards. These awards recognize exemplary achievement in accident prevention and significant contributions to the safety and occupational health program. This program recognizes effective safety and health management, team member safety performance, and excellence in accident prevention.

a. Categories.

(1) District

(2) Special Recognition

(3) Public Safety Program

(4) Hydropower Project

(5) Area and/or Resident Office

(6) Contractor

b. Nominations will be submitted no later than 15 December or each year for each category in which they meet or exceed the following criteria:

(1) District. The District as a minimum must be below maximum tolerance rates in at least four of the five statistical areas, and a reduction from the past year's rates in at least three areas. A government or contractor fatality disqualifies a District for this award. District programs and accident experience will be reviewed and analyzed. Districts with outstanding programs and exceptional accident experience for the year will receive an award.

(2) Special Recognition. Nominees in the special recognition category will be selected at the discretion of the District Engineer.

(3) For field level awards (categories 5(a)(1)(c) - 5(a)(1)(g)), the nominees shall be the best project in the appropriate category from the District for the past fiscal year. All projects shall be significantly below Division maximum tolerance rates in all accident categories. Projects nominated should not have experienced an accident in any category with the possible exception that lake projects may have experienced public fatalities. Reduction in the number of public fatalities from previous years would be critical. Award selection will not be based on accident statistics alone. Emphasis will be placed on implementation of safety program requirements, the nature of work activities, level of hazards encountered, and on safety initiatives. These will be determined based on the information provided for the award nomination. It is important that supporting information such as the last safety management action plan of the project and the project safety plan be provided.

(3) Instructions. Nominations will be analyzed at District and Division Safety Offices. Nominations for awards will contain as a minimum, where applicable, the following information:

(a) Category of award

(b) Name, address, and phone number of nominee

(c) Name, and phone number of person (POC) initiating nomination.

(d) Names of persons reviewing nominations within the District.

(e) Name of person responsible for or in charge of project or office being nominated.

(f) Period of time covered by award if not for the previous fiscal year.

(g) Previous safety awards won by the nominee.

(h) Man-hours of exposure both government and contractor (this can be provided by the Safety Office).

(i) Number of accidents and frequency rate.

(j) Number of property damage accidents and dollar value.

(k) Motor vehicle mileage.

(l) Motor vehicle accident frequency rate.

(m) Visitation and recreational related fatality data (for lake projects).

(n) Description of nature of work activities, major hazards, safety program initiatives, and pertinent information necessary to properly evaluate nominee.

(o) Copy of District Safety Office's Safety Management Evaluation of nominated project for the fiscal year.

(p) Copy of nominated project's accident prevention plan, activity hazard analyses, and safety policy letter.

(q) For District Award:

(1) Submit data in a through n above.

(2) Examples of Command and staff leadership as manifested in the Safety Management Action Plan.

(3) Significant accomplishments.

(4) Extraordinary accident prevention efforts, effective initiatives, innovative successes, training efforts, recognition, evaluation, and control of accident and illness producing acts and conditions.

6. Responsibilities:

a. The SOHO will send reminders to all district elements in sufficient time to allow supervisors to meet deadlines.

b. Staff Chiefs and construction field office managers will give full support to the program and encourage full utilization of the awards program.

c. Supervisors will review employee performance and submit full documentation to support award nominations.

APPENDIX E
POSITION HAZARD ANALYSIS FOR GOVERNMENT EMPLOYEES

1. Purpose. The purpose of the Position Hazard Analysis (PHA) is to systematically identify hazards and potential accidents associated with each employee's position that may cause injury or occupational illness and specify controls to minimize their effect or guard against them in each job task.

2. References.

a. SAD Supplement 1 to ER 385-1-40, Occupational Health Program

c. EM 385-1-1, Safety and Health Requirements Manual

d. SADvR 385-1-21, Job (Position) Hazard Analysis

3. Development. A PHA shall be written for each employee, including student employees, summer hires and temporary employees with potential exposure to occupational hazards. SAD Form 172-R shall be used. An example form for your reference is provided in Annex I of this Appendix. Note that the upper right hand corner (Medical Surveillance, Personal Protective Equipment, Certification/Training) will be completed by the Safety Office. Office workers will have a generic PHA that will be reviewed at orientation and during performance evaluation. Examples of personnel requiring "position specific" PHAs include but are not limited to: quality assurance personnel, construction representatives, HTRW personnel, surveyors, lock and dam personnel, rangers, maintenance personnel, boat operators, floating plant personnel, powerplant personnel and any employee with potential occupational hazards. The same PHA may cover employees working in the same job series and exposed to essentially the same hazards. The activities, equipment, materials, hazards and controls should be specific to the individual employee so that when the hazard analysis is reviewed with employees, they are aware of potential hazards of their specific job and the controls necessary to protect themselves. To provide sufficient detail, standard operating procedures (SOPs) may need to be written for specific routine tasks. These should be referenced in the activity section of the PHA. The PHA for each employee should result from mutual

input and discussion between supervisors and employees to assure complete and concise coverage. It should address required safety and health training and certification, participation in medical surveillance, adequate procedural and physical safeguards, and required personal protective equipment. It should be as comprehensive as practicable but need not address every hazard and control for every employee.

4. Uses. The PHA will assist supervisors in providing a safe workplace for employees as required through systematic identification and control of hazards. It may be used as a guide for selecting individual training required and as a tool for use in safely conducting jobs which occur infrequently. Supervisors may want to use it as an aid in determining whether employees are meeting safety requirements. The PHA can also be used as an important tool in deciding how to eliminate employee exposure to hazards. This can be accomplished by installing engineering controls, finding a new way to do the job, changing the physical conditions (e.g., tools, equipment, materials or locations), changing the job procedures, or reducing the necessity for or frequency of a job, (e.g., reducing exposure time). When an employee leaves his or her position, the PHA will be the basis for the replacement PHA.

4. Responsibilities.

a. Managers are responsible for:

(1) Ensuring that the evaluation of supervisors' performance includes the preparation and utilization of a PHA for all employees.

(2) Ensuring that hazardous operations are regularly reviewed to develop engineering or administrative controls to reduce or eliminate employee exposure to hazards.

b. Supervisors are responsible for completing a PHA for each employee they supervise. Each analysis should be discussed jointly with the employee and should be updated as job changes occur. For new employees, the PHA should be reviewed when completing the On-the-Job Orientation section of ENG Form 3529, Employee Orientation Checklist. The employee's supervisor shall maintain the original of the analysis. Copies shall be provided to the

employee, Civilian Personnel Advisory Center for filing in the employee's official personnel file, and to the District Safety Office. Updates shall be provided in the same manner. Supervisors will assure that controls are adequate for the hazards identified, that employees comply with controls such as wearing personal protective equipment, and that adequate medical surveillance and pre-employment and termination physicals are conducted.

c. Employees are responsible for bringing to the supervisor's attention such changes in work conditions that may affect exposure to hazards.

d. The Safety Office is responsible for maintaining inventory of the PHAs and for providing technical assistance for preparation of the PHAs. The Safety Office will review the analyses and provide suggestions as appropriate. The Safety Office will provide input to managers regarding their evaluation of supervisors' safety performance with regard to the Position Hazard Analysis Program.

e. The Civilian Personnel Advisory Center (CPAC) is responsible for reviewing vacant positions to ensure announcements include requirements for medical surveillance, training, and the use of personal protective equipment. The job description should include a general statement to publicize potential hazards.

ANNEX I
SAD FORM 172-R

JOB HAZARD ANALYSIS(SADvR 385-1-21)

Employee's Name_____
Supervisor's Name /
Job Series____4742_____
Job Title__Asst. Chief Engineer____
Job Number_____4114_____

	Yes	No
Medical Surveillance	√	___
Personal Prot. Equip.	√	___
Certification/Training (Required)	√	___

Major Activity	Locations	Hazards	Controls
Makes periodic inspections to ensure vessel is well maintained	Floating Plant	Exposure to the elements	Proper clothing-use foul weather gear. Be aware of exposure duration and symptoms of exposure-related illnesses.
		Tripping, slipping, falls	Wear safety footwear. Remove grease and oil from working surfaces. Stumbling hazards will be painted yellow. Good Housekeeping.
		Falling objects	Wear hard hat.
		Drowning	Wear a life vest. Know where lifesaving equipment is located.
Welding	Floating Plant	Cuts/bruises; injuries from fumes and gases Welding; fumes/slag Flash burns to eyes	Use proper tools for the job. Assure you have proper ventilation. Wear proper respirator and assure of proper fit. Wear proper clothing, gloves and safety helmet. Follow guidelines in EM 385-1-1. Annual Physical/Pulmonary Function Test.
Handling lines	Floating Plant	Water hazards Drowning Entanglement in lines Exposure to the elements Back strain/muscle pulls	Knowledge of marine safety; observe safety regulations (EM 385-1-1 and other marine safety regulations.) Wear life vest; know where lifesaving equipment is located. Worn or damaged lines will not be used; avoid pinch points and stay clear of lines under strain. Use good housekeeping for lines on deck. Be aware of exposure duration and symptons of exposure-related illnesses. Wear proper clothing. Ensure proper lifting techniques are followed
Confined spaces	Floating Plant	Injuries from gases/fumes, falls/tripping, oxygen deficiency	Follow entry procedures as outlined in the Vessels Confined Space Program, ensure that procedures are followed as outlined.

Employee's Signature_____ Date 4-12-96 Supervisor's Signature_____ ate 4-12-96

SAD FORM 172-R Previous editions are obsolete.

JOB HAZARD ANALYSIS(SADvR 385-1-21)

Employee's Name_____
Supervisor's Name
Job Series 4742
Job Title Asst. Chief Engineer
Job Number 4114

	Yes	No
Medical Surveillance	√	___
Personal Prot. Equip.	√	___
Certification/Training (Required)	√	___

Major Activity	Locations	Hazards	Controls
Operates, maintains, and repairs equipment and machinery	Floating Plant	Entanglement in machinery	All points requiring lubrication during operation will have fittings located or guarded so as to be accessible without hazardous exposure and all moving parts shall be guarded when exposed to contact.
			Be aware of items (clothing, rings, etc.) which could get caught in machinery. Implement lockout-tagout program during repairs on machinery.
		Electrical shock	Proper equipment maintenance and grounding. Use properly insulated tools.
		Cuts/Bruises	Use proper tools for the job.
		Injuries from fumes and gases	Ventilation and respirator.
		Lifting	Use proper lifting procedures. Get help for heavy objects.
		Noise hazards	Wear hearing protection devices. Annual audiogram.
		Eye hazards	Safety goggles. Know how to use eye wash.

Employee's Signature _____ Date 4-12-96

Supervisor's Signature _____ Date 4-12-96

JOB HAZARD ANALYSIS(SADvR 385-1-21)

Employee's Name_____
Supervisor's Name_____
Job Series_____4742_____
Job Title__Asst. Chief Engineer_____
Job Number_____4114_____

	Yes	No
Medical Surveillance	√	___
Personal Prot. Equip.	√	___
Certification/Training (Required)	√	___

Major Activity	Locations	Hazards	Controls
Maintenance and repair	Floating Plant	Chipping paint, tripping, slipping, falls	Wear proper respirator if needed. Wear eye protection. Wear safety footwear; good housekeeping-remove grease and oil regularly; stumbling hazards will be painted yellow and slippery deck areas coated with an anti-skid surface.
		Falling objects	Wear hard hats.
		Medical surveillance	Annual physical and audiogram
Confined Spaces	Floating Plant	Injuries from gases/fumes, falling/tripping-oxygen defiency	Follow entry prrocedures as outlined in the Vessel Confined Space Program, ensure that procedures are followed as outlined.

Employee's Signature_____ Date 4-12-96 Supervisor's Signature_____ Date 4-12-96

SAD FORM 172-R Previous editions are obsolete.

APPENDIX F
OCCUPATIONAL HEALTH, MEDICAL SURVEILLANCE AND INDUSTRIAL HYGIENE PROGRAM

1. Purpose.

a. This Appendix establishes procedures to ensure that safe, healthful work environments are provided. It assures that affected staff and operating officials are trained to recognize, evaluate, and control hazards caused by inadequate ventilation, poor lighting, excessive noise, and exposure to hazardous materials such as toxic chemicals, toxic gases, and vapors.

b. This Appendix also establishes procedures for determining the need for medical surveillance for employees potentially exposed to certain occupational health hazards and their relationship to the Position Hazard Analysis.

2. Applicability. This Appendix applies to all employees and activities of the Wilmington District.

3. References.

a. 5 CFR 339, Medical Qualification Determinations

b. 29 CFR 1910, Occupational Safety and Health Standards for General Instruction

c. 29 CFR 1960, Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters

d. EO 12196, Occupational Safety and Health Programs for Federal Employees.

e. AR 40-5, Preventive Medicine

f. ER 385-1-40, Occupational Health Program

g. EM 385-1-1, Safety and Health Requirements Manual

h. EP 385-1-58, Medical Surveillance Handbook

i. SADvR 385-1-23, Medical Surveillance

4. Surveys and Inspections. Regular and special surveys and inspections will be made by the SOHO or a contract Industrial Hygienist of all operations and industrial processes to ensure that:

a. Adequate natural or forced air ventilation is provided to keep atmospheres within allowable limits wherever toxic materials and agents (vapors, gases, dusts, etc) are used.

b. Lighting is provided in accordance with American Standard Practice for Industrial Lighting.

c. Noise exposure is controlled by shielding noise sources, limiting the duration of exposure, and providing exposed personnel with adequate ear protection.

d. A favorable thermal environment is provided.

e. Adequate measures are taken to prevent occupational skin diseases.

f. Adequate sanitation is provided in all occupied areas, including, general sanitation of eating facilities, toilet facilities, and wash and change rooms.

g. Potable water is obtained from approved sources.

h. Sewage and industrial waste is disposed of in accordance with sanitary regulations.

i. Appropriate personal protective equipment and apparel, such as special clothing, air-purifying and air supplied respirators, goggles, and protective creams and ointments are provided as required by exposure.

j. Employees are given initial indoctrination and continuing instructions in occupational health measures commensurate with their occupational assignments.

5. Atmosphere Deficiency Tests. Tests for explosive, flammable, toxicological, and other atmospheric deficiencies that may be detrimental to health and safety will be conducted by a contract

Industrial Hygienists whenever and wherever there are potential hazards to provide reasonable assurance that the atmospheres are within allowable limits.

6. Contract Work. Special safety requirements pertaining to control of occupational health hazards on specific projects that are not included in EM 385-1-1 will be included in the contract specifications.

7. Material Safety Data Sheets (MSDS). MSDS are required at work sites where hazardous materials are being handled. The data on these sheets is required to inform users of special precautions to be taken to ensure safe and healthful working conditions. It is the supervisor's responsibility to assure that his employees are provided this information. MSDS should be in the language of the area (e.g. English, Spanish or both).

8. Medical Surveillance.

a. As required by references 3a and 3d, periodic surveys of all operations involving industrial type activities shall be conducted by an Industrial Hygienist to determine the types and amount of exposure each job may produce. All employees in the District who are potentially exposed to hazardous chemicals or physical hazards shall be included in the medical surveillance program. Employees will be included in the program if measured exposure is of sufficient duration that physiological damage could occur. The Occupational Safety and Health Administration (OSHA) will base the determining criteria on the type of exposure and the Permissible Exposure Limit (PEL) for the material, as set.

b. When the PEL is expressed as an 8-hour time-weighted average, the following criteria will be used. If the concentration of the material is one-half of the PEL, the employee must work with the material at least 120 hours over any continuous 6-month period in order to require medical surveillance. If the exposure is less than one-half of the PEL, no medical surveillance is required.

c. When an employee is working with a material that has a PEL ceiling value, the employee shall be included in the Medical Surveillance Program regardless of the duration of exposure.

d. Medical surveillance will be provided as required by Federal regulations. Employees working with regulated substances covered by 29 CFR 1910.1001-1045 will be included in the Medical Surveillance Program regardless of duration or level of exposure. Medical surveillance will be provided for employees whose jobs include certain physical requirements identified in 5 CFR or other pertinent regulations as deemed appropriate.

e. Respiratory Protection Program requirements are detailed in Appendix O of this regulation.

f. Hearing Conservation.

(1) All employees in the District that are exposed to excessive noise will be included in the Medical Surveillance Program for hearing conservation. When information indicates that an employee is exposed to 85dBA or above, medical surveillance will begin.

(2) The SOHO will periodically conduct noise surveys.

(3) Each employee exposed at or above 85 dBA TWA shall be notified.

(4) A baseline audiogram shall be established within 6 months of an employee's first exposure.

(5) Audiometric testing will be conducted once annually by qualified medical personnel and compared to the baseline test to determine validity and to determine if a standard threshold shift has occurred.

(6) Results of the noise survey will be used to determine the appropriate type of hearing protection for that operation. The supervisor at no cost to the employee will supply proper hearing protection.

g. Medical support will be provided in accordance with applicable regulations. Medical support will be obtained through contractual agreements with local private medical facilities.

h. Employees occupying positions that have been identified as requiring medical surveillance will receive a pre-placement, periodic, and termination examination. The SOHO will establish procedures to ensure that medical surveillance is conducted. Employees in the Medical Surveillance Program, including Hearing Conservation, will receive an audiogram at the time of the examination. The SOHO will maintain a file of Position Hazard Analyses, and a list of the type of medical examinations required for specific chemical, biological and physical hazards.

i. Upon completion of a medical examination, documentation from the examining physician stating the medical condition of the employee will be returned to the SOHO for coordination and filing with the individual's medical file. When infirmities are noted, the SOHO will investigate and recommend action to eliminate or reduce the hazard. When an employee is found to be physically unfit to perform job duties, CPAC will take appropriate action to assure that the employee is considered for assignment to available positions for which they are physically and otherwise qualified.

j. Pregnancy Surveillance.

(1) Employees of child bearing age have the potential for exposures to chemicals and physical agents that may effect reproduction ability. Reproductive hazards include mutagens that cause chromosome damage and teratogens that effect the development of the fetus. Supervisors shall review all MSDS's and notify the Safety Office of any chemicals listed as reproductive hazards.

(2) Employees shall notify their supervisor and the SOHO when pregnancy is known. Any limitations of work due to pregnancy will be treated like any other medically certified temporary disability.

(3) Upon the introduction of chemicals identified as reproductive hazards, the SOHO shall be immediately notified and shall educate all employees with potential exposure of the hazards associated with these chemicals.

10. Supervisor Responsibilities.

a. Ensure that appropriate employees receive the job related medical exam.

b. Notify the SOHO, through channels, of any change of job assignments, purchase of new chemicals or other action that would affect the potential exposure of workers. This action includes notifying the Safety Office upon removal or termination of job assignment.

c. Be knowledgeable of those employees under his supervision requiring medical surveillance.

d. Minimize employee exposure to hazardous materials.

e. Keep employees apprised of actions regarding their medical surveillance.

f. Maintain Material Safety Data Sheets for all chemicals stored or used in the workplace.

g. Ensure that employees are given training in hazard communication with an annual update.

APPENDIX G
ACCIDENT PREVENTION PROVISIONS FOR CONTRACTOR AND GOVERNMENT ACTIVITIES

1. Purpose. This Appendix prescribes requirements for implementing the Accident Prevention provisions for construction and service contracts, and identified government activities.

2. Scope. This Appendix is applicable to all activities accomplished by government and contractor forces within the Wilmington District. The loss prevention provisions for government activities are essential to ensure that applicable safety requirements are adhered to during all operations. The loss prevention provisions for contractor forces are as much a part of the contract as any other provision set forth in the contract for control of work. After signing the contract, it is mandatory that the contractors vigorously comply with all pertinent safety requirements during the duration of the contract.

3. General. Accident prevention requirements are necessary to ensure that management for both government and contractor employees performing work provide controls for the protection of the life and health of their employees, the exposed public, the prevention of property damage, and the avoidance of work interruptions. All construction contracts shall include all applicable "Accident Prevention" clauses as required by the Defense Federal Acquisition Regulations, and shall include reference to EM 385-1-1, Corps of Engineers Safety and Health Requirements Manual. All Architect-Engineer and other service contracts involving work of a long duration or of a hazardous character shall comply with the applicable provisions of 29 CFR 1910 (OSHA General Industry Standards), 29 CFR 1926 (OSHA Construction Standards) and EM 385-1-1.

4. Contractor's Accident Prevention Plan and Preconstruction Conference.

a. After award of the contract the Contracting Officer's Representative (COR) will forward a letter to the contractor calling his attention to the clause in the contract that requires a written plan for carrying out the accident prevention provisions of

the contract. The letter will stress the importance of the contractual safety obligations of the contract and will include as an enclosure the latest edition of the Safety and Health Requirements Manual, EM 385-1-1. Attention is called to Annexes I, II, and III for guidance on developing an Activity Hazard Analysis. See Appendix A of EM 385-1-1 for guidance on developing an Accident Prevention Plan.

b. The contractor will be informed when and where the proposed plan will be submitted and with whom arrangements will be made for the preconstruction conference. The contractors written Accident Prevention Plan, including blasting and generic diving plans when required, will be submitted prior to the preconstruction conference and reviewed by the COR with comments from the SOHO. Following this review and prior to initiation of work, the contractor will meet in conference with appropriate Corps personnel to discuss the Accident Prevention Plan, inherit and specific hazards of the planned operations, and other aspects of the contracted work. Written minutes containing the understanding reached at the Preconstruction Conference will be furnished the contractor and a copy will be provided to the SOHO. The Contractor will keep a copy of the minutes on file at the worksite.

c. The SOHO will be informed of all preconstruction conferences in sufficient time to permit attendance.

d. The preconstruction conference agenda will be developed to meet the specific problems and unusual features of the job. Consideration will be given to any previous experience of the contractor on Corps contracts. The following safety topics are suggested for the agenda where applicable:

(1) Identification and accountability of contractor personnel responsible for accident prevention.

(2) The establishment of a mutual understanding relating to the purpose and function of an activity hazard analysis.

(3) A review and discussion of the hazards and remedies proposed by the contractor, leading to an agreement upon the methods used in recognition, evaluation, and methods to control the hazards.

(4) Purpose and advantages of the Safety Program.

(5) Discussion of safety inspections and records required by the contract clauses.

(6) A list of local site specific requirements that must be complied with (noise control, traffic problems, etc).

(7) How the contractor proposes controlling and coordinating the work of the subcontractors.

(8) Discussion of overstatements, omissions, and irrelevant items in the contractors accident prevention plan.

6. Contractor Activity Hazard Analysis (AHA).

a. An AHA will be developed at the beginning of any "major phase" of construction that has not been reviewed previously with the contractor and documented. A copy of the AHA will be submitted to the SOHO for inclusion in the official contract safety file. The purpose of the AHA is to review the specific hazards anticipated and the specific measures planned to eliminate them. Guidance for developing an AHA is provided in Annex I of this Appendix.

b. "Major Phase" pertains to the following items of work: drilling, land clearing, excavation, tunneling, road relocations, pile driving, concrete placement, quarrying, dredging, building construction, installation of equipment, steel erection, use of hazardous materials, electrical work, installation of heating, ventilation and air conditioning, demolition, paving, use of explosives, cableway operations, and quarrying.

7. Government Activity Hazard Analysis (AHA.

a. An AHA will be developed for all hazardous government activities. All AHA's will be submitted to the SOHO for monitoring. The purpose of the AHA is to review the specific hazards anticipated and the specific measures planned to eliminate them. Guidance for developing an AHA is provided in Annex I of this Appendix.

b. "Major Phase" pertains to items of work such as dewatering and inspecting stilling basins, intake tower gate repairs, draft tube and scroll casing inspection and repairs,

tainter gate inspection and repairs, dredging, dragarm maintenance and repairs, etc.

8. Contract Safety Files.

a. Contracting Division is designated to maintain the official contract files. Copies of contract documents relating to safety and accident prevention will be maintained in the SOHO.

b. Safety and accident prevention documents shall be maintained in the contract safety files. They include but are not limited to notices of contract award, notice to proceed, contract modifications having implications on previously confirmed safety procedures or devices, correspondence to contractors relating safety deficiencies, blasting and diving plan submittals, accident prevention plans, etc.

9. Inspection and Approval of Plant and Equipment. Work shall not commence until the contractors plant and operating equipment have been inspected and tested for compliance with EM 385-1-1, and other applicable contract requirements. Safety Inspection Checklist, as appropriate will be completed by contractor personnel and submitted to the COR. Government Quality Assurance personnel will make quality assurance inspections. Prior to QA inspections, the contractor shall submit all inspection records and tests required by paragraph 16.A.01 of EM 385-1-1. Equipment failing to meet the requirements will not be used pending compliance therewith. Whenever defects are noted that will render the equipment unsafe, the contractor will be promptly notified of the specific corrective action required and directed to withhold equipment operation until corrective action has been taken and the COR advised of the completed action.

10. Use of "Stop Work Order". If all attempts to secure voluntary compliance with the safety requirements are not successful, the COR may issue a "Stop Work Order". It is important that the order applies only to that portion of the work that is affected by the lack of action by the contractor and that all facts of the proceedings be documented in writing, including notation of uncorrected safety violations on the reverse side of the Daily Log of Construction, ENG FORM 2538. The contractor will be informed in writing of the extent of the stoppage of work, the date and hour work was stopped, the reason for the action, and the conditions under which work may proceed.

The Safety Office shall be immediately notified of issuance of "Stop Work" orders that result from non-compliance with safety requirement.

11. Responsibility for Enforcement. Full and complete responsibility for enforcement of the safety provisions of all service and construction contracts rests with the COR. Prompt and positive action at the field level will be taken to correct deficiencies.

12. Responsibility of Inspectors in Case of Immediate Hazards.

a. Whenever the government inspector observes a condition or a work situation that is being performed at the risk of life or limb, the inspector will immediately take the following measures:

(1) Require contractor representatives to immediately remove workers from the area of danger and refrain from dangerous practices.

(2) If contractor representatives are not at the location of the dangerous condition, the inspector will direct the workers to remove themselves from the dangerous location and cease the hazardous operation.

(3) The inspector will see that work is not resumed in the area of danger and the defective methods, SOPs, equipment, tools, scaffords, etc, are not used further until recommended corrective action is taken.

b. The inspector will immediately report any of the above actions and any noncompliance with his recommendations to his immediate supervisor and also document observations on the Daily Log of Construction.

13. Reckless Employees. When a Contractor's employee endangers his or her own well being, or the well being of others by blatant disregard of safety regulations, the contractor will be requested to discharge the offender.

ANNEX I
GUIDE FOR THE PREPARATION OF AN ACTIVITY HAZARD ANALYSIS (AHA)

1. Purpose. This Annex provides guidance in preparing an AHA in accordance with EM 385-1-1.

2. Applicability. This applies to all Wilmington District activities.

3. References.

a. AR 385 series.

b. ER 385 series.

c. EM 385-1-1.

4. Policy. An AHA for each major phase of work is required by EM 385-1-1. This analysis, utilized correctly, will have favorable affects on the District's safety record. This Annex provides guidance for preparing an AHA through a step-by-step procedure giving an example, explanations, and definitions. By showing this procedure, a better understanding will be gained of how and why the AHA is used.

5. Overview.

a. An AHA is a procedure used to review job methods and identify hazards. These hazards may have been overlooked from the start or they may have developed after production work has started. Once the hazards are known, the best control can then be developed.

b. The person best suited to develop the analysis is the foreman or line supervisor. The reasons being that the foreman has probably performed for 5-10 years the required task that he is now supervising. He has made mistakes, observed the hazards, and should have the best suggestions on how to make the job safer. Additionally, he is best qualified to break the job down into successive steps.

c. Once the analysis' rough draft is completed, a person in the preparer's organization with collateral safety responsibilities should review it. The reviewer should review the analysis on a

technical level, check to see that no hazards were overlooked, and examine the control measures to see that the most effective measures are being used.

6. Procedures.

a. Step 1 - Selecting an activity to analyze.

(1) An activity is a sequence of separate steps that together accomplish a work goal. Some activities can be too broadly defined in general terms of what is accomplished. Making paper, building a new dormitory, mining ore are examples. Such broadly activities are not suitable for an AHA. Similarly, an activity can be too narrowly defined. Pulling a switch, tightening a screw, pushing a button are examples. Such narrowly defined activities are also not suitable for an AHA.

(2) Activities suitable for an AHA are those assigned generally to a line supervisor and related to a particular phase of work. Erecting blocks walls, placing a roof and painting are good subjects for an AHA.

(3) Once an activity or major phase has been selected we recommend completing the analysis shown in Annex 4 of this Appendix. Note that the activity chosen for the example is Interior Demolition of the U.S. Army Reserve Center.

b. Step 2 - Break the Activity Down Into Successive Steps

(1) Note that the activity is broke down into its principal steps. Usually the line supervisor or foreman will rely on past experience with the type of work being analyzed. The work goal (endpoint), beginning point, and what has to be done (steps) to accomplish the work goal. A logical procession, step-by-step should be visualized.

(2) Record the steps in their natural order of occurrence. Describe what is done, but not the details of how if is done. Three or four words are usually sufficient. Number the steps consecutively.

(3) In the example, the progression of principal steps include the following:

(a) Remove furniture from the office.

(b) Remove plumbing, electrical and HVAC ductwork from the partitions.

(c) Demolish interior.

(d) Clean up.

c. Step 3 - Identify Hazards and Potential Accidents.

(1) Once the principal steps have been identified and logged on the form, identify the potential hazards associated with each of the principal steps. Once again past experience will be heavily relied upon. Talking with workers about past experiences or near-misses will be of great help. Checking with first aid logs or accident investigation will also help. At this point, hazards associated with other activities working adjacent to the activity being analyzed should be evaluated.

(2) The following is a list of questions that will help identify most of the hazards:

(a) Is there danger of striking against, being struck by or otherwise making injurious contact with the object?

(b) Can the employee be caught on, in, or between the object?

(c) Can the employee slip or trip? Can the employee fall on the same level or to another level?

(d) Can the employees strain themselves by pushing, pulling or lifting?

(e) Is there a possibility of electrical, health, or fire hazards associated with that principal step?

(3) It is estimated that 90% of the potential hazards will be uncovered. The other 10% is what makes the AHA so unique.

Factors that are unique to an AHA include (elevation, terrain, weather, etc) may add to or change the potential hazards. All of this must be taken into consideration when doing the analysis.

(4) In the example, most of the hazards associated with the principal steps have been listed. These are very general due to the lack of specific project information. The purpose of this is to keep the analysis simple and easy to follow.

d. Step 4 - Develop a Control for Each Hazard Identified.

(1) Develop methods of controlling the hazards identified in Step 3. There may be several solutions to controlling the hazard, however the method that is most beneficial should be chosen. Ask, "what are the benefits of this solution?" Sometimes the solution will solve that particular problem but create a new hazard for that step or another step. Ask workers for suggestions.

(2) The following are suggestions to help develop ideas for the best solution for the hazard:

(a) Change the physical conditions that create the hazard. "What change in physical condition will eliminate the hazard or prevent the accident?" A good example of this would be changing the surface in a work area to a non-slip type surface. Supplying ear muffs to a worker who must travel through an area in which noise levels exceed the standard would be another.

(b) Change the procedures of the Step. "What should the employee do or not do to eliminate the hazard or prevent this potential accident?" For example, "Is there another way for the employee to reach the work station other than going through the noisy area?" If there is, will it be more or less hazardous for the employee? Consideration should be given to work saving tools and equipment. If an employee must lift and carry a heavy object to a workbench, supplying the workbench with casters would eliminate the need to carry. Or two workers should lift the object.

(c) Reduce the frequency that a task must be performed. Every task has some potential for an accident to occur. Increasing the frequency that a task must be performed increases the probability of an accident occurring.

(d) Training. If none of the previous suggestions are applicable, the answer may be training the employees to do a task safely. Accidents are often caused by a lack of knowledge of safe procedures. This could mean simple instructions or specialized training from an outside source. The latter is recommended for irregular or unique work.

(3) Special attention should be given to newer employees (1 to 1-1/2 years). These employees are among the most likely to have an accident. New employees should be provided with good initial safety training.

(4) Once a control has been decided for a hazard, it must be put into a positive statement. Dust respirators will be supplied to employees. Electricity will be locked out by a mechanical device.

(5) A completed copy is provided in the example.

7. Update as Needed. It should be noted that the completed analysis is not set in stone. Field changes may result in new hazards. A delay in a different activity may result in employees working next to another activity, thus adding new hazards to the job. For an AHA to be most effective it must be updated as the activity progresses.

ANNEX II
MAJOR CONSTRUCTION ACTIVITY AND HAZARD CHECKLIST

MAJOR ACTIVITY OR PHASE	**HAZARD**
Excavation and Foundation	Equipment Operation: Pre-work Checks, Machinery Guards, Crane Load Tests, Back-up Alarms Traffic Controls: Haul Road Patterns, Signs and Signals, Flagmen and Signalmen. Dust Control Barricades Night Lighting Explosives (covered separately) Shoring and Sloping Protective Equipment: High Visibility Vests and Head Protection Pile Driving
Mass Concrete Placement	Hoisting Equipment: Pre-work Checks and Load Testing Electrical Hazards Scaffolding: Erection and Inspection, Handrails and Toeboards, Scaffold Machines, Suspended Scaffolds Access Facilities: Ramps and Runways, Stairways and Ladders. Housekeeping Controls Safety Nets Protective Lighting Night Lighting

MAJOR ACTIVITY OR PHASE	HAZARD
	Electrical Grounding Adequacy of Forms Vehicle Back-up Alarms
	Compressed Gas Cylinders: Storage and Use
Steel Erection	Hoisting Equipment: Pre-work Checks and Load Testing
	Access: Stairways, Ladders and Manlift
	Stairways, Ladders and Scaffolding: Handrails, Toeboards, Scaffold Machines, and Suspended Scaffolds Safety Nets
	Protective Equipment: Safety Belts and Lifelines Housekeeping Controls
	Welding: Cylinder Storage and Use Flash Burn Hazards, and Fire Protection
Building Construction	Housekeeping Controls: Fire Hazards and Stumbling Hazards
	Scaffolding: Handrails, Toeboards, Scaffold Machines, Suspended Scaffolds and Bracing and Stability

MAJOR ACTIVITY OR PHASE	HAZARD
	Access Facilities: Stairways, Ladders, Workman Hoists, Floor, Roof, and Wall Openings, Multistory Perimeter Guarding Material Storage: Orderliness, Fire Hazard Control Hoisting Equipment: Pre-work Checks and Load Tests Electrical Exposures: Hand and Power Tools Power Actuated Tools Lighting: Work Areas Access Areas
Heating, Ventilating and Air Conditioning	Scaffolds: Handrails and Toeboards Rolling Scaffolds, Bracing and Stability Access: Ladders, Stepladders Material Storage: Orderliness, Fire Hazard Control Protective Equipment Electrical Grounding
Electrical and Instrumentation Work	Clearance Procedures: Outages Coordination with Others

MAJOR ACTIVITY OR PHASE	HAZARD
	Hotline Work, Electrical Grounding and Protective Equipment
Use of Chemicals, Caustics, Toxic Materials, Radiation Exposures, and Welding	Determination of Hazard: Protective Equipment (Masks, Respirators, Eye Protection, Protective Clothing, Dosimetry) Fire and Explosion Hazard Control Storage of Materials Ventilation Radiation Exposures
Floating Plant Operations	Equipment Operation: Equipment Checks Machinery Guarding Protective Equipment: Work Vests, Ring Buoys, Life Saving Skiffs, Respirators, Eye Protection, Protective Clothing Lighting: Work Areas Welding: Cylinder Storage and Use Flash Burn Hazards Fire Protection Clearance Procedures: Equipment Repair and Checks
Land Clearing	Equipment Operations: Pre-work Checks, Equipment Guards,

MAJOR ACTIVITY OR PHASE	HAZARD
	Canopies, Winch Guards, Felling Controls, Decking Controls, Burning Controls and Power Tool Operations Protective Equipment: Head Protection, Leg and Knee Protection,
Demolition	Planning Order of Work Housekeeping Controls, Shoring and Bracing, Protective Equipment, Materials Handling and Material Removal
Paving	Traffic Controls: Signs, Signals, Flagmen, Haul Patterns, Equipment Checks, Reverse Alarms and Protective Equipment
Explosives and Blasting	Transportation, Storage, Handling, Drilling, Loading, Warning Plan, Firing, Radio Frequency Hazards, Misfire Procedure, Static Electricity Control, Lightening Hazard Control, and Public Protection

ANNEX III
SAMPLE ACTIVITY HAZARD ANALYSIS

ACTIVITY HAZARD ANALYSIS

ACTIVITY Interior Demolition, Army Reserve Center **ANALYZED BY/DATE** Hollingsworth B. Doe 12/12/97

PRINCIPAL STEPS	POTENTIAL SAFETY / HEALTH HAZARDS	RECOMMENDED CONTROLS
1. Remove furniture from work area.	1. Back strain.	1. Instruct all workers on proper lifting techniques. 2. Use mechanical aid/hand truck when possible.
	2. Foot injuries.	1. Require all workers to wear safety shoes.
2. Disconnect plumbing, electrical, and HVAC ductwork from interior.	1. Electrocution or shock from wires	1. Shut off power to all affected work areas. 2. Lock and tag all circuits to work areas.
	2. Workmen or tools falling from elevated work areas.	1. Provide scaffolding with standard railing. 2. Rope off areas subject to falling tools. 3. Require all workers to wear hard hats

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS
1. Mechanical lifting devices. 2. Hand trucks. 3. Locks and tags for lockout/tagout. 4. Hand tools. 5. Scaffolding	1. Test circuits to ensure not energized. 2. Scaffolding.	1. Lifting techniques. 2. Proper erection of scaffolding. 3. Asbestos removal and abatement. 4. Proper use of hand tools. 5. Proper use of PPE.

SAW form 652
4 October 1998

ACTIVITY HAZARD ANALYSIS

ACTIVITY Interior Demolition, Army Reserve Center **ANALYZED BY/DATE** _____

PRINCIPAL STEPS	POTENTIAL SAFETY / HEALTH HAZARDS	RECOMMENDED CONTROLS
	3. Asbestos from hot water pipe insulation.	1. Use proper techniques for asbestos removal and disposal. 2. Use proper type of PPE - Protective clothing, respirators.
	4. Slips, trips, and falls.	1. Use proper fall protection. 2. Apply good housekeeping techniques (keep debris off floors, keep floors dry).
	5. Noise.	1. Monitor noise level. Require all workers to wear hearing protection if noise level exceeds 85 dbA.
	6. Dust.	1. Provide dust respirators and safety glasses for all affected workers. 2. Provide fans for ventilation.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

SAW form 652
4 October 1998

ACTIVITY HAZARD ANALYSIS

ACTIVITY Interior Demolition, Army Reserve Center

ANALYZED BY/DATE _____

PRINCIPAL STEPS	POTENTIAL SAFETY / HEALTH HAZARDS	RECOMMENDED CONTROLS
3. Demolish interior.	7. Fire/explosion.	1. Prohibit smoking in work area. 2. Provide the proper type and number of fire extinguishers.
	8. Cuts from pipes or duct.	1. Require gloves for all workers.
	1. Dust.	1. Provide dust respirators. 2. Provide fans for ventilation.
	2. Eye injury.	1. Require all workers to wear safety glasses.
	3. Debris falling on workers.	1. Rope off areas when demolition begins 2. Post watchmen during demolition. 3. Require all workers to wear hard hats and safety shoes.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

SAW form 652
4 October 1998

ACTIVITY HAZARD ANALYSIS

ACTIVITY Interior Demolition, Army Reserve Center **ANALYZED BY/DATE** _____

PRINCIPAL STEPS	POTENTIAL SAFETY / HEALTH HAZARDS	RECOMMENDED CONTROLS
	4. Workmen falling.	1. Provide scaffolding with standard railing.
	5. Cuts/puncture wounds.	1. Remove nails from scrap lumber.
	6. Fire/explosion.	1. Remove all scrap lumber. 2. Vacuum dust from work area after every shift. 3. Prohibit smoking in work area. 4. Provide proper type and number of fire extinguishers.
	7. Noise.	1. Monitor noise level. Require all workers to wear hearing protection if noise level exceeds 85 dbA.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

SAW form 652
4 October 1998

ACTIVITY HAZARD ANALYSIS

ACTIVITY Interior Demolition, Army Reserve Center

ANALYZED BY/DATE _____

PRINCIPAL STEPS	POTENTIAL SAFETY / HEALTH HAZARDS	RECOMMENDED CONTROLS
4. Clean up.	1. Dust. 2. Fire/explosion.	1. Provide dust respirators and safety glasses for all affected workers. 2. Provide fans for ventilation. 1. Prohibit smoking in work areas. 2. Vacuum dust after each shift. 3. Provide proper type and number of fire extinguishers.

EQUIPMENT TO BE USED	INSPECTION REQUIREMENTS	TRAINING REQUIREMENTS

SAW form 652
4 October 1998

APPENDIX H
RADIATION SAFETY

1. Purpose. To provide policy procedures and information necessary to support the radiation safety program.

2. Applicability. Applicable to all facilities in the Wilmington District that procure, use, store, transport or dispose of any radiological materials or devices which produce ionizing radiation.

3. References.

a. AR 40-5, Preventive Medicine.

b. AR 385-11, Ionizing Radiation Protection.

c. AR 40-14, Control and Recording Procedures for Exposure to Ionizing Radiation and Radioactive Materials.

d. ER 385-1-1, Radiological Safety.

e. EM 385-1-1, USACE Safety and Health Requirements Manual.

f. NRC By product, Source and/or Special Nuclear Material License.

4. Responsibilities.

a. Chief Safety and Occupational Health Office. Ensuring that radiation protection portion of the District's Safety and Occupational Health program comply with Federal and Corps of Engineers regulations.

b. Radiation Protection Officer (RPO). The RPO is responsible for the supervision of the radiation protection program and will serve as the specialist in the area of radiological safety.

c. Alternate RPO. Coordinates with the RPO on monitoring, storage, testing, transportation, acquisition, or disposal of all radiological sources. Also provide RPO assistance in supervision of the radiation protection program as well as technical guidance on the control of hazards to health and safety.

d. Custodian of Records. Is responsible for the centralized issue and control of personnel monitoring devices and preparing and maintaining DD Form 1141 or automated dosimetry report and DD Form 1952. Also, for assuring that all files and records pertaining to radiological matters are maintained and updated.

e. Construction Field Office Managers.

(1) Assuring that all radiological devices are stored in a manner and in an area approved by the RPO.

(2) Assigning one person in writing, at the project to act as the Local Radiation Control Office (LRCO).

(3) Ensuring that personnel radiation exposure is monitored and recorded.

(4) Ensuring that all persons working in or frequenting a controlled (restricted) area are informed of the presence of radioactive materials or equipment capable of producing ionizing radiation and the safety precautions and procedures needed to minimize their exposure as well as the exposure to the general public.

f. Local Radiation Control Officer (LRCO).

(1) Conduct a monthly physical inventory of all radiological devices at project.

(2) Provide a written monthly report to RPO that includes a list of devices inventoried (by serial number), their location and their condition at time of inventory.

(3) Assures coordination with RPO prior to any movement of radiological devices.

(4) Reports any change in conditions of radiological devices to RPO.

5. Medical Surveillance. A preplacement and termination medical examination will be given to all radiation workers. These examinations will be coordinated with the RPO and be consistent with the requirement in AR 40-14, paragraph 6. Periodic medical and

ophthalmic examinations, when required, will be performed at a frequency determined by a medical doctor, District IH, and in coordination with the RPO.

6. Training. All authorized users of nuclear testing equipment will be trained in the following aspects of Radiological Safety:

a. Principles and practices of radiation protection.

b. Leak testing procedures.

c. Maintenance.

d. Biological effects of radiation.

e. Radioactivity measurement standardization and monitoring techniques and instruments.

f. Accident and incident procedures.

g. Procedures for nuclear gauge storage and transportation.

h. General safety precautions, as well as the following aspects of Gauge Operations;

(1) Instrument theory.

(2) Operating procedures.

(3) Maintenance.

(4) Field application.

(5) Gauge calibration.

7. Personnel Monitoring. All personnel who are occupationally exposed to ionizing radiation will wear TLD badge. The TLD badge will be placed in a TLD holder and below the shoulders, above the hips, and on the outside of clothing. Any variation in TLD badge use must be approved by the RPO prior to initiation.

8. Care and Handling of Personnel Monitoring Devices (Thermoluminescent Dosimeters (TLDs).

a. When TLD badges are not being worn, they will be stored in locations approved by the RPO. The badges will be stored conveniently close to, but outside of, any radiation area. The TLDs will be adequately shielded from ionizing radiation produced within the area. A control dosimeter (TLD Badge) will be stored in each approved TLD badge storage area.

b. Area/Resident Engineer will ensure that the TLD badge issued to or used by one person will not be issued to or used by another person during the same wearing period.

9. Storage.

a. Radioactive materials will be stored in a fire-resistive building or within a fire-resistive enclosure.

b. The storage facility shall be locked and access controlled at all times.

c. Access to radioactive material in the stored condition shall be restricted so as to limit the exposure level to those limits in 10 CFR part 20.

d. Appropriate radiation signs shall be posted as required by 10 CFR Part 20.203.

e. Only authorized personnel shall be allowed to enter the storage area. Time in the area shall be kept to a minimum.

f. Storage areas will be surveyed for radiation leakage at least every 6 months using appropriate equipment if stored materials have not been leak tested in that period.

10. Recording Procedures. DD Form 1141 or automated Dosimetry Report will be prepared and maintained for each person occupationally exposed to ionizing radiation. It will be prepared by the custodian of records. In initial preparation of DD 1141, the custodian of records shall try to obtain complete reports of all previous occupational exposures based on recorded personnel dosimetry. DD Form 1952 will be used to record the occupational exposure history and relevant health physics information.

11. Control Procedures. The RPO will review and evaluate, at intervals not to exceed a calendar quarter, DD Form 1141 and results of bioassay procedures for each person occupationally exposed to ionizing radiation. This review and evaluation will be noted on DD Form 1141. Classification of overexposure, notification of chain of command and employee, and appropriate actions will be executed in accordance with paragraph 13, AR 40-14.

12. Leak Tests. Leak tests will be performed on all gauges being used at intervals not to exceed six months. Leak testing will also be performed on all gauges that have been in storage, to exceed the specified period stated above, before the gauge is to be used.

13. Transportation and Shipping. Transportation of devices containing radioactive materials requires conformance with the U.S. Department of Transportation and International Atomic Energy Association Regulations. Transportation and shipping plans/methods must be approved by the RPO to ensure compliance with the applicable regulations.

14. Emergency Procedures.

a. In the event that the gauge is lost, stolen, or physically damaged to the extent that the source shielding could be compromised, the Area/Resident Engineer and the RPO or Assistant RPO should be notified immediately.

b. In the event of fire, immediate notification will be made to the local fire department that the building contains radiological materials. Notification must also be made to the District RPO who will conduct a survey of the remains and provide information to USAEHA and NRC as required.

APPENDIX I
ACCIDENT REPORTING AND INVESTIGATIONS

1. Purpose. This Appendix establishes policies and procedures for prompt reporting and investigation of all accidents in compliance with AR 385-40 and OCE Supplement 1 to AR 385-40.

2. References.

a. AR 385-40, Accident Reporting and Records.

b. OCE Supplement 1 to AR 385-40.

c. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual.

3. Applicability. This Appendix applies to all District employees, activities, and Contractors.

4. Accident Report Forms.

a. ENG Form 3394 - United States Army Corps of Engineers Accident Investigation Report.

b. Standard Form 91 - Operator's Report of Motor Vehicle Accident.

c. Standard From 91A - Investigation Report of Motor Vehicle Accident.

d. CA-1 - Federal Employee's Notice of Traumatic Injury and Claim for Continuation of Pay/Compensation.

e. CA-2 - Federal Employee's Notice of Occupational Disease and Claim for Compensation.

5. Scope.

a. A typed, completed and properly executed Accident Investigation Report, ENG Form 3394, will be forwarded to the Safety Office within ten workdays after knowledge of occurrence for each type accident listed below:

(1) Injuries to personnel. Accident reports, ENG Form 3394, are required for injuries to civilian employee, contractor employees, and military personnel, with consequences as follows:

(a) Fatal Injuries (Boards of Investigation are required as discussed in paragraph 9 of this Appendix).

(b) Permanent Total Disability (Boards of Investigation are required as discussed in paragraph 9 of this Appendix). Permanent total disability is defined as the complete loss of any member or part of a member of the body, or any permanent impairment of functions of the body or part thereof, to the extent that he or she can not follow gainful employment.

(c) Permanent Partial Disability (Boards of Investigation are required as discussed in paragraph 9 of this APPENDIX). Permanent partial disability is defined as the complete loss of any member or part of a member of the body, or any permanent impairment of the functions of the body or part thereof.

(d) Temporary Total Disability. An injury that does not result in death, permanent total, or permanent partial disability, but does result in one or more days away from work (other than the day the accident occurred).

(e) Other Injuries. All injuries to Government employees that result in filing a Workers' Compensation claim with the Department of Labor, either traumatic (CA-1) or occupational (CA-2).

(2) Injuries to the Public. Accident reports, ENG Form 3394, are required for injuries to the public as follows:

(a) Drownings, other accidents, and permanent disability involving the public at all Corps administered construction and operations projects.

(b) Injuries or damages to the public on Corps projects that may result in a claim against the Government.

(3) Motor Vehicle Accidents. All accidents involving the operation, whether moving or not moving, of any Army vehicle that results in injury, damage to the vehicle, or damage to any other property regardless of the amount of damage shall be reported.

For the purpose of this regulation, Army vehicle includes the following:

(a) All Corps of Engineer vehicles, regardless of who was operating the vehicle at the time of the accident.

(b) Vehicles leased or rented and operated by Corps of Engineer personnel.

(c) Privately owned vehicles when used for official business, authorized by travel orders, and operated by Corps of Engineer personnel.

(d) General Service Administration (GSA) vehicles operated by Corps of Engineers personnel.

All motor vehicle accidents that occur on public roads resulting in $500 or more in property damage shall be reported to local law enforcement. All accidents that occur on Corps projects that involve Corps personnel and the visiting public shall be reported to local law enforcement. All motor vehicle accidents shall be reported to the Safety Office on ENG Form 3394, and to the Logistics Management Office on SF 91.

(4) Private Property Damage. Accidental damage to private property, equipment, or material incident to a Corps activity, regardless of the amount of damage, will be reported.

(5) Other Accidents. Accident reports shall be submitted for accidental fires, explosions, exposure to microwave or ionization radiation, chemical exposures, and contamination or damage or property from biological, radiological, or chemical agents.

6. Safeguarding Accident Information. The completed ENG Form 3394 and any attachments or copies will not be appended to or enclosed in any report or document, unless the sole purpose of the other report or document is to aid in accident prevention. Requests for copies of completed accident reports will be in writing and forwarded to the Safety Office.

7. Immediate Notification (Report of Serious Accident - ROSA).

a. Immediate telephonic notification will be made to the Safety Office of any accident resulting in any of the following consequences:

(1) Fatality, permanent total or permanent partial disability to on-duty military, government, or contractor personnel; and off-duty if on the premises or incident to a Corps activity or operation.

(2) Accidents in which three or more persons are hospitalized.

(3) Property damage of $200,000 or more to Corps or contractor property and equipment.

(4) Any mishap, regardless of the consequences, that may result in unfavorable criticism of the Corps or Army, or provoke questions at the Washington level.

b. Drivers or passengers of motor vehicles involved in motor vehicle accidents that conforms to the preceding criteria will make a telephonic/radio report of the accident to their supervisor as soon as possible after the accident occurs. Supervisors, upon notification, will make an immediate report through supervisory channels to the appropriate Division or Staff Office. The Division or Staff Office Chief will immediately notify the Safety Office and the District Engineer.

c. Telephonic notification, Report of Serious Accident (ROSA) will include, but will not be limited to the following:

(1) Name of the employee(s) killed or injured, job title, and installation or activity.

(2) Extent of injuries and/or identification of property ownership and equipment damaged and the dollar estimate.

(3) Date and time of accident.

(4) Location of accident, including the project name.

(5) Activity at the time of the accident.

(6) If contractor accident, the contract number and the name of the contractor.

(7) Description of the accident (who, what, where, why and how).

(8) Immediate actions taken to control the hazard to prevent further injuries.

(9) Other information that may be considered pertinent.

(10) Name, position, office and phone number of the person reporting the accident.

d. Drivers of Government vehicles will follow the accident reporting steps outlined in the vehicle operators packet placed in the glove compartment of each vehicle.

e. When reporting an accident that requires immediate telephonic notification after duty hours, or on weekends or holidays, one of the following persons in the order listed shall be notified:

NAME	TITLE	OFFICE PHONE	HOME PHONE
William F. Harris	Chief, Safety	910-251-4698	910-791-0029
George T. Burch	Chief of Staff	910-251-4503	910-686-0424
MAJ John F. Jacobs	Deputy Commander	910-251-4627	910-792-0907

8. Accident Reports.

a. Government. The following accident reporting procedures apply to government employees sustaining an on-the-job traumatic injury, occupational illness or disease, or property damage.

(1) Employee. An employee who sustains a job-related injury or illness shall obtain from his or her supervisor and complete the employee portion of an OWCP Form CA-1 (for traumatic injury) or a CA-2 (for occupational diseases). After completion, return the form to the immediate supervisor. **A CA-1 must be submitted on all injuries regardless of how insignificant they seem.**

(2) Supervisor.

(a) The supervisor shall provide the appropriate CA form to the injured employee. After completion of the employee's APPENDIX, the supervisor shall complete the supervisor's portion. There is also a receipt portion that the supervisor must complete and give to the injured employee.

(b) In addition, the supervisor of the injured employee shall complete the Accident Investigation Report, ENG Form 3394 through block 15. **A copy of ENG Form 3394 must then be attached to the original CA Form and the two forms forwarded through management channels to the Safety Office within ten (10) working days from the date of the accident.** The **original** ENG Form 3394 will be forwarded through management channels as indicated to the Safety Office within ten (10) working days for the date of the accident.

(c) The original CA-1 will be reviewed by the Safety Office and hand carried to the Civilian Personnel Advisory Center (CPAC) within two working days of receipt.

(d) An ENG Form 3394 must be completed on any accident resulting in a lost workday (other than the day of injury), medical expenses incurred (when a CA-16 is utilized), property damage of $2000.00 or more, or **ANY** motor vehicle accident. Items 15a and 15b are required entries that shall be completed.

(e) The following signature chain shall be used on ENG Form 3394. After each signature, the name, title and date shall be typed or printed legibly.

(1) Item 15c - First line supervisor that completed the form.

(2) Item 16 - Second line supervisor.

(3) Item 17 - Staff Chief.

(4) Item 18 - Chief, Safety Office

(5) Item 19 - Commander

(f) In addition to ENG Form 3394, an SF 91 (Standard Form 91) shall be completed for any motor vehicle accident resulting in damage to a vehicle. The form shall be fully completed, if able, by the operator of the vehicle involved in the accident. The completed form shall be forwarded to the supervisor of the vehicle operator who will complete an ENG Form 3394 accident report, complying with the procedures stated in paragraph 8a above. The SF 91 will be forwarded to the Logistics Management Office, with a copy furnished to the Safety Office.

b. Contractor. The following reporting procedures apply to all contractor activities:

(1) An ENG Form 3394 shall be completed and submitted to the Safety Office within ten (10) days for any accident that results in a lost work day or $2000.00 or more in property damage. Immediate notification shall be made to the Contracting Officer's Representative for any accident that results in a fatality; $200,000.00 or more in property damage; three or more persons being hospitalized, or any incident that may result in adverse publicity to the Corps of Engineers. The Contracting Officer's Representative shall notify the Safety Office within 8 hours of occurrence. Reporting requirements for ENG Form 3394 within ten (10) days still apply.

(2) The following signature chain shall be used on ENG Form 3394 for all contractor accidents. After each signature, the name, title and date must be typed or printed legibly.

(a) Item 15c - Corps representative and contractor representative.

(b) Item 16 - Area or Resident Engineer, Branch Chief.

(c) Item 17 - Division Chief.

(d) Item 18 - Chief, Safety Office.

(e) Item 19 - Commander.

c. The forms shall be stocked in each office.

d. Any questions concerning these reporting procedures should be directed to the Safety Office or CPAC for specific questions concerning the CA forms.

9. Boards of Investigation.

a. Accidents involving a fatality, permanent total disability, permanent partial disability to government or contractor personnel, hospitalization of three or more people, and $200,000.00 or more in property damage will be investigated by a Board of Investigation appointed by the District Commander. The Board will normally contain three members composed of technical and management specialists. The Board president will be a GS 13 or higher. The Chief of Safety will be appointed as a technical advisor, but not as a member.

b. The Board of Investigation report shall include sketches, diagrams, and other exhibits essential to presenting a clear picture of the accident. Three copies of the Board report shall be forwarded, through the chain of command, to the Safety and Occupational Health Office, HQUSACE no later than 45 days after occurrence of the accident. Basic requirements for Boards are outlined in EP 385-1-40 dated 31 May 1991.

c. The Chief of Safety shall travel as soon as possible to all accidents that require a Board of Investigation.

10. Disciplinary Action for Property Damage Accidents.

a. Reports of Survey will be conducted for all property damage accidents. Disciplinary will be recommended where accident circumstances, as determined by the accident investigation report, indicate GROSS NEGLIGENCE as a primary cause.

b. Gross negligence shall include, but not be limited to:

(1) **Willful violation** of known or established safety regulations or requirements.

(2) **Improper operation** of an assigned motor vehicle or equipment resulting in an accident in which the operator is found at fault.

(3) Conviction of **willful traffic violations.**

(4) Operating government vehicles or equipment **while under the influence** of intoxicating liquors or drugs.

(5) **Willful violation** of a safety regulation that contributed to the accident.

c. Disciplinary action recommended shall comply with the criteria setforth in AR 690-700, Chapter 751, Discipline.

11. Accident Reporting Integrity. It is management's responsibility to take reasonable steps to insure that all accidents are properly reported. When there is doubt as to which office is chargeable in an accident, the accident report shall be submitted to the Safety Office with a memorandum outlining facts pertinent to the case. The Safety Office will render the decision as to which office is chargeable.

12. Exposure Reports. The Safety Office is responsible for submitting an exposure report to the South Atlantic Division Headquarters. The report is required to be submitted by the 12th of each month. Each office responsible for reporting statistics to the Safety Office shall do so no later than the 7th of each month.

a. Report of Government Employee Man-hours. The Resource Management Office is responsible for providing all monthly government man-hours to the Safety Office. Man-hours for personnel TDY from other Districts are the home district's responsibility. Man-hours for employees officially detailed will be reported with the detail duty station.

b. Government Vehicle Mileage. The Logistics Management Office is responsible for providing all vehicle mileage to the Safety Office. The mileage shall be reported quarterly by the date specified above.

c. Rental and Privately Owned Vehicle Mileage. Each employee will report rental and privately owned vehicle mileage on their travel voucher. IMO will capture the mileage and report it quarterly to the Safety Office by the date specified above.

d. Report of Contractor Man-hours. All field and district staff offices supervising construction, dredging, or service contracts shall submit reports of contractor man-hours worked each month. Man-hours worked during the month by each prime contractor shall be listed separately on this report with the contract name, number and name of the contractor. The man-hours for prime contractors shall include man-hours for all subcontractors. The list shall specify whether the contract is construction, service or dredging. Man-hours shall be submitted for all Architect-Engineer contracts involving hazardous work such as drilling. The man-hours shall be submitted on SAW Form 648, Monthly Man-hour Report.

e. Man-days for Military Personnel. Man-days for military personnel shall be reported by the Resource Management Office.

f. Visitation Days to Recreation Areas. Visitation days shall be reported by the Natural Resource Management Unit.

13. Loan of plant and Personnel. The responsibility for investigation of accidents involving personnel, equipment and plant on loan between Engineer Districts shall be that of the employing or owning office. Accident reports shall be submitted accordingly. Upon request, the user should provide a courtesy copy of an accident report to the using office. This responsibility can only be changed when operational control has been formally transferred in a Memorandum of Understanding signed by responsible officials for both the owning and using organizations.

14. Example of a Completed Accident Investigation Report. See Annex I of this Appendix.

15. Boards of Investigation Procedures. See EP 385-1-40, Boards of Investigation.

16. Report of Serious Injury Format (ROSA). See Annex II of this Appendix.

ANNEX I
EXAMPLE OF A COMPLETED ACCIDENT INVESTIGATION REPORT
(REDUCED TO ABOUT 85% OF THE ORIGINAL SIZE)

(For Safety Staff only) | REPORT NO. | EROC CODE

UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT

(For Use of this Form See Attached Instructions and USACE Suppl to AR 385-40)

REQUIREMENT CONTROL SYMBOL: CEEC-S-8(R2)

1. ACCIDENT CLASSIFICATION

PERSONNEL CLASSIFICATION	INJURY/ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING
GOVERNMENT ☐ CIVILIAN ☐ MILITARY	☐	☐ FIRE INVOLVED ☐ OTHER	☐	☐
☒ CONTRACTOR	☒	☐ FIRE INVOLVED ☐ OTHER	☒	☐
☐ PUBLIC	☐ FATAL ☐ OTHER		☐	

2. PERSONAL DATA

a. NAME (Last,First,MI)	b. AGE	c. SEX	d. SOCIAL SECURITY NUMBER	e. GRADE
DILLINGER, JOHN Q.	41	☒ MALE ☐ FEMALE	___ ___ ___ / ___ ___ / ___ ___ ___ ___	

f. JOB SERIES/TITLE: HEAVY EQUIPMENT OPERATOR

g. DUTY STATUS AT TIME OF ACCIDENT: ☒ ON DUTY ☐ TDY ☐ OFF DUTY

h. EMPLOYMENT STATUS AT TIME OF ACCIDENT: ☐ ARMY ACTIVE ☐ ARMY RESERVE ☐ ARMY NG ☐ VOLUNTEER ☐ PERMANENT ☐ FOREIGN NATIONAL ☐ SEASONAL ☐ TEMPORARY ☐ STUDENT ☐ OTHER (Specify)

3. GENERAL INFORMATION

a. DATE OF ACCIDENT (month/day/year)	b. TIME OF ACCIDENT (Military time))	c. EXACT LOCATION OF ACCIDENT	d. CONTRACTOR'S NAME
01 / 21 / 91	1432	Intersection of Kerr Avenue and Market Wilmington, NC 28402	(1) PRIME: John Doe Co, Inc. (2) SUBCONTRACTOR: Palm Coast Trucking

e. CONTRACT NUMBER: DACW17-91-C-0047
☐ CIVIL WORKS ☐ MILITARY ☐ OTHER (Specify) ____

f. TYPE OF CONTRACT: ☒ CONSTRUCTION ☐ SERVICE ☐ A/E ☐ DREDGE ☐ OTHER (Specify) ____

g. HAZARDOUS/TOXIC WASTE ACTIVITY: ☐ SUPERFUND ☐ DERP ☐ IRP ☐ OTHER (Specify) N/A

4. CONSTRUCTION ACTIVITIES ONLY (Fill in line and corresponding code number in box from list - see instructions)

a. CONSTRUCTION ACTIVITY	(CODE)	b. TYPE OF CONSTRUCTION EQUIPMENT	(CODE)
Site Preparation	0002	Dump Truck	0012

5. INJURY / ILLNESS INFORMATION (Include name on line and corresponding code number in box for items e, f & g - see instructions)

a. SEVERITY OF ILLNESS / INJURY	(CODE)	b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY
Lost Workday Case	LWD	8	0	0

e. BODY PART AFFECTED
PRIMARY: Head (CODE) CZ
SECONDARY: Right Leg (CODE) LS

f. NATURE OF ILLNESS / INJURY: Concussion (CODE) TK

g. TYPE AND SOURCE OF INJURY/ILLNESS
TYPE: Head went through (CODE) 0120
SOURCE: Windshield (CODE) 0170

6. PUBLIC FATALITY (Fill in line and corresponding code number in box - see instructions)

a. ACTIVITY AT TIME OF ACCIDENT (CODE)

b. PERSONAL FLOATATION DEVICE USED? ☐ YES ☐ NO ☐ N/A

7. MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE: ☐ PICKUP/VAN ☐ AUTOMOBILE ☒ TRUCK ☐ OTHER (Specify) Dump Truck

b. TYPE OF COLLISION: ☐ SIDE SWIPE ☐ HEAD ON ☐ REAR END ☐ BROADSIDE ☒ ROLL OVER ☐ BACKING ☐ OTHER (Specify) ____

c. SEAT BELTS	USED	NOT USED	NOT AVAILABLE
(1) FRONT SEAT		X	
(2) REAR SEAT			

8. PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM	b. OWNERSHIP	c. $ AMOUNT OF DAMAGE
(1) WABCO 23cu. yd. 35D Dump Truck	Palm Coast Trucking	$10,000.00
(2)		
(3)		

9. VESSEL / FLOATING PLANT ACCIDENT (Fill in line and corresponding code number in box from list - see instructions)

a. TYPE OF VESSEL/FLOATING PLANT (CODE)

b. TYPE OF COLLISON/MISHAP (CODE)

10. ACCIDENT DESCRIPTION (Use additional paper, if necessary)

Employee was traveling east on Kerr Avenue (Empty) to reload when another truck approached traveling west at approx. 40 mph., through a curve employee moved truck to side of road which sloped down, loosing control. Truck turned and rolled down slope.

CESAWDR 385-1-1
8 Jun 99

11 CAUSAL FACTOR(S) *(Read Instruction Before Completing)*

a *(Explain YES answers in item 13)*	YES	NO
DESIGN: Was design of facility,workplace or equipment a factor?	X	
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?		X
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?		X
OPERATING PROCEDURES: Were operating procedures a factor?	X	
JOB PRACTICES: Were any job safety/health practices not followed when the accident occurred?	X	
HUMAN FACTORS: Did any human factors such as, size or strength of person, etc.,contribute to accident?		X
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?		X

a *(CONTINUED)*	YES	NO
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust,fumes,mists,vapors or physical agents, such as, noise,radiation,etc.,contribute to accident?		X
OFFICE FACTORS: Did office setting such as, lifting office furniture,carrying,stooping,etc.,contribute to the accident?		X
SUPPORT FACTORS: Were inappropriate tools/resources provided to properly perform the activity/task?		X
PERSONAL PROTECTIVE EQUIPMENT: Did the improper selection, use or maintenance of personal protective equipment contribute to the accident?		X
DRUGS/ALCOHOL: In your opinion,was drugs or alcohol a factor to the accident?		X

b. WAS A WRITTEN JOB/ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT?
[X] YES *(If yes, attach a copy.)* [ ] NO

12 TRAINING

a WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?	b. TYPE OF TRAINING.	c. DATE OF MOST RECENT FORMAL TRAINING.
[X] YES [ ] NO	[ ] CLASSROOM [X] ON JOB	10 / 14 / 89 (Month) (Day) (Year)

13 FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT; INCLUDE DIRECT AND INDIRECT CAUSES *(See instruction for definition of direct and indirect causes.) (Use additional paper, if necessary)*

a DIRECT CAUSE
Other driver was traveling in excess speed into employee lane forcing evasive action

b INDIRECT CAUSE(S)
Not wearing seat belt and trying to over compensate.

14 ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S).

DESCRIBE FULLY:
Employee speeding was removed and Mr. Dillinger was repremanded about not wearing his seatbelt All employees were provided Defensive Driving Safety meeting and reminded of posted speed limit on Kerr Avenue.

15 DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.

a BEGINNING *(Month/Day/Year)* / /	b. ANTICIPATED COMPLETION *(Month/Day/Year)* / /

c. SIGNATURE AND TITLE OF SUPERVISOR COMPLETING REPORT	d. DATE *(Mo/Da/Yr)*	e. ORGANIZATION IDENTIFIER *(Div, Br, Sect)*	f. OFFICE SYMBOL
CORPS _____	___ / ___ / ___		
CONTRACTOR _____	___ / ___ / ___		

16 MANAGEMENT REVIEW *(1st).*

a. [ ] CONCUR b. [ ] NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE
	Area Engineer	

17 MANAGEMENT REVIEW *(2nd - Chief Operations, Construction, Engineering, etc.)*

a. [ ] CONCUR b. [ ] NON CONCUR c. COMMENTS

SIGNATURE	TITLE	DATE
	Chief, Con-Ops Division	

18 SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW

a [ ] CONCUR b. [ ] NON CONCUR c. ADDITIONAL ACTIONS/COMMENTS

SIGNATURE	TITLE	DATE
	Chief, Safety & Occupational Health	

19 COMMAND APPROVAL

COMMENTS

COMMANDER SIGNATURE	DATE

(Reverse of ENG Form 3394)

☆ U.S.G.P.O.: 1989- 626-113

ANNEX II
SAMPLE FORMAT FOR A REPORT OF SERIOUS ACCIDENT (ROSA)

CESAWDR 385-1-1
8 Jun 99

OFFICE SYMBOL DATE

MEMORANDUM FOR CESAW-SO

SUBJECT: Report of Serious Accident (ROSA)

1. Name of the employee: John T. Roe, Dump Foreman.

2. Extent of injuries: Severed leg.

3. Date and time of accident: 5 December 1990, 1330 eastern standard time.

4. Location of accident and project name: Dirtsville Beach, North Carolina; Beach Renourishment.

5. Activity at time of accident: Extending pipeline.

6. Name of contractor and contract number: Tinshack Dredging Company, Contract No. DACW54-91-C-0001.

7. Description of the accident: A section of pipe was being added to the pipeline. Equipment operator failed to ensure that employee was in the clear before attempting to connect pipe.

8. Immediate actions taken to control the hazard: Safety meeting discussed accident and developed standard operating procedure for ensuring that employees will not be caught between pipes being connected.

9. Other pertinent information: Equipment operator was a new employee.

10. Name, position office and phone number of person reporting the accident: Jim B. Toe, Wilmington Area Office, BR 549.

APPENDIX J
REPORT OF HAZARDS, UNSAFE CONDITIONS OR PRACTICES

1. Purpose. The purpose of this Appendix is to provide all employees with a practical means of reporting hazards, unsafe conditions, or practices.

2. Applicability. This Appendix applies to all employees of the Wilmington District.

3. General.

a. DA Form 4755, 1 October 1978, Employee Report of Alleged Unsafe or Unhealthful Working Conditions, is for use by all employees. When an employee recognizes an unsafe condition or practice that can not be corrected by themselves or their supervisor, he or she should complete DA Form 4755 and forward it to the Safety Office for review and determination. A copy of this form is in Annex I of this Appendix.

b. If dissatisfied with the determination, the employee may appeal the decision to the Division Safety Office. If still dissatisfied, the employee may forward it to the HQ Safety Office. If still dissatisfied, the employee may forward it to the Army Director of Safety. Finally, if still dissatisfied, the employee may appeal to the Office of Federal Agency Program, U.S. Department of Labor. In the latter case, the request should be in writing to the Assistant Secretary of Defense (Manpower and Reserve Affairs), Washington, D.C. 20301, describing in detail the entire processing of the report and the setting forth of his or her objections thereto. All correspondence will be submitted through regular channels.

c. Nothing in this procedure should be considered that would deter an employee from making a report of an unsafe or unhealthy working condition to his supervisor. However, an employee may request that his or her name be withheld from the supervisor if he or she submits a notice of unsafe conditions to the designated safety official. The Occupational Safety and Health Act of 1970 gives an employee assurance that no discriminatory or discharge action will be taken against and employee who exercises his or her rights under the Act.

ANNEX I
DA FORM 4755

EMPLOYEE REPORT OF ALLEGED UNSAFE OR UNHEALTHFUL WORKING CONDITIONS

For use of this form, see AR 385-10; the proponent agency is Office of The Inspector General.

This form is provided for the assistance of any complainant and is not intended to constitute the exclusive means by which a complaint may be registered with the local Safety Office (Ref OSHA Poster on rights of employees and their representatives).

The undersigned *(check one)*

☐ Employee ☐ Representative of employees ☐ Other *(Specify)* _____

believes that a job safety or health hazard exists at the following place of employment

Does this hazard *(s)* immediately threaten serious physical harm? ☐ Yes ☐ No
If "yes" checked, immediately contact your supervisor or safety representative.

Name of official in charge _____ Telephone _____

Operation/Activity _____

Exact location of worksite _____

1. Kind of operation _____

2. Describe briefly the hazard which exists there including the appropriate number of employees exposed to or threatened by such hazard

3. List by number and/or name the particular occupational safety and health standard *(s)* which may have been violated, if known

4. *(a)* To your knowledge, has this hazard been the subject of any union/management grievance or have you *(or anyone you know)* otherwise called it to the attention of, or discussed it with the employer or any representative thereof? _____

(b) If so, please give the results thereof, including any efforts by management to eliminate or reduce the severity of the hazard

5. Please indicate your desire:

☐ I do not want my name revealed to the official in charge.

☐ My name may be revealed to the official in charge.

WORK LOCATION	TELEPHONE NO.	DATE

TYPED OR PRINTED NAME OF EMPLOYEE OR EMPLOYEE REPRESENTATIVE	SIGNATURE

DA FORM 4755, OCT 78

USAPPC V1.00

APPENDIX K
SAFETY CHECKLISTS FOR FLOATING PLANT, LAUNCHES, MOTORBOATS AND SKIFF, AND MOBILE CONSTRUCTION EQUIPMENT

1. Purpose. This Appendix sets forth District policy regarding the inspection of floating plant and mobile construction equipment.

2. Applicability. This Appendix applies to all contractor and government floating plant and mobile construction equipment used in the Wilmington District.

3. General Policy.

a. A safety inspection shall be made of each major piece of floating plant (dredge, derrick boat, fuel barge, tug, scow, etc). For contractor plant, the inspection shall be conducted prior to commencement of work. For government plant, the inspection shall be conducted annually, pursuant to paragraph 5.a(2) of ER 1130-2-500. SAD Form 1437-R, "Safety Survey Checklist for Floating Plant", shall be used and completed by the person(s) conducting the survey. The survey shall be conducted by qualified contractor personnel for contractor operations and by qualified government personnel for government operations. All surveys shall be spot checked by the Safety Office. A copy of this form is contained in Annex I of this Appendix.

(1) For contractor plant, a copy of the completed form shall be filed in the government project office and contractor's office until the project has been completed. Safety deficiencies noted during the check shall be corrected before the plant commences work. For government plant, a copy of the completed form shall be filed aboard the plant and in the Port Captain's office. Safety deficiencies noted during the check shall be corrected before the plant is allowed to continue work.

(2) Contractor or government plant involved in an accident or experiencing a breakdown requiring major repairs shall be re-inspected before the equipment is allowed to restart work.

b. A safety inspection shall be made of each major piece of heavy mobile construction equipment (crane, derrick, dragline, pile driver, paver, scraper, truck, etc) including rental equipment.

The inspections shall be conducted prior to commencement of work for all contractor activities and annually for government activities. SAD Form 1666-R, "Safety Inspection Checklist for Mobile Construction Equipment" (Mar 1997) shall be used to record the results of the inspection for all contractor and government activities. The government Resident Engineer shall conduct spot inspections of contractor equipment and the District SOHO will conduct spot inspections of government activities. A copy of this form is contained in Annex II of this Appendix.

(1) For contractor activities, a copy of the completed form shall be maintained in the government project office and in the official contract file. Safety deficiencies noted on the inspection shall be corrected prior to that piece of equipment being placed into service and the notation of such correction be made on SAD Form 1666-R.

(2) Contractor or government equipment involved in an accident or experiencing a breakdown requiring major repairs shall be re-inspected before the equipment is allowed to restart work.

ANNEX I
SAFETY CHECKLISTS FOR FLOATING PLANT
AND
LAUNCHES, MOTORBOATS AND SKIFFS

SAFETY CHECKLIST FOR FLOATING PLANT

Contract # and title:	
Contractor:	Subcontractor:
Plant Name:	Owner:
Superintendent:	Captain:
Engineer:	Number in crew:
Contract inspector:	Date inspected:

	Yes	No	N/A
1. Is a copy of the current USCG Form 835 available for plants regulated by USCG? (19.A.01)			
2. Is documentation of an accredited marine surveyor (SAMS or NAMS) available for non USCG inspected plants? (19.A.01)			
3. Do all officers and crew posses an appropriate USCG license or USACE license and certification? (19.A.02)			
4. Are periodic inspections and test records of all floating plant, equipment, and machinery available as part of the official project file? (19.A.01)			
5. Is there a severe weather plan which contains the following available? (19.A.03) a. a description of potential types of severe weather hazards and steps to guard against the hazards? b. the time frame for implementing the plan? c. the name and location of the safe harbor? d. the name of the vessels which will be used to move any non-self propelled plant, and their type, capacity, speed, and availability? e. river gage readings at which floating plant must be moved away from dams, river structures, etc. to safe areas?			

SAD Form 1437a-R
Mar 97

Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

	Yes	No	N/A
6. Is the station bill conspicuously posted throughout the vessel? (19.A.04)			
7. Has each crew member been given a written description of their emergency duties and are they familiar with them? (19.A.04)			
8. Have the following drills and tests been recorded in the station log? (19.A.04) a. abandon ship drill? b. fire drill? c. man overboard drill? d. pump shell or pipe rupture? e. hull failure? f. emergency power and lighting tests? g. bimonthly emergency power generator tests? h. bimonthly emergency lighting storage batteries tests?			
9. Are material safety data sheets(MSDSs) available for all hazardous materials on board? (06.B.01)			
10. Are employees trained to handle hazardous materials? (06.B.01)			
11. Are at least two employees on each shift certified in CPR and first aid? (03.A.02)			
12. Is there a first aid log at each first aid station? (01.D.04)			
13. Are first aid kits located in a readily accessible location and adequately stocked? (03.B.01 & .02)			
14. Is there an adequate supply of approved, potable drinking water available? (02.A.01)			
15. Are outlets dispensing non-potable water clearly marked "Water Unfit For Drinking, Washing or Cooking"?(02.A.07)			
16. Are the proper numbers of toilets, washbasins and showers provided? (02.B.06 & .07)			

	Yes	No	N/A
17. Are water, soap, and a means of drying available? (02.C.02)			
18. Is the latest information published by the USCG regarding aids to navigation available on board the vessel? (19.A.11)			
19. Is the vessel equipped with: (19.A.05) a. fenders? b. axes or other emergency cutting equipment? c. an appropriate navigational signal device? d. general alarm system operated from primary electrical system with standby batteries on trickle charge? e. easily accessible emergency controls that are adequately protected against accidental operation? f. explosion-proof lights around gasoline and oil barges or other locations where a fire or explosive hazard exists? g. interconnected emergency alarms? h. smoke alarms in living quarters? i. doors that open from both sides? j. clearly marked emergency exits? k. emergency stops for prime movers operating a dredge pump? l. GFCI protection on grounded 120 or 240 volt systems in toilet/shower spaces, galley, machinery spaces, weather deck, exterior or near any sinks? m. properly maintained and identified water tight compartments?			
20. Fuel systems: (19.A.06) a. Are tanks or lines free of gauge glasses or try cocks? b. Do all fuel tanks have shutoff valves that can be operated outside the compartment in which the tank is located and outside the engine compartment and outside the house bulkheads at or above the weather deck? c. Is there a shut off valve at the engine end of the fuel lines that are 6 feet or more in length and can it be operated from outside the house bulkheads at or above the weather deck? overboard discharge?			

	Yes	No	N/A
d. Are all carburetors on gasoline engines equipped with a backfire trap or flame arrestor? e. Are all carburetors (except downdraft type) equipped with a drip pan, with flame screen, which is continuously emptied by suction from the intake manifold or if permitted by the overboard discharge? f. Are fuel storage tanks diked or curbed IAW NAVFAC DM-22? If not are portable tanks used IAW USCG requirements in 46CFR Parts 64 and 98.3?			
21. Are cables which cross the waterways between floating plants or between plant and mooring marked? (19.A.07)			
22. Is there a fire and emergency warning system (or an established fire watch) on all vessels where people are quartered? (19.A.07)			
23. Are all floors, decks, and bilge's free of accumulation of fuel and grease? (19.A.07)			
24. Are there holdbacks or rings available to secure equipment during rough weather? (19.A.07)			
25. Are all deck openings, elevated surfaces, and similar locations provided with guardrails, bulwarks, or taut cable guardlines? (19.A.07)			
26. Are all rotating machinery, hot pipes, and moving cables guarded against accidental contact? (16.B.03)			
27. Are hazardous energy control procedures available to insure that machinery will not be operated while greasing or making repairs? (12.A.01 & 16.A.08)			
28. Are decks free of tripping hazards? or adequately marked in yellow? (19.A.07)			
29. Is all deck cargo carried on fuel barges placed on dunnage? (19.A.07)			
30. Are all pieces of floating plants operating as one unit securely fastened together with no openings(or with guarded openings)? (19.A.07)			
31. Is there a list of confined spaces available? (19.A.08)			

	Yes	No	N/A
32. Are all permitted required confined spaces labeled? (19.A.08)			
33. Are engine spaces housing internal combustion engines having electric spark ignition systems equipped with exhaust fans? (19.A.10)			
34. Are all machinery spaces and non-diesel fuel tanks compartments equipped with at least 2 ventilators, fitted with fans? (19.A.10)			
35. Are the following spaces provided with an adequate natural ventilation system? (19.A.10) a. spaces containing a portable fuel tank? b. living spaces or galley? c. other compartment spaces?			
36. Do vent intakes extend to within 1 foot of the bottom of the compartment? (19.A.10)			
37. Is suitable eye protection provided at battery charging stations? (05.B.01 & .05)			
38. Are eye wash stations provided at battery charging stations? (6.B.02)			
39. Are flammable items such as paint and thinners properly stored? (9.B)			
40. Are gasoline and other flammable liquids properly stored, dispensed, and handled? (09.B.01-.30)			
41. Does all electrical wiring meet requirements of USCG-259, the National Electrical Safety Code and the National Electric Code? (11.A.01)			
42. Are insulated mats provided at locations where machinery has exposed live parts? (11.A.07)			
43. Are switch and transformer banks adequately protected and marked to keep unauthorized personnel out of the danger area? (11.A.02)			
44. Are portable electric tools grounded by a multiconductor cord with an identified conductor and a multicontact polarized plug-in receptacle? (11.C.01)			

	Yes	No	N/A
45. Are ground fault circuit interrupters provided in locations where portable tools could be used? (11.C.05)			
46. Are flexible cords protected in work area, appropriately secured or suspended and are they used for appropriate useages. (11.A.03 and Table 11-1?)			
47. Are all means of access properly secured, guarded and free of slipping and tripping hazards? (19.B.01)			
48. Are all working decks, stair treads, ship ladders, platforms, catwalks, and walkways, provided with non-slip surfaces? (19.B.01)			
49. Are grab bars provided on the sides of super structure of tugs, tenders, and launches except where railings are present? (19.B.01)			
50. Are double rung or flat tread type Jacob's ladders restricted to use only when no safer form of access is practical? (19.B.01)			
51. Is there a safe means for boarding or leaving the vessel? (19.B.02)			
52. Is there a stairway, ladder, ramp, gangway, or personnel hoist provided at all personnel points of access with breaks of 19" or more in elevation? (19.B.02)			
53. Are gangways and ramps: (19.B.02) a. secured at one end by at least one point on each side with lines or chains to prevent overturning? b. supported at the other end in such a manner as to support them and their normal loads in the event they slid off their supports? c. placed at an angle no greater than that recommended by the manufacturer? d. provided with a standard guardrail?			
54. Are stairs or permanent inclined ladders provided for vertical access between decks? (9.B.03)			

	Yes	No	N/A
55. Is there at least 2 feet of clearance on outbord edges used for passageways? (19.B.3)			
56. Is the vessel equipped with at least one portable or permanent ladder with at leastr one portable or permanent ladder with which to rescue a person in the water? (19.B.04)			
57. Are there at least 2 means of escape from all assembly, sleeping and messing areas on the plant? (19.B.04)			
58. Are all means of access maintained safe and functional? (19.B.04)			
59. Are all floating pipelines used as walkways equipped with a walkway which is at least 20" wide and has a handrail on at least one side? (19.B.05)			
60. Are floating pipelines that are not intended as walkways barricaded on both ends?(19B.05)			
61. Are positive measures taken to raise and secure the ladder and to block suction and discharge lines during maintenance on pumps and suction or discharge lines? (19.D.01)			
62. Do floating or trestle supported dredge pipelines display the following lights at night and in periods of restricted visibility: (19.D.02) a. One row of yellow lights that : (1) flash 50-70 times per minute? (2) are visible all around the horizon? (3) are visible for at least 2 miles on a clear night? (4) are between 3-10 feet above the water? (5) are approximately evenly spaced? (6) are not more than 30 feet apart where the pipeline crosses a navigable channel? (7) are sufficient in number to clearly show the pipeline's length and course? b. two red lights at each end of the pipeline (including ends in a channel where the pipeline is separated to allow vessels to pass) that: (1) are visible all around the horizon? (2) are visible for at least 2 miles on a clear dark night? (3) are 3 feet apart in a vertical line with the lower light at the same height above the water as the flashing yellow light?			

	Yes	No	N/A
63. Is the dredge designed such that a failure or rupture of any dredge pump component including the pipe shall not cause the dredge to sink? (19.D.04)			
64. Is submerged pipeline resting on the bottom where it crosses the navigation channel and is it and the anchoring system no higher than the required project depth? (19.D.03)			
65. Is buoyant or semi-buoyant pipeline fully submerged and on the bottom? (19.D.03)			
66. Is raised pipeline adequately marked? (19.D.03)			
67. Is a bilge alarm or shutdown interface available on any dredge with the dredge pump below the waterline? (19.D.07)			
68. Are two positive means available to secure "stone boxes" when the boxes are under positive pressure? (19.D.08)			
69. Remarks: (Enter actions taken for "no" answers.)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

SAFETY CHECKLIST FOR LAUNCHES, MOTORBOATS AND SKIFFS

Contract # and title:	
Contractor:	Subcontractor:
Name of equipment:	Superintendent:

	Yes	No	N/A
1. Is a qualified crew person assigned to assist with deck duties under the following circumstances: (19.C.01) a. when extended trips(more than 2 hours) are made from the work site? b. when conditions of navigation make it hazardous for an operator to leave the wheel while underway? c. when operation other than tying-in require the handling of lines? d. when operating at night or in inclement weather? e. when towing?			
2. Are all motorboats, launches and skiffs posted with the number of passengers and weight they can carry? (19.C.02)			
3. Is there a PFD available for each passenger and crew member? (19.C.02)			
4. Do all launches and motorboats that are less than 26 feet in length have at least one 1A-10B:C fire extinguisher on board? (19.C.03)			
5. Do all launches and motorboats that are 26 feet or more in length have at least 2 1A-10B:C fire extinguishers on board? (19.C.03)			

SAD Form 1437b-R Mar 97 Previous edition may be used for contracts referencing the 1992 edition of EM 385-1-1.

	Yes	No	N/A
6. Do all launches and motorboats that have gasoline or liquid petroleum gas power plants or equipment in cabins, compartments, or confined spaces have built-in automatic CO2 or other equally effective type of fire extinguishing system? (19.C.03)			
7. Remarks: (Enter actions taken for "no" answers.)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

ANNEX II
SAD Form 1666-R, SAFETY INSPECTION CHECKLIST FOR MOBILE CONSTRUCTION EQUIPMENT

SAFETY CHECKLIST FOR CRAWLER, TRUCK & WHEEL MOUNTED CRANES

Contract # and title:	
Equipment name & number: owned or leased?	
Contractor:	Subcontractor:
Contract Inspector:	Date inspected:

	Yes	No	N/A
1. Unless the manufacture has specified an on-rubber rating, outriggers will be fully extended and down? (16.D.10)			
2. Are lattice boom cranes equipped with a boom angle indicator, load indicating device, or a load moment indicator? (16.D.01)			
3. Are lattice boom and hydraulic cranes equipped with a means for the operator to visually determine levelness? (16.D.02)			
4. Are lattice boom and hydraulic cranes, except articulating booms cranes, equipped with drum rotation indicators located for use for the operator? (16.D.03)			
5. Are lattice boom and hydraulic mobile cranes equipped with a boom angle or radius indicator within the operator's view? (16.D.04)			
6. Are lattice boom cranes, with exception of duty cycle cranes, equipped with an anti-two blocking device? (16.D.05)			
7. When duty cycle machines are required to make a non-duty lift, is the crane equipped with an international orange warning device and is a signal person present? (16.D 05)			
8. Are the following with the crane at all times: (16.C.02) a. the manufacturer's operating manual? b. the load rating chart? c. the crane's log book documenting use, maintenance, inspections and tests? d. operating manual for crane operator aids used on the crane.			

	Yes	No	N/A
9. Are the following on the project site: a. completed periodic inspection report prior to initial work? (16.C.12) b. pre-operational checklist used for daily inspection? (16.C.12) c. written reports of the operational performance test? (16.C.13) d. written reports of the load performance test? (16.C.13)			
10. Are all operators physically qualified to perform work? (16.C.05)			
11. Are all operators qualified by written and practical exam or by appropriate licensing agency for the type crane they are to operate? (16.C.05)			
12. Is the crane designed and constructed IAW the standards listed in Table 16-1? (16.C.06)			
13. Is a hazard analysis for set-up and set-down available? (16.C.08)			
14. Are accessible areas within the swing radius of the rear of the crane barricaded? (16.C.09)			
15. Are there at least 3 wraps of cable on the drum? (16.C.10)			
16. Are the hoisting ropes installed IAW the manufacturer's recommendations? (16.C.10)			
17. Are critical lift plans available? (16.C.18)			
18. Are minimum clearance distance for high voltage lines posted at the operator's position? (11.E.04)			
19. Do older lattice boom cranes with anti-two block warning devices in lieu of anti-two block prevention devices have a written exemption? (16.D.05)			
20. Is the slow moving emblem used on all vehicles which by design move at 25 MPH or less on public roads? (08.A.04)			
21. Are all vehicles which will be parked or moving slower than normal traffic on haul roads equipped with a yellow flashing light or flasher visible from all directions? (16.A.13)			

	Yes	No	N/A
22. Is all equipment to be operated on public roads provided with: (16A.07) a. headlights? b. brake lights? c. taillights? d. back-up lights? e. front and rear turn signals?			
23. Are seat and seat belts provided for the operator and each rider on equipment? (16.A.07 and 16.B.08)			
24. Is all equipment with windshields equipped with powered wipers and defogging or defrosting devices? (16.A.07)			
25. Is the glass in the windshield or other windows clear and unbroken to provide adequate protection and visiblity for the operator? (16.A.07, 16.B.10)			
26. Is all equipment equipped with adequate service brake system and emergency brake system? (16.A.18)			
27. Are areas on equipment where employees walk or climb equipped with platforms, footwalks, steps, handholds, guardrails, toeboards and non-slip surfaces? (16.B.03)			
28. Is all self propelled equipment equipped with automatic, audible, reverse signal alarms? (16.B.01)			
29. Is there a record of manufacturer's approval of any modification of equipment which affects its capacity or safe operation? (16.A.18)			
30. Are truck and crawler cranes attached to a barge or pontoon by a slack tiedown system? (16.F.06)			
31. Have the following conditions been met for land cranes mounted on barges or pontoons: (16.F.04) a. Have load ratings been modified to reflect the increased loading from list, trim, wave, and wind action? b. Are all deck surfaces above the water? c. Is the entire bottom area of the barge or pontoon submerged? d. Are tie downs available? e. Are cranes blocked and secured?			
32. Are all belts, gears, shafts, spindles, drums, flywheels, or other rotating parts of equipment guarded where is a potential for someone to [illegible] (16.B.03)			

	Yes	No	N/A
33. Is the area where the crane is to work level, firm and secured? (16.A.10)			
34. Is a dry chemical or carbon dioxide fire extinguisher rated at least 5-B:C on the crane? (16.A.26)			
35. Are trucks, for truck mounted cranes, equipped with a working reverse signal alarm? (16.B.01)			
36. Is a signal person provided where there is danger from swinging loads, buckets, booms, etc.? (16.B.13)			
37. Is there adequate clearance from overhead structures and electrical sources for the crane to be operated safely? (16.C.09)			
38. Is there adequate lighting for night operations? (16.C.19)			
39. Has the the boom stop test on cable-supported booms been performed? (16.D.06)			
40. Is the boom disenaging device functioning as required? (16.D.06)			
41. Has all rigging and wire rope been inspected? (Section 15)			
Remarks:(Enter actions taken for all "no" answers.)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

SAD Form 1666a-R Mar 97 Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

SAFETY CHECKLIST FOR PORTAL, TOWER, AND PILLAR CRANES

Contract # and Title:			
Equipment name & number: owned or leased?			
Contractor:	Subcontractor:		
Contract Inspector:	Date Inspected:		
	Yes	No	N/A
1. Are the following available: (16.E.02) a. written erection instructions? b. listing of the weight of each component? c. an activity hazard analysis for the erection? d. does the activity hazard analysis contain (1.) location of crane and adjacent structures? (2.) foundation design and construction requirements? (3.) clearance and bracing requirements?			
2. Is there a boom angle indicator within the operator's view? (16.E.04)			
3. Are luffing jib cranes equipped with: (16.E.05) a. shock absorbing jib stops? b. jib hoist limit switch? c. jib angle indicator visible to operator?			
4. If used, do rail clamps have slack between the point of attachment to the rail and the end fastened to the crane? (16E.06)			
5. Are the following with the crane at all times: (16.C.02) a. the manufacturer's operating manual? b. the load rating chart? c. the crane's log book documenting use, maintenance, inspections and tests? d. the operating manual for crane operational aids used on the crane?			

SAD Form 1666b-R Mar 97 Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

	Yes	No	N/A
6. Are the following on the project site: a. completed periodic inspection report prior to initial work? (16.C.12) b. pre-operational checklist used for daily inspections? (16.C.12) c. written reports of the operational performance tests? (16.C.13) d. written reports of the load performance tests? (16.C.13)			
7. Is every crane operator certified by a physician to be physically qualified to perform work? (16.C.05)			
8. Are all operators qualified by written and practical exam or by appropriate licensing agency for the type crane they are to operate? (16.C.05)			
9. Is the crane designed and constructed IAW the standards listed in Table 16-1? (16.C.05)			
10. Is a hazard analysis for set-up and set-down available? (16.C.08)			
11. Are there at least 3 wraps of cable on the drum? (16.C.10)			
12. Are the hoisting ropes installed IAW the manufacturer's recommendations? (16.C.10)			
13. Is the a record of manufacturer's approval of any modification of equipment which affects its capacity or safe operation? (16.A.07)			
5. Remarks: (Enter actions taken)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

SAD Form 1666b-R Mar 97 Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.
page 2 of 2

SAFETY CHECKLIST FOR RIGGING

Contract # and title:

Equipment name & number:
owned or leased?

Contractor	Subcontractor:
Contractor inspector:	Date inspected:

	Yes	No	N/A
1. Has all defective rigging been removed? (15.A.01)			
2. Is rigging stored properly? (15.A.01)			
3. Are running lines within 6.5' of the ground or working level guarded? (15.A.03)			
4. Are all eye splices made in an approved manner with rope thimbles? (sling eyes excepted) (15.A.04)			
5. Are positive latching devices used to secure loads? (15.A.05)			
6. Are all custom lifting accessories marked to indicate their safe working loads? (15A.07)			
7. Are all custom designed lifting accessories proof-tested to 125% of their rated load? (15.A.07)			
8. Are the following conditions met for wire rope: (15.B.01-09) a. Are they free of rust or broken wires? b. Are defective ropes cut up or marked as unusable? c. Do rope clips attached with U-bolts have the U-bolts on the dead end or short end of the rope? d. Are protruding ends of strands in splices on slings and bridles covered or blunted? e. Except for eye splices in the end of wires and for all-endless wire rope slings, are all wire ropes used in hoisting, lowering, or pulling loads one continuous piece, free of knots or splices?			

SAD Form 1666c-R Mar 97 Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

	Yes	No	N/A
f. Do all eye splices have at least 5 full tucks? [illegible] attached without attached the dead end of the wire rope to the live rope? h. Are they free of eyes or splices formed by wire rope clips or knots?			
9. Are the following conditions met for chain? (15.C.01-04) a. Are all chains alloyed? b. Do all coupling links or other attachments have rated capacities at least equal to that of the chain. c. Are makeshift fasteners restricted from use?			
10. Are the following conditions met for fiber rope:(15.D.01-07) a. Are all ropes protected from freezing, excessive heat or corrosive materials? b. Are all ropes protected from abrasion? c. Are splices made IAW manufacture's recommendations? d. Do all eye splices in manila rope contain at least 3 full tucks and do all short splices contain at least 6 full tucks(3 on each side of the centerline of the splice)? e. Do all splices in layed synthetic fiber rope contain at least 4 full tucks and do short splices contain at least 8 full tucks (4 on each side of the centerline of the splice)? f. Do the tails of fiber rope splices extend at least 6 rope diameters (for rope 1" diameter or greater) past the last full tuck? g. Are all eye splices large enough to provide an included angle of not greater than 60* at the splice when the eye is placed over the load or support?			
11. Are the following conditions met for all slings:(15.E.01-06) a. Is protection provided between the sling and sharp surfaces? b. Do all rope slings have minimum clear length of 40 times the diameter of component ropes between each end fitting or eye splice? c. Do all braided slings have a minimum clear length of 40 times the diameter of component ropes between each end fitting or eye splice?			

	Yes	No	N/A
d. Do all welded alloy steel chain slings have affixed permanent identification stating size, grade,			
e. Is each synthetic web sling marked or coded to identify its manufacturer, rated capacities for each type hitch and the type material?			
12. Are drums, sheaves, and pulley smooth and free of surface defects? (15.F.01)			
13. Is the ratio of the diameter of the rigging and the drum, block sheave or pulley thread diameter such that the rigging will adjust without excessive wear, deformation, or damage? (15F.02)			
14. Have all damaged drums, sheaves and pulleys been removed from service? (15.F.04)			
15. Are all connections, fittings, fastenings, and attachments of good quality, proper size and strength, and installed IAW manufacturer's recommendations? (15.F.05)			
16. Are all shackles and hooks sized properly? (15.F.06 & .07)			
17. Are hoisting hooks rated at 10 tons or greater provided with safe handling means? (15.F.07)			
18. Do all drums have sufficient rope capacity? (15.F.08)			
19. Is the drum end of the rope anchored by a clamp securely attached to the drum in a manner approved by the manufacturer? (15.F.08)			
20. Do grooved drums have the correct groove pitch for the diameter of the rope and is the groove depth correct? (15.F.08)			
21. Do the flanges on grooved drums project beyond the last layer of rope at a distance of either 2" or twice the diameter of the rope, whichever is greater? (15.F.08)			
22. Do the flanges on ungrooved drums project beyond the last layer of rope a distance of either 2.5" or twice the diameter of the rope, which ever is greater.			

	Yes	No	N/A
23. Are the sheaves compatible with the size of (15F.09)			
24. Are sheaves properly aligned, lubricated, and in good condition? (15.F.09)			
25. When rope is subject to riding or jumping off a sheave, are sheaves equipped with cablekeepers? 915.F.09)			
26. Are eye bolts loaded in the plane of the eye and at angles less than 45* to the horizontal? (15.F.10)			
27. Remarks: (Enter actions taken for "no" answers.)			
Contractor inspector signature			
Contractor QC/safety/project manager signature			

SAFETY CHECKLIST FOR MOTOR VEHICLES, TRAILERS AND TRUCKS

Contract # and title: owned or leased?	
Equipment name & number:	
Contractor:	Subcontractor:
Contractor inspector:	Date inspected:

	Yes	No	N/A
1. Are records of safety inspections of all vehicles available? (18.A.02)			
2. Are all vehicles to be operated between sunset and sunrise equipped with: (18.A.04) a. 2 headlights? b. taillights and brake lights? c. front and back turn signals? d. 3 emergency flares, reflective markers, or equivalent portable warning devices?			
3. Are vehicles, except trailers or semi-trailers having a gross weight of 5000 lbs or less, equipped with service brakes and manually operated parking brakes? (18.A.05)			
4. Are service brakes on trailers and semitrailers controlled from the driver's seat of the prime mover? (18A.06)			
5. Does the vehicle have: (18.A.06) a. a speedometer? b. a fuel gage? c. an audible warning device (horn)? d. a windshield & adequate windshield wiper? e. an operable defroster and defogging device? f. an adequate rearview mirror? g. a cab, cab shield, and other protection to protect the driver from the elements and falling or shifting materials? h. non-slip surfaces on steps? I. a power-operated starting device?			

SAD Form 1666d-R Mar 97 Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

	Yes	No	N/A
6. Is all the glass safety glass and is all broken or cracked glass replace? (18.A.07)			
7. Do trailers meet the following: (18A.08) a. Are all towing devices adequate for the weight drawn? b. Are all towing devices properly mounted? c. Are locking devices or a double safety system provided on every 5th wheel mechanism and tow bar arrangement to prevent accidental separation? d. Are trailers coupled with safety chains or cables to the towing vehicle? e. Are trailers equipped with the power brakes equipped with a break-away device which will lock-up the brakes in the event the trailer separates from the towing vehicle?			
8. Are all dump trucks:(18.A.10) a. equipped with a holding device to prevent accidental lowering of the body? b. equipped with a hoist lever secured to prevent accidental starting or tipping? c. equipped with means to determine (from the operator's position) if the dump box is lowered? d. equipped with trip handles for tailgates that allow the operator to be clear?			
9. Are all buses, trucks and combination of vehicles with a carrying capacity of 1.5 tons or more, to be operated on public roads equipped with: (18.A.11) a. 3 reflective markers? b. 2 wheel chocks for each vehicle? c. at least one 2A:10B:C fire extinguisher? d. at least two properly rated fire extinguishers (for vehicles carrying flammable cargo)? e. a red flag not less than 1 foot square.			
10. Is vehicle exhaust controlled so as not to present a hazard to personnel? (18.A.13)			
11. Are all rubber tired motor vehicles equipped with fenders or with mud flaps if the vehicle is not designed for fenders? (18.A.14)			

	Yes	No	N/A
12. Are all vehicles, except buses, equipped with seat belts? (18.B.02)			
13. Does all self-propelled construction and industrial equipment have a working reverse signal alarm? (16.B.01)			
14. Are all hot surfaces of equipment, including exhaust pipes or other lines, guarded or insulated to prevent injury or fire? (16.B.03)			
15. If an off the road vehicle, is it equipped with rollover protective structures? (16.B.12)			
16. Remarks: (Enter actions taken for "no" answers)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

SAD Form 1666d-R
Mar 97

Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

SAFETY CHECKLIST FOR CRAWLER TRACTORS AND DOZERS

Contract # and title:	
Equipment name & number: owned or leased?	
Contractor:	Subcontractor:
Contractor inspector:	Date inspected:

	Yes	No	N/A
1. Are initial and daily/shift inspection records available? (16.A.01& .02)			
2. Are only qualified operators assigned to operate mechanized equipment? (16.A.04)			
3. Are sufficient lights provided for night operations? (16.A.11)			
4. Is the unit shut down before refueling? (16.A.14)			
5. Does the unit have as a minimum a 5-B:C fire extinguisher? (16.A.26)			
6. Is there an effective, working reverse alarm? (16.B.01)			
7. Are moving parts, shafts, sprockets, belts, etc., guarded? (16.B.03 ,07, and 13)			
8. Is protections against hot surfaces, exhausts, etc., provided? (16.B.03 and .13)			
9. Are fuel tanks located in a manner to prevent spills or overflows from running onto engine exhaust or electrical equipment?			

SAD Form 1666e-R Previous editions may be used for contracts

	Yes	No	N/A
10. Are exhaust discharges directed so they do not endanger person of obstruct operator vision?(16.B.05)			
11. Are seat belts provided? (16B.08)			
12. Is protection (grills, canopies, screens) provided to shield operator from falling or flying objects? (16.B.10 and .11)			
13. Is roll over protection provided? (16.B.12)			
14. Remarks: (Enter actions taken for "no" answers)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

SAFETY CHECKLIST FOR SCRAPERS, MOTOR GRADERS, AND OTHER MOBILE EQUIPMENT

Contract # and title:	
Equipment name and number: owned or leased?	
Contractor:	Subcontractor:
Contractor inspector:	Date inspected:

	Yes	No	N/A
1. Are initial and daily/shift inspection records available? (16.A.01 & .02)			
2. Are only qualified operators assigned to operate equipment? (16.A.04)			
3. Are sufficient lights provided for night operations? (16.A.11)			
4. Does the unit have as a minimum a 5-B:C fire extinguisher? (16.A.26)			
5. Is there an effective working reverse alarm? (16.B.01)			
6. Is the unit shut down for refueling? (16.A.14)			
7. Are moving parts, shafts, sprockets, belts, etc., guarded? (16.B.03, .07 and .13)			
8. Is protection against hot surfaces, exhausts, etc., provided? (16.B.03 and .13)			
9. Are fuel tanks located in a manner to prevent spills or overflow from running onto engine exhaust or electrical equipment? (16.B.04)			
10. Are exhaust discharges directed so they do not endanger persons or obstruct operator vision? (16.B.05)			

SAD Form 1666f-R
Mar 97

Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

	Yes	No	N/A
11. Are seat belts provided for each person required to ride on the equipment? (16.B.08)			
12. Is protection (grills, canopies, screens) provided to shield operators from falling or flying objects? (16.B.10 and .11)			
13. Is roll over protection provided? (16.B.12)			
14. Is a safe means of access to the cab provided (steps, grab bars, non-slip surfaces)? (16.B.03)			
15. Are adequate head and tail lights provided? (16.A.07)			
16. Have brakes been tested and found satisfactory? (16.A.07)			
17. Does the unit have an emergency brake which will automatically stop the equipment upon brake failure? Is this system manually operable from the drivers position? (16.A.07)			
18. Is all equipment with windshields equipped with powered wipers and defogging or defrosting system? (16.A.07)			
19. Are all vehicles which will be parked or moving slower than normal traffic on haul roads equipped with a yellow flashing light or flasher visible from all directions? (16.A.13)			
20. Is the slow moving emblem used on all vehicles which by design move at 25 MPH or less on public roads? (08A.04)			

	Yes	No	N/A
21. Have air tanks been tested and certified? (20.A.01)			
22. Is an air pressure gage in working condition installed on the unit? (20.A.12)			
23. Does the air tank have an accessible drain valve? (20.B.17)			
24. Remarks: (Enter action taken for all "no" answers)			
Contractor inspector signature			
Contractor QC/safety officer/project manager			

SAFETY CHECKLIST FOR MATERIAL HOISTS

Contract # and title:			
Equipment name & number:			
Contractor:	Subcontractor:		
Contract Inspector:	Date inspected:		
	Yes	No	N/A
1. Are all hoist towers, masts, guys or braces, counterweights, drive machinery supports, sheave supports, platforms, supporting structures, and accessories designed by a licensed engineer? (16.K.02)			
2. Is a copy of the hoist operating manual available? (16.K.04)			
3. Do all floors and platforms have slip-resistant surfaces? (16.K.08)			
4. Are landings and runways adequately barricaded and is overhead protection provided where needed? (16.K.08)			
5. Are hoisting ropes installed IAW manufacturer's instructions? (16.K.10)			
6. Are operating rules posted at the hoist operator's station? (16.K.14)			
7. Are air powered hoists connected to an air supply of sufficient capacity and pressure to safely operate the hoist? (16.K.15)			
8. Are pneumatic hoses secured by some positive means to prevent accidental disconnection? (16.K.15)			
9. Remarks: (Enter actions taken for all "no" answers.)			
Contractor inspector signature			
Contractor QC/safety officer/project manager signature			

SAD Form 1666g-R
Mar 97

Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

SAFETY CHECKLIST FOR EARTH DRILLING EQUIPMENT			
Contract # and title:			
Equipment name & number:			
Contractor:	Subcontractor:		
Contractor inspector:	Date inspected:		
	Yes	No	N/A
1. Is a copy of the manual for all drilling equipment available? (16.M.01)			
2. Have all overhead electrical hazards and potential ground hazards been identified in a site layout plan and addressed in an activity hazard analysis? (16.M.02)			
3. Are MSDSs for all drilling fluids available? (16.M.05)			
4. Does the drilling equipment have 2 easily accessible emergency shut down devices (one for the operator and one for the helper)? (16.M.06)			
5. Is the equipment posted with a warning of electrical hazards? (16.M.06)			
6. Is there a spotter or an electrical proximity warning device available to ensure safe distances from power lines are maintained? (16.M.06)			
7. Remarks: (Enter actions taken for "no" answers)			
Contractor inspector signature			
Contractor QC/safety officer/project manager			

SAD Form 1666h-R
Mar 97

Previous editions may be used for contracts referencing the 1992 edition of EM 385-1-1.

APPENDIX L
HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

1. Purpose. This Appendix prescribes responsibilities and procedures for implementing the Corps of Engineers' safety and occupational health requirements for hazardous, toxic and radioactive waste.

2. Applicability. This Appendix applies to all Corps employees engaged in investigative and corrective actions at Wilmington District hazardous, toxic and radioactive waste (HTRW) or suspected HTRW sites, including DERP-FUDS. The specific requirements vary in proportion to the risks posed at a specific site and are determined by an assessment of site hazards and site activities. Limited portions apply to data collection activities for environmental assessments conducted for real estate transactions.

3. References.

a. 29 CFR 1910.120, OSHA, Hazardous Waste Site Operations and Emergency Response.

b. ER 385-1-92, Safety and Occupational Health Document Requirements for Hazardous, Toxic, and Radioactive Waste (HTRW) Activities.

c. ER 385-1-90, Respiratory Protection.

d. EM 385-1-1, Safety and Health Requirements Manual.

e. 29 CFR 1926, OSHA Construction Standards.

4. Definitions. The following definitions are provided to assist in interpretation and implementation of this Appendix.

a. HTRW Site. A site that has been investigated and is known to contain HTRW.

b. Suspected HTRW Site. A site that has not been thoroughly investigated, but for which there is documented rationale for suspecting the presence of HTRW. Rationale may include photographs, historical data, or knowledge of previous use of the site.

c. Intrusive Site Activities. Site procedures that put the employee at risk of direct exposure to site hazards. Examples of intrusive activities include but are not limited to: drilling or turning of soil for inspection, sample collection, opening containers, opening wells for sample collection, entering abandoned structures, and similar activities.

d. Non-intrusive Site Activities. Site activities that are limited in scope and are restricted from intrusive data collection procedures as listed above or other activities that put an employee at risk of exposure to or direct contact with site activities. Examples of non-intrusive activities include the following: visual inspections and walk through or drive through site visits.

e. Exclusion Zone. Zone where contamination does or could occur.

f. Contamination Reduction Zones. Transition areas between exclusion zone and clean areas where decontamination takes place.

g. Support Zone. Uncontaminated areas where administrative and support functions are located.

5. Responsibilities.

a. Chief, Safety and Occupational Health Office will:

(1) Provide oversight of the safety and health of all team members engaged in hazardous materials or hazardous waste activities.

(2) Ensure that the District's written safety and occupational health program adequately address employees and activities at HTRW sites and supplements Site Safety and Health Plans (SSHPs) developed for Corps activities.

(3) Assist in the preparation of emergency response plans for emergencies involving the release of hazardous materials or waste at Corps managed facilities.

(4) Assist in the development of SSHPs for in-house HTRW activities.

(5) Coordinate safety review and acceptance of all SSHPs for all in-house or contractor conducted preliminary assessments and investigations.

(6) Review all health and safety design criteria and specifications for all HTRW projects within the District prior to advertisement.

(7) Review for concurrence any requested changes to accepted SSHPs during investigative and remediation activities.

(8) Review and provide comments and or recommendations for all required contractor HTRW construction submittals, including the contractor's Safety and Health Plan(SHP) and Site Safety and Health Plan (SSHP), prior to commencement of on-site activities.

(9) Provide industrial hygiene and safety support for all HTRW activities within the District.

(10) Establish and maintain a tracking system to identify employees who meet the training and medical surveillance requirements for entry into HTRW sites.

(11) Monitor or provide for monitoring of District employees' exposure to hazardous agent at HTRW sites.

(12) Furnish physicians providing medical surveillance with a written description of the employee's duties as they relate to HTRW activities and his exposure assessment.

(13) Maintain copies of the physician's written opinion for all District employees medically certified to perform HTRW activities as required by paragraph (f)(7) of reference 3a.

(14) Certify that District employees have met medical and training requirements for activities at sites covered by this regulation.

(15) Ensure that District employees required to use respiratory protection are enrolled in the District's Respiratory Protection Program.

(16) Verify that medical protocol and exam results are reviewed by licensed physician who is certified in Occupational Medicine by the American Board of Preventive Medicine Incorporated.

b. Chief, Technical Services Division (TSD) for work at HTRW or Suspected HTRW sites will:

(1) Develop and provide formal sign off of SSHPs for each HTRW site activity performed by TSD employees.

(2) Coordinate with the Chief of Safety for review and acceptance of SSHPs for HTRW site activities involving TSD employees.

(3) Identify all employees who meet the criteria of this appendix for training and medical surveillance. Coordinate with the Safety Office to ensure certification is maintained.

(4) Develop activity hazard analyses that reflect all HTRW activities performed by TSD personnel.

(5) Maintain documentation of Safety Office review and acceptance of SSHPs for TSD HTRW activities.

(6) Provide personal protective equipment and clothing required by HTRW operations.

(7) Provide on-site evaluations of contractor adherence to the SSHP at HTRW construction and remediation sites.

(8) Ensure that procedures are established to confirm that personnel entering the exclusion zone meet the requirements of training and medical surveillance.

(9) Ensure that HTRW projects' SSHP is forwarded to the Safety Office for review.

(10) Stop HTRW project work upon notice of any imminent danger to health, safety, or other environment and take necessary action to resolve the situation.

(11) Ensure HTRW project manifesting and disposals meet Federal, state and local requirements.

(12) Ensure that HTRW hazardous pay requirements are met.

c. Chief, Project Management Division will:

(1) Provide overall coordination of development and implementation of all HTRW safety and health requirements.

(2) Provide coordination for all approval and review requirements both within the District and external to the District.

d. Chief Real Estate Division (Savannah) will restrict activities of his or her employees to ensure that these employees do not perform any on-site activities at HTRW sites.

e. Chief Civilian Personnel Advisory Center will assist Staff Chiefs in obtaining required training specified in paragraph 8.

6. Policy.

a. For the purpose of this Appendix, HTRW projects are defined as all investigative or corrective actions at HTRW and suspected HTRW sites, including DERP-FUDS. Investigation and removal of underground storage tanks (UST) are considered HTRW sites and are covered by this appendix.

b. Environmental assessments for real estate transactions have the potential for exposing personnel to hazards posed by HTRW. Administrative controls by qualified HTRW trained personnel will be established to limit site activities and to minimize the potential hazards associated with the site visit.

c. Construction of facilities not related to site investigation or remediation will not be permitted at uncontrolled HTRW sites.

d. Site conditions will be realistically assessed, to the degree possible, prior to sending personnel on HTRW or suspected HTRW sites.

e. Whenever feasible, engineering and administrative controls will be used to minimize the hazards associated with HTRW.

f. **Entry into the exclusion zone at an HTRW site shall be limited to necessary personnel. Personnel not certified through training and medical surveillance will not be permitted into the exclusion zone.**

g. Staff chiefs will limit the number of personnel who are assigned duties requiring training and medical surveillance noted in this Appendix. Examples of personnel requiring training and medical surveillance include but are not limited to; construction inspectors, preliminary assessment personnel, and geotechnical personnel performing intrusive work. Prior to updating training and medical surveillance, the staff chief will review the need for the employee's participation in the program. Employees who have received training and medical surveillance, but who have not performed HTRW activities should be removed from the program unless the staff chief anticipates an actual need for their certification within the upcoming year. If the staff chief removes an employee from the HTRW program, the staff chief will notify the SOHO in writing so that the employee can be scheduled for a termination physical examination per reference 3a.

7. Procedures. The following is a description of the procedures that will define an employee being assigned to HTRW activities and the Medical Surveillance necessary to comply with reference's 3a-3e.

a. The staff chief will assign his or her personnel to HTRW activities.

b. Personnel performing on-site activities at HTRW or suspected HTRW sites must complete the 40 Hour Site Safety and Health Course for HTRW sites. Prior to attending the course, the employee must be medically screened to ensure that there are no medical reasons the employee can not perform the assigned duties.

c. An annual physical examination will be conducted to ensure the continued physical qualifications of the employee. Based upon no exposure to any hazardous substances, the employee will receive an abbreviated physical for 5 years. On the sixth year, the employee will receive a complete physical examination.

d. If there is an exposure to the employee at or above the action limit established by the Permissible Exposure limit (PEL) or the Threshold Limit Value (TLV), the employee will receive a complete physical examination to ensure no occupational conditions exist from the exposure.

e. Personnel assigned to HTRW that do not perform any on-site activities, do not require Medical Surveillance nor do they require the 40-Hour Site Safety and Health Course.

f. Copies of all training certificates for the 40-Hour Site Safety and Health Course and the 8 Hour Annual Refresher course shall be submitted to the SOHO by all participants.

g. Annex I of this Appendix is a flow chart delineating the procedures for inclusion in HTRW activities and can be used by the staff chief to assist in determining the need for medical surveillance.

8. Training. All government and contractor personnel who are required to perform on-site HTRW activities covered by this Appendix must be trained. The content and duration of training will be dependent upon the employee's potential for exposure to hazardous agents.

a. Employees whose job assignments require them to conduct environmental assessments for real estate transactions must have sufficient hazard awareness training to enable them to recognize and avoid hazards that they may encounter. The District SOHO will determine sufficiency of training. Real estate personnel will not perform intrusive activities.

b. Employees whose job descriptions require them to enter known or suspected HTRW sites to perform, oversee or supervise investigative or corrective actions will receive 40 hours training off site. If the employee has a job on-site that involves the operation of equipment he or she must receive an additional 3 days of actual field experience under the direct supervision of a trained, experienced supervisor.

c. All employees who visit an HTRW site will receive a briefing from the Site Safety and Health Officer describing the specific hazards and precautions associated with that site.

The briefing will be based upon information contained in the SSHP and other applicable sources of data. The briefing will be updated as necessary.

d. On-site managers or supervisors at HTRW sites must have the 40-hour course and an additional 8 hours of specialized training on managing such operations.

e. Employees requiring the 40-hour training course must receive 8 hours of refresher training annually. The refresher training may be performed in-house, if the Chief of the Safety Office has approved the trainer and the course material.

f. Training must meet the requirements of reference 3a.

g. Personnel who visit HTRW sites under remediation, but who are not directly involved with the work site activities and who are not required to enter the exclusion zone are not required to attend the 40 hour training course.

9. Medical Surveillance. All employees who participate in the 40-hour training, in on-site activities for HTRW investigation or remediation, or in response to a release of hazardous material must be medically screened. The medical surveillance standard operating procedure (SOP) is contained in Annex II of this Appendix. In addition to pre-placement and periodic examinations described in Annex II, the following medical surveillance protocol will be established:

a. Termination examination. Whenever an employee is removed from the HTRW program, he or she must receive a termination examination. The termination examination may be deleted if the following conditions are met:

(1) The employee's last examination was within the last 6 months.

(2) The employee had no exposure since the last examination.

(3) The employee has no symptoms associated with HTRW exposure.

b. Special Tests. If a new work assignment involves the likelihood of exposure to a unique hazard not anticipated prior to the original baseline medical examination, then employees will be screened for that hazard prior to assignment.

10. Personal Protective Equipment.

a. To the extent possible, engineering and administrative controls will be used to reduce and maintain employee exposure to hazardous substances below published exposure limits.

b. Whenever engineering and administrative controls do not adequately limit employee exposure, personal protective equipment (PPE) shall be used.

c. Selection of PPE shall be based on specific site conditions and activities and will be addressed in the SSHP. If the site has been characterized, that information shall be used to determine the correct level of PPE. If the site has not been characterized, the level of PPE shall be determined by the responsible industrial hygienist or safety professional based upon available information.

d. At a minimum, PPE for any site activity will be level D. Level D PPE includes the use of hard hats, safety boots, protective gloves and clothing as warranted by site procedures to be performed.

11. Monitoring and Sampling.

a. During investigative work preliminary to remediation of an HTRW or suspected HTRW site, site personnel shall use direct reading instruments to assess site conditions to avoid incidents resulting in employee injury or exposure to hazardous environments. Employees using direct reading instruments shall be trained in their operation.

b. During on-going projects at HTRW sites, the contractor will establish an on-going air monitoring program whenever there is a question of employee exposure to hazardous substances. The purposes of monitoring are to assure proper selection of PPE, establish medical surveillance requirements and to document site conditions.

c. Monitoring to determine employee exposure will be performed by qualified industrial hygienists or technicians working under the direct supervision of a qualified industrial hygienist. Monitoring shall be performed using protocols endorsed by OSHA or the National Institute of Occupational Safety and Health (NIOSH).

d. The District Safety Office shall review the results of all sampling performed to assess employee exposure.

e. All sampling performed to assess employee exposure shall be maintained in the contract file for that particular project.

12. Site Control Program. Whenever intrusive activities are conducted at an HTRW or suspected HTRW site, a site control program which meets the requirements of paragraph 28.B.02 of reference 3d will be prepared and included in the SSHP.

13. Documents. The District and contractor that have employees covered by this chapter shall have a written safety and health plan. Existing written program may be modified or amended as necessary to meet the requirements for HTRW sites as outlined in reference 3a, 3b, and 3d. An acceptable SHP must contain the following:

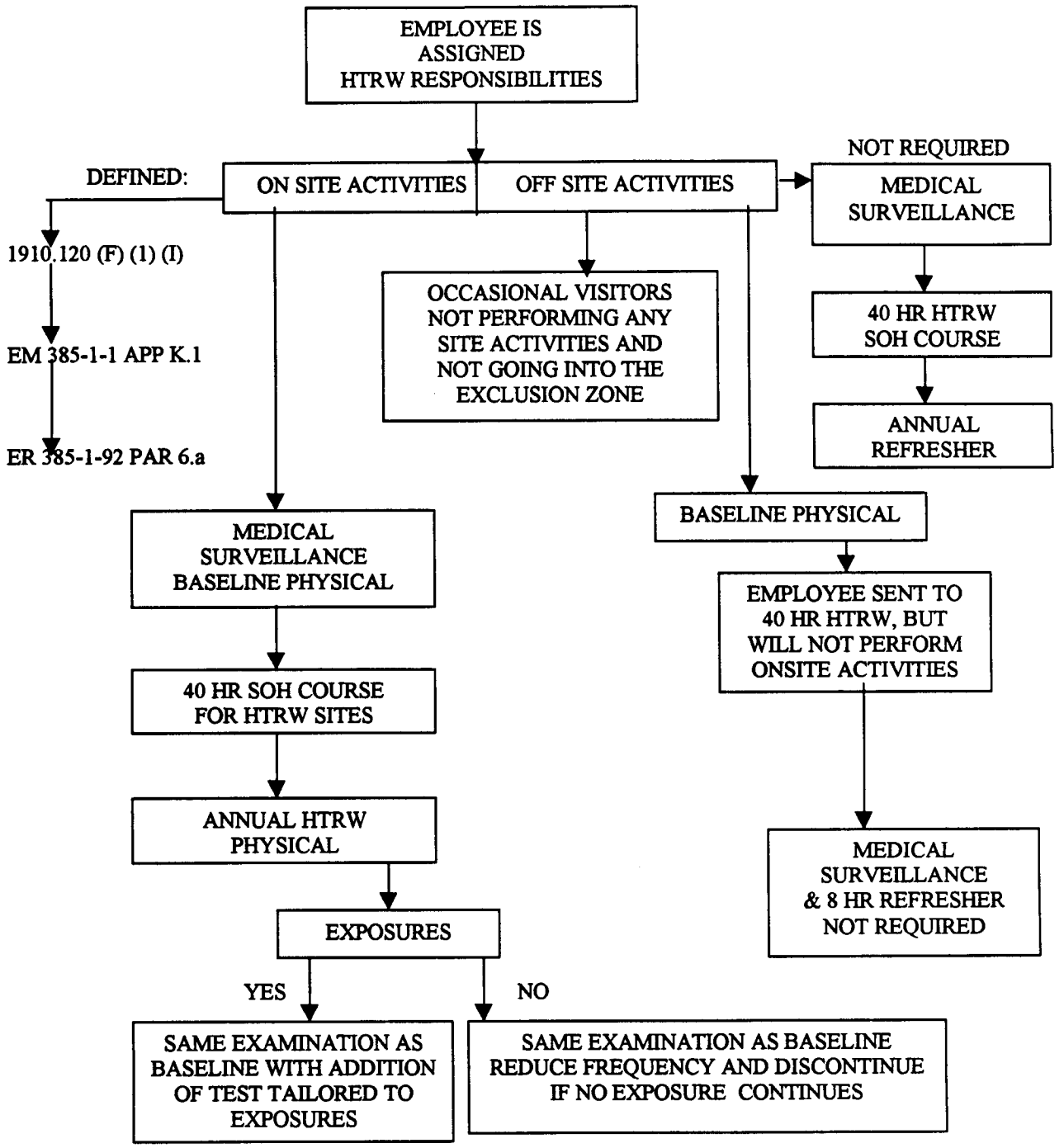
a. Organizational structure.

b. Comprehensive workplan.

c. Site Safety and Health Plan (SSHP). The SSHP shall address the safety and health hazards of each phase of site activity and the procedures for their control. When a site is subject to progressive phased activities, an SSHP for one activity can be amended to cover subsequent activities. How extensive and detailed the SSHP is, is dependent upon the specific site hazards and activities. For non-intrusive procedures at suspected sites an abbreviated SSHP may be used. The abbreviated format may also be used for performing minor intrusive tasks during preliminary assessments of suspect HTRW sites, if amended to note the specific tasks to be performed and the control measures to be used.

14. Hazardous Pay. The Safety Office will determine hazardous pay for Level C work when PPE will not practically eliminate potential hazards. Level A and B work automatically receive hazardous pay.

ANNEX I
PROCEDURES FOR DETERMINING THE NEED FOR MEDICAL SURVEILLANCE



ANNEX II
STANDARD OPERATING PROCEDURES (SOP) FOR HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW) PHYSICAL EXAMINATIONS

1. The following SOP will be followed for all personnel engaged in HTRW work and shall be included in the District's Medical Surveillance Program.

a. Initial Baseline Physical Examination. When an employee is scheduled to attend initial HTRW training and designated to perform HTRW work, prior to attending the initial training, the employee must have a baseline physical. The initial physical examination shall consist of the following:

(1) Audiogram

(2) Vision screening

(3) SMAC blood test

(4) CBC blood test

(5) Chest x-ray

(6) PFT

(7) Physical examination by a physician

(8) Medical and work history

(9) Urinalysis

b. Periodic Physical Examination. The SOHO will review available information on the employee's exposure during the previous twelve month period and will separate those employee with exposure from those with none. Physical examinations for these two groups of employees will consist of the following:

(1) Employees with exposure. Employees in this group will have the same examination as the baseline with the addition of test tailored to any exposures.

(2) Employees with no exposure. Employees in this group who remain in the HTRW program on a stand-by status will have the following examination annually:

(a) PFT

(b) Blood pressure

(c) Medical history for the past 12 months

(d) Urinalysis

(e) Review of hazardous exposures for the past year.

If all of the above procedures are within acceptable limits as reviewed by an Occupational Health Physician (OHP), the OHP will be asked to physically qualify the employee for another 12 months. This process may be repeated no more than 5 years before a History and Physical Examination by an OHP must be documented. Additional testing shall be performed and compared with the baseline, tailored according to findings. The OHP will have the option of either certifying that the employee is physically qualified based upon the above criteria or may require additional testing prior to certifying physical qualifications.

APPENDIX M
FIRE PREVENTION AND PROTECTION

1. Purpose. This Appendix defines the policy of the District Engineer for the maintenance and administration of comprehensive fire prevention and protection program. This includes building evacuation procedures for the District office and guidance for all District facilities to develop their own site-specific plans. Each facility shall have a written, dated emergency evacuation plan and a written dated fire prevention plan to minimize the risks of fire and other emergencies. Basic fire prevention and protection for construction activities will comply with CFR 29 CFR 1910.38, EM 385-1-1, NFPA, and applicable local and state codes.

2. References.

a. 29 CFR 1910.38, Employee Emergency Plans and Fire Prevention Plans.

b. AR 385 Series

c. ER 385-1-1, Safety

d. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

e. National Fire Protection Association Codes

3. Policy.

a. The SOHO shall conduct inspections that address life safety and fire protection at least annually of all District facilities.

b. The District's Safety and Occupational Health Manager is the District's Fire Marshall for all District occupied space and facilities.

c. Unless OSHA and NFPA requirements for fire brigades are met, the only building fires that should be fought by District employees are small fires that can be extinguished with fire extinguishers.

d. Managers of facilities in remote locations shall establish, if possible, Memorandums of Understanding with local fire department for fighting fires. The fire department shall be provided inventories of all hazardous material in the facility, a map showing storage locations, and shall be walked through the facility so that they understand the layout and dangers associated with the facility.

e. Evacuation and fire prevention plans shall be reviewed annually and updated as needed. Applicable plans shall be provided to and reviewed with contractors.

f. Facilities that do not meet safety and fire requirements shall be expeditiously corrected. All deficiencies shall be reviewed annually and reported to the SOHO until corrected.

g. The SOHO will be notified by telephone within 24 hours of any fire. A report of all fires will be sent to the SOHO within 5 days of a fire.

4. General Building and Structure Requirements.

a. In every building or structure, exits shall be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all times or occupancy. No lock or fastener shall be installed to prevent free escape from the inside of any building.

b. Every exit shall be clearly visible. The route to reach it shall be conspicuously marked in such a manner that every occupant of every building or structure who is physically and mentally capable will readily know the direction of escape from any point. Each means of egress, in its entirety, shall be so arranged or marked that the way to a place of safety is indicated in a clear manner. Any doorway or passageway that is not an exit, but could possibly be thought of as an exit, shall be so arranged or marked to prevent occupant confusion with actual fire exits. Every effort shall be taken to avoid occupants mistakenly traveling into dead-end spaces during a fire emergency.

c. As a minimum, two means of egress shall be provided in every building, structure, or area where the size, occupancy, and arrangement endangers occupants attempting to use a single means of egress that is blocked by fire or smoke.

The two means of egress shall be arranged to minimize the possibility that both may be impassable by the same fire or emergency condition.

d. Where hazardous processes or storage is of such character as to introduce an explosion potential, explosion venting or an explosion suppression system specifically designed for the hazard involved shall be provided.

e. Clearance of at least 18 inches shall be maintained between the top of stored material and sprinkler deflectors.

f. Clearance shall be maintained around lights and heating units to prevent ignition of combustible materials.

g. Clearance, as per the National Electrical Code, of 3 feet shall be maintained around all electrical panelboards to prevention ignition of combustible materials.

5. Housekeeping.

a. Scrap lumber, shavings, paper, crating materials, excelsior, and similar combustibles shall be cleared from buildings daily and work areas shall be maintained free from accumulations of combustible debris.

b. **All entrances, fire exits, stairs, halls and passageways shall allow free, unrestricted passage at all times. No material or equipment of any type shall ever be placed or stored to block or restrict free access and egress.**

c. Combustible cleaning materials shall be stored in closed metal containers. **No combustible materials shall be stored beneath or stacked within 10 feet of buildings.**

d. All rags, waste, etc, soiled by flammable or combustible materials shall be placed in tight or closed metal containers for daily disposal.

6. Burning Areas.

a. All burning areas shall be established after coordination with the designated authority and in compliance with Federal, State and local regulations and guidelines.

b. A sufficient force to control and patrol burning operations shall be maintained until the last embers have been extinguished. Fires and open flame devices shall not be left unattended.

7. Other.

a. Smoking is not permitted in any Wilmington District Corps of Engineers facility.

b. All electrical installations shall be accomplished in accordance with the latest edition of the National Electrical Code.

c. Emergency telephone numbers are reporting instruction shall be conspicuously posted.

8. Fire Protection.

a. Supervisory personnel at all field offices and facilities are responsible for ensuring that all fire extinguishing equipment is inspected for defects and serviced at least once each year and or as needed. Visual inspections for signs of leaks or other defects shall be made at least one per month. Inspection tags shall be attached to all extinguishers and the dates they were inspected and weighed or recharged shall be indicated thereon.

b. All employees will be trained on the proper handling and operation of fire extinguishers.

c. Adequately approved fire fighting appliances shall be provided at temporary buildings and places where combustible materials are stored on any site as follows:

(1) Class A fire (wood, paper, textiles, rubbish, etc) - Water or foam extinguisher.

(2) Class B fire (oil, grease, gasoline, and similar flammable materials) - Foam, carbon dioxide, or dry chemical extinguishers.

(3) Class C fire (electrical) - Carbon dioxide, or dry chemical extinguisher.

(4) The use of carbon tetrachloride or chlorobromomethane as a fire extinguishing agent is prohibited.

d. Class B fire extinguishers shall be provided on all draglines and trucks transporting flammable liquids and at all fuel storage tanks and pumps, tar kettles, and at sites where arc or gas welding or cutting is being performed.

e. Where unusual fire hazards exist or emergencies develop, additional fire fighting facilities, such as larger portable chemical units, fire pumps, fire hoses, outside assistance, etc., shall be developed as necessary to ensure reasonable protection.

9. Fire Extinguisher Equipment for all Motorboats.

a. The requirements for fire extinguisher equipment are applicable to all launches and motorboats regardless of construction. All motorboats 26 feet or longer shall be inspected by the Commanders authorized representative with such assistance as may be required of the Marine Inspection Service, U.S. Coast Guard.

b. The chiefs of all field units, survey parties, Operations Project Managers, and dredges are responsible for compliance with these regulations and for requisitioning initial and or replacement of fire extinguishers in accordance with existing contracting procedures.

c. The minimum approved type of equipment to be carried on each motorboat shall be one of the following:

(1) FSN 4210-965-1105 - Extinguisher, Fire, Dry-Chemical, 2 1/2 lb capacity, 10 to 20 B:C.

(2) FSN 4210-595-1777 - Extinguisher, Fire, Carbon Dioxide, 5 lb capacity, 1 to 5 B:C.

10. Evacuation Plan. The plan shall include the following:

a. Notification procedures - fire department, supervisors, district, and division. Phone numbers should be included.

b. Evacuation routes to include designation of safe locations outside of the facility where employees should wait for further instructions.

c. Fire extinguishing activities.

d. Emergency escape procedures and escape route assignments.

e. Procedures to verify that detector activation are fires or false alarms.

f. Procedures to account for all employees after evacuation have taken place.

g. Control room operator activities during emergencies.

h. Procedures to account for all employees who remain to operate critical plant equipment before they evacuate.

i. Rescue and medical duties for those employees who are to perform them.

j. The handling of tour groups, visitors or personnel not normally in the facility.

k. Fire reporting procedures.

l. Drill requirements including evacuation, and rescue operations.

m. Responsible employees who can provide further information or explanation of duties under the plan.

n. Signature cover sheet with the facility head signature, Chief of Operations or Chief of Staff signature, and Chief of Safety and Occupational Health signature signifying review and acceptance of the plan. The plans shall be reviewed for completeness and for consistency throughout the District.

11. Fire Prevention Plans.

a. A written fire prevention plan shall be available for each facility. The plan shall include the following:

(1) A list of major workplace fire hazards.

(2) Storage and handling procedures for fire hazards to include general housekeeping and procedures for the control of flammable and combustibles.

(3) Potential ignition sources and control procedures, to include smoking, cutting, grinding, and welding.

(4) A listing of fire protection equipment and written procedures for use.

(5) Documented plant inspections by plant, District, Division, safety, fire protection, and maintenance personnel.

(6) Standard Operating procedures (SOPs) for specific maintenance operations that present unique fire hazards such as cavitation and confined space work.

(7) Names and job title of personnel responsible for maintenance of fire equipment and those responsible for fire hazards.

(8) Required maintenance and testing procedures and frequency for all fire equipment and systems (e.g. CO2 systems, Halon systems, detectors, alarm systems).

(9) Planning of parking spaces for emergency vehicles and fire fighting equipment.

(10) Information on fires in similar facilities or other fire prevention information which would be of interest and educate employees regarding fire prevention or protection.

(11) Signature cover sheet with the facility head signature, Chief of Operations or Chief of Staff signature, and Chief of Safety & Occupational Health signature. These plans should be reviewed annually for completeness and consistency.

b. All employees shall be informed of the fire hazards of materials and processes to which they are exposed. Employees shall sign that they have read the above plan and that the above plan has been reviewed with them. Signature sheets shall be kept with the plans.

APPENDIX N
PERSONAL PROTECTIVE EQUIPMENT

1. Purpose and Scope. This Appendix prescribes requirements, procedures, and policies for providing personal protective equipment and apparel necessary to protect the health and safety of all Wilmington District employees from occupational hazards. This includes all affected permanent and temporary employees.

2. References.

a. AR 385-32, Protective Clothing and Equipment

b. AR 40-5, Preventive Medicine

c. AR 40-61, Medical Logistics Policies and Procedures

d. AR 385-10, The Army Safety Program

e. ER 385-1-40, Occupational Health Program

f. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

g. 29 CFR 1910, Occupational Safety and Health Standards for General Industry

h. American National Standard, Z87.1, Practice for Occupational and Educational Eye and Face Protection

3. General.

a. Policy.

(1) Hazardous conditions that create exposure to injury will be eliminated or reduced whenever possible through engineering, administrative, or environmental controls. When it is not practical or technologically feasible to do so, the use of personal protective equipment (PPE) will be permitted. Personnel protective equipment should always be considered an interim or last-resort means of accident or illness prevention as improper use or failure of the equipment exposes the employee to injury or illness.

(2) Whenever it is necessary by reason of hazards of processes, environment, chemical, radiological, or mechanical hazards, PPE for eyes, ears, face, head, extremities, lungs, and skin shall be provided, used, and maintained in a sanitary and reliable condition.

(3) The decision to provide PPE shall be based on the Position Hazard Analysis (PHA) of the employee, detailing the type of PPE and training required. Frequency or length of exposure shall not be a determining factor.

(4) PPE will not be provided or used as a substitute for items of work clothing that employees would **normally** provide at his or her own expense to fulfill the requirements and working conditions of the job. For example, an employee who **normally** works outside in the winter is expected to report to work properly dressed for outside work, e.g., heavy coat, hat, gloves, overshoes.

b. Procurement.

(1) PPE will be procured in the same manner as other purchases of equipment and supplies, and in accordance with established acquisition procedures.

(2) PPE will remain the property of the Government and will be returned to the issuing organization when no longer required. Exceptions include the following: safety footwear and prescription eyewear will be issued as non-recoverable property in accordance with AR 40-61, Medical Logistics Policies and Procedures.

4. Requirements.

a. Hazard Assessment. Each supervisor shall assess his or her work area to determine if hazards that would necessitate the use of PPE are, or are likely to be present. The assessment should include hazards that may be encountered while at other locations while in performance of official government business. Hazard assessment shall be documented on the form contained in Annex I of this Appendix. If hazards are present or are likely to be present, the supervisor shall:

(1) List all anticipated hazards that would necessitate the use of PPE on the employees Position Hazards Analysis.

(2) Select and list on the employees Positions Hazards Analysis the type of PPE that will protect the employee from the hazards identified in the hazard's assessment.

(3) Communicate selected decisions to each employee, including a discussion of the Position Hazards Analysis.

(4) Select **properly-fitting** PPE for each employee.

b. Training. Training will be provided to all employees who are required to use PPE in the performance of their assigned duties. Training shall address the following:

(1) The need for PPE.

(2) The type of PPE required.

(3) The proper way to don, doff, adjust, and wear PPE.

(4) Limitations of PPE.

(5) The proper care, cleaning and maintenance of PPE.

(6) PPE useful life, replacement, and disposal procedures.

Training shall be certified on the form contained in Annex II of this Appendix.

c. Testing. Before being allowed to perform work requiring the use of PPE, each employee will demonstrate an understanding of the training specified above, and the ability to properly use the PPE.

d. Retraining. Retraining will be provided as necessary. Circumstances where retraining may be required include the following:

(1) The supervisor has reason to believe that an employee does not have the understanding and skill required to properly use PPE.

(2) Changes in the workplace render previous training obsolete.

(3) Changes in the types of PPE to be used rendering previous training obsolete.

(4) Inadequacies in an employee's knowledge or use of assigned PPE indicate that the employee has not retained the required understanding or skill.

e. Inspection. An inspection, cleaning, and maintenance program will be established to ensure that PPE is in a sanitary and good working condition.

(1) PPE will be inspected, cleaned, and maintained at regular intervals. Cleaning is particularly important for eye and face protection devices, where dirty or fogged lenses could impair vision.

(2) Contaminated PPE will be decontaminated or disposed of, in a manner that protects employees from exposure to hazards.

f. Recordkeeping. Compliance with OSHA requirements must be certified.

(1) Each supervisor shall, through a written certification, verify that the required workplace assessment has been performed.

(2) Each supervisor shall verify that employees who are required to use PPE, have received the required training, been tested, and understand the proper use and procedures to be followed.

5. Eye and Face Protection.

a. Requirement.

(1) All government employees conducting eye hazardous operations or working in eye hazardous areas are required to wear eye protection specific to the hazard encountered. The appropriate personal protective equipment shall be provided at no cost to the employee. If it is determined that prescription lenses are required by vision screening and the employee has not worn prescription glasses before, the government will pay for the eye examination. The government will not pay for routine eye exams.

Safety eyewear shall be procured with side shields and the side shields shall not be removed. Prescription safety glasses should be procured using local vendors whenever possible so that **properly fitting** glasses are obtained and delays are kept to a minimum.

(2) Where there is reasonable probability of injury that can be prevented by the use of PPE, protective eye and face equipment shall be required. In such cases, a type of protector shall be provided that is suitable for the work to be performed. No unprotected person shall knowingly be subjected to a hazardous environmental condition.

(3) Suitable eye protectors shall be provided whenever machines or operations present the hazards of flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, or potentially injurious light radiations.

(4) When there is a hazard from flying objects, eye protection provided with side shields shall be used. Detachable side protectors are acceptable.

(5) Protectors shall meet the following minimum requirements:

(a) They shall provide adequate protection against the particular hazards for which they are designed. When worn under the designated conditions, they shall be reasonably comfortable, fit snugly and shall not unduly interfere with the movements of the wearer.

(b) They shall be durable.

(c) They shall be capable of being disinfected.

(d) They shall be easily cleanable.

(6) Protectors should be kept clean and in good repair.

(7) Persons whose vision requires the use of corrective lenses in spectacles, and who are required by this regulation to wear eye protection, shall wear goggles or spectacles of one of the following types:

(a) Spectacles whose protective lenses provide optical correction.

(b) Goggles that can be worn over corrective spectacles without disturbing the adjustment of the spectacles.

(c) Goggles that incorporate corrective lenses mounted behind the protective lenses.

(8) Eye hazards and protective equipment requirements shall be reviewed with the employees during orientation and periodically thereafter. Contractors and visitors shall be informed of eye hazards and required to wear safety glasses or equivalent while conducting eye hazardous operations or while in eye hazardous areas in government facilities.

(9) Protective eye and face devices purchased after 5 July 1994 shall comply with the American National Standards Institute (ANSI), Practice for Occupational and Educational Eye and Face Protection, Z87.1-1989.

(10) Contact lenses are not considered appropriate substitutes for eye protection. Contact lenses shall not be worn in work environments with chemicals, fumes, smoke, dust, or molten metals.

(11) All personnel who have effective sight in only one eye shall be furnished and required to wear safety glasses, plain or prescription, with side shields, except when performing routine office duties.

(12) Photochromatic and sun lenses are approved, but **for outdoor use only.** Photochromatic lenses are lenses that adjust to varying amounts of light, such as "Photogray" and "Photosun." Special-purpose tints used for indoor tasks shall be static (nonphotochromatic) and fit for a specific task (i.e., welding or cutting). If an employee is exposed to both indoor and outdoor eye hazards then they shall be provided with adequate protection for both locations and hazards. Clip-on sunglasses are recommended as an inexpensive method of protecting against sunlight provided they meet the criteria described in paragraph (13) below.

(13) Boat operators shall wear protective glasses that filter a minimum of 96% of ultra-violet light at a wavelength of 400 nanometers when conditions require such protection. The supervisor shall determine what other employees, in addition to boat operators require protection form exposure to sunlight.

(14) Eye protection shall be properly maintained. Prescription safety glasses shall be issue as personal property. When eye protection is not provided to individual employees or when it is required for visitors or contractors, it shall be kept clean and readily available. Eye protection shall be kept in a clean container near eye hazardous equipment or in a designated cabinet in the immediate work area so that its presence or easy access encourages its use.

(a) **The cost of safety glasses (frame and lenses) shall not exceed $150.00 unless justified, in writing, by the employees' supervisor.**

(b) If an employee purchases their own safety glasses, prescription or otherwise, they shall meet the requirements of ANSI Z87.1 (for use on the job).

b. Emergency Eyewash Facilities.

(1) Where chemicals which are toxic or caustic are stored or handled and can be splashed into the eyes (eyewash), or onto the body (showers), emergency eyewash or shower facilities shall be provided. The eyewash facilities shall provide a minimum flow of .4 GPM for 15 minutes.

(2) Portable eyewash fountains will not be used for operations where there is a fresh water system available. They will be allowed in remote (field) or mobile operations.

(3) Eyewash facilities shall be in a readily accessible location. The location should be based upon the hazard involved. For example, if battery acid is being used, the eyewash should be within 6-10 feet of the point of operation. If a less caustic material is involved, the facility could be installed at a greater distance from the point of operation.

(4) The route to an eyewash facility must be as direct as possible without intervening doors, turns, stairs, etc. There should also be no barriers to restrict access to the facility.

No material shall be allowed to accumulate in the eyewash pathway.

(5) All portable eyewash facilities shall be tested and inspected monthly. Plumbed units shall be activated weekly to flush and clean the lines. This weekly test shall be documented and posted in a conspicuous location near the unit. Portable units shall be inspected in accordance with the manufacturer's instructions.

6. Protective Footwear Policy.

a. All government employees conducting foot hazardous operations or working in foot hazardous areas are required to wear protective footwear. If it is determined by a physician, and documented in writing, that a particular shoe is not suitable for an employee, the government shall follow the physicians recommendations.

(1) Supervisors are responsible to ensure that foot hazardous areas are identified and that employees have the appropriate protective footwear for the hazards associated with the specific job. Foot hazardous operations are those operations that have a high potential for foot injuries, such as, material handling, construction, maintenance, automotive repair, field surveying, and any field inspection operation of Engineering, Construction, Operations, Regulatory and Planning, etc.

(2) Supervisors are also responsible for ensuring that all protective footwear is essential for performance of work. All employees, including intermittent and seasonal employees shall be provided protective footwear.

(3) **The cost of safety shoes shall not exceed $115.00 unless justified in writing by the employee's supervisor.** The allowable cost for safety shoes will be reviewed periodically and adjusted as needed.

(4) Foot hazards and protective equipment requirements shall be reviewed with employees during orientation and periodically thereafter.

(5) Protective footwear purchased after July 5, 1994 shall comply with ANSI Z41-1991, "American National Standard for Personal Protective Footwear."

(6) Waterproof boots will be considered protective footwear. If a compression hazard exists along with the hazard of excessive moisture, then the waterproof boots will be the type that can cover a safety shoe.

(7) Protective footwear shall be maintained by the employee.

b. The requirement for safety shoes shall be stated in the employees Position Hazard Analysis. Employees that normally work in the field shall initially be provided two pairs of safety shoes to assure that clean, dry, well-maintained shoes are always available. Employees that normally work in the office shall initially be provided one pair of safety shoes. Safety footwear shall not be replaced until determined by the immediate supervisor to be unusable. The unusable pair shall be turned in to the immediate supervisor and discarded. In order that safety footwear be obtained in the most expedient manner, credit card purchases with a local vendor are recommended to assure good fit and expediency.

7. Personal Flotation Devices (PFD's).

a. Type III, Type V, or better vest type U.S. Coast Guard approved International Orange personal flotation devices shall be worn by all government employees in work areas in which exists the potential for drowning.

b. Park Rangers may wear green Coast Guard approved PFD's, Type III, Type V or better with reflective tape.

c. PFD's shall be inspected before and after each use to detect defects that could alter its buoyancy.

8. Respiratory Protection.

a. When respiratory protective equipment is required, it should be provided and used in accordance with Appendix O, Respiratory Protection Program.

b. Medical status of employees who are to wear respirators shall be evaluated and medical clearance from a qualified physician shall be obtained that indicates the employee is medically qualified to wear the specified type of respirator.

c. Only approved respiratory protective equipment shall be provided and used. "Approved" means the respirator and its component parts have been tested and listed as satisfactory by joint approval of the Mine Safety and Health Administration (MSHA) or NIOSH (National Institute for Occupational Safety and Health) or SCBA and gas masks that have valid approval from the Bureau of Mines.

d. A competent person knowledgeable of inhalation hazards and respiratory protective equipment shall conduct a step-by-step evaluation to ensure only appropriate respiratory protection for the conditions of exposure is utilized. Protection factors described in EM 385-1-1, Appendix N shall be fully considered in the selection process.

9. Protective Headgear.

a. All government employees shall wear hard hats when working in or visiting a hard hat area.

b. Hard hat areas shall be identified and all points of entry shall have a hard hat caution sign posted.

c. Hard hat areas shall be general areas such as construction, alteration, demolition, dredging, quarries, etc.

d. All protective headgear shall meet the requirements of ANSI Z89.1, Class A or ANSI Z89.2, Class B.

e. Protective headgear worn near electric lines and equipment shall be Class B.

10. Hearing Protection.

a. All employees in the District that are exposed to excessive noise will be included in the Medical Surveillance Program for Hearing Conservation.

b. Noise monitoring will be conducted by the Safety and Occupational Health Office.

c. Results of the noise survey shall be used to determine the appropriate type of hearing protection that will be supplied by the government.

d. All employees working in a noise hazardous area shall wear hearing protection.

e. Supervisors are responsible for identifying potential hazards, training employees in proper use of hearing protection, and for enforcing the use of hearing protection. The need for hearing protection is suspect when one of the following three conditions exist:

(1) Employees have difficulty communicating with each other by speaking when in the presence of noise.

(2) Employees report head noises or ringing in the ears (tinnitus) after working for several hours in noise.

(3) Employees sustain a temporary hearing loss that has the effect of muffling speech and other sounds following several hours of noise exposure.

11. Miscellaneous PPE. A number of chemical, physical, and environmental hazards can be controlled with miscellaneous PPE.

a. Coveralls are authorized to provide occupational protection against biological, chemical, environmental and chemical hazards. Employees in the following positions are authorized two pairs of appropriate coveralls:

(1) All Engineer Repair Yard positions with the exception of the supply technician.

(2) All floating plant positions.

(3) All hydropower positions, with the exception of field office assistants.

(4) All water resource management personnel that are required to make confined space entries and handle or come into contact with hazardous materials.

(5) Other positions can procure coveralls when needed to protect against new hazards. The new hazards should be discussed with the SOHO and added to the employee's Position Hazard Analysis.

The coveralls shall not be used as daily attire and shall only be worn when other than normal or routine work activities are scheduled. Poly/cotton blend full-body coveralls are acceptable for most applications. Welders shall have flame-resistant coveralls. Impermeable coveralls shall be used when recommended by material safety data sheets. All coveralls shall have long sleeves (short sleeves do not protect the arms from hazardous materials). A replacement pair of coveralls will be procured when the immediate supervisor determines that the employee's coveralls no longer provides the required level of protection. Disposable coveralls may also be used.

b. Survival Suits are authorized for motorboat operators that operate motorboats, alone, when water temperatures are 60 degrees or lower. The suits shall be USCG approved Type V, International Orange.

b. Foul weather gear or rainsuits are authorized for motorboat operators that operate motorboats, alone, and ferry other team members to sites along the water when weather conditions are such that hypothermia could result.

d. Special foot protection such as slip-on toe protectors, metatarsal protectors, hip boots, oil or chemical resistant boots, waterproof or insulated boots are authorized. Foot protection purchased shall be dependent upon the hazards listed in the employee's PHA.

d. Insect bite kits are authorized to provide protection to employees that are sensitive or allergic to insect bites. The kits can only be provided when prescribed by a physician.

e. Chaps are authorized to provide protection when using a chain saw.

f. Full-body harnesses and lanyards are authorized for personal fall protection.

g. Knee pads are authorized to prevent bruising or scraping of the knees.

h. Insect repellant is authorized in areas infected with chiggers, mosquitoes and ticks.

i. Barrier cremes and lotions are authorized for protection against poisonous plants and sunburn.

12. Funding. The cost of all personal protective equipment and apparel shall be charged to the account of the office requisitioning the items.

13. Property Accountability. Safety footwear and prescription safety glasses are issued to personnel as personal property. **Supervisors shall maintain records of the dates and names of employees and costs associated with the purchase of personal protective equipment.**

ANNEX I
CERTIFICATION OF HAZARD ASSESSMENT

Work Area: _____.

Date Evaluated: _____.

Hazards Present: _____. _____.

_____. _____.

_____. _____.

PPE Required: _____. _____.

_____. _____.

_____. _____.

Affected Employees: _____. _____.

_____. _____.

_____. _____.

_____. _____.

_____. _____.

_____. _____.

_____. _____.

Certified: _____. Date: _____.
Supervisor's Signature

ANNEX II
CERTIFICATION OF TRAINING

On __/__/__ the following employees were trained in the following subjects.

Employees: _____. _____.

_____. _____.

_____. _____.

_____. _____.

_____. _____.

_____. _____.

When PPE is necessary.

What PPE is necessary.

How to properly don, doff, adjust, and wear PPE.

The limitation of PPE.

The proper care, maintenance, useful life and disposal of PPE.

Certified: _____. Date: _____.
Supervisor's Signature

APPENDIX O
RESPIRATORY PROTECTION PROGRAM

1. Purpose. This Appendix prescribes requirements and procedures for the selection, use, care and maintenance of respirators.

2. Applicability. This Appendix applies to all elements of the Wilmington District. Contractors shall submit a Standard Operating Procedure (SOP) for the proper use and handling of respirators (see EM 385-1-1 and Title 29 CFR 1910.134).

3. References.

a. 29 CFR 1910.134, OSHA Standard for Respiratory Protection.

b. AR 11-34, The Army Respiratory Protection Program.

c. AR 40-5, Health and Environment.

d. EM 385-1-1, General Safety and Occupational Health Requirements Manual.

e. ER 385-1-90, Respiratory Protection Program.

f. CESAD Supplement 1, ER 385-1-90, Sep 85.

g. TB MED 502, Respiratory Protection Program.

h. ANSI Z88.2 Practice for Respiratory Protection.

4. Background. When working with toxic materials, it has long been recognized that the respiratory tract is the most important route in which toxic substances enter the body. Inhaling toxic substances causes most industrial poisonings. The primary effort to control such hazards should be engineering controls, such as specially designed ventilation systems. If engineering controls cannot be implemented; or are cost prohibitive, infeasible, or inadequate, respirators must be used to protect the employee whenever hazardous conditions exist. A respiratory protection program shall be established and implemented in accordance with ANSI Z88.2, and the Joint NIOSH/OSHA Standard Completion Program Respirator Decision Logic and Appendix N of EM 385-1-1. This program encompasses training, maintenance, care and awareness of

limitations associated with the various types of respirators.

5. Responsibilities. Overall implementation of the respiratory protection program is the responsibility of the Commander, Wilmington District.

a. Management at each Area, Resident, and Project office shall:

(1) Designate a Respiratory Protection Program Coordinator on the form contained in Annex I and provide a copy to the SOHO.

(2) Become familiar with the respiratory protection program as outlined in this Appendix. A copy of the program shall be maintained in the local office.

(3) Request assistance from the SOHO in conducting atmospheric testing of areas to determine if employees are exposed to contaminant levels in excess of the threshold limit values (TLV) and permissible exposure limits (PEL).

(4) Train a minimum of two employees on fit testing procedures.

(5) **Enforce the use of respirators by employees. Written documentation of employee's failure to wear respirators shall be cause for disciplinary action and shall be forwarded to the SOHO for inclusion in the employee's medical records.**

(6) Ensure that all affected employees are trained in the proper use of respirators and report to medical surveillance examinations.

(7) Ensure that compressed air breathing system alarms are tested prior to use in potentially Immediately Dangerous to Life or Health (IDLH) situations.

b. Managers and supervisors of all affected District HQ employees shall:

(1) Designate a Respiratory Protection Program Coordinator on the form contained in Annex I and furnish a copy to the SOHO.

(2) Ensure that all affected employees are trained in the proper use of respirators.

(3) Ensure that all affected employees are fit tested.

(3) Ensure that all affected employees are medically fit to wear a respirator.

c. All affected employees shall:

(1) Wear and maintain respirators as required.

(2) Notify supervisors of any problems with respirators or if having respiratory problems.

(3) Report for training and medical surveillance examinations.

d. The Safety Office shall:

(1) Ensure that supervisors are notified of employee's periodic medical examination.

(2) Ensure that proper medical examination requirements are followed.

(3) Ensure that all respirators are approved by NIOSH and MSHA.

(4) Provide oversight to ensure compliance with the Respiratory Protection Program.

e. Each Program Coordinator will review all operations and areas designated for respirator use. The form shown on Annex II will be completed and forwarded to the SOHO. The objective is to ensure that all means of exposure control have been considered, that potential contaminants are properly identified, and that an appropriate respirator is available for the intended use.

6. Program Requirements.

a. Respirators and canisters shall be selected according the hazards the worker is exposed. **Project personnel must know which type of respirator and canister to use in each particular situation.** For guidance, refer to EM 385-1-1, Appendix N and Annex III of this APPENDIX.

b. **Supervisors shall be instructed in the proper use of respirators and their limitations.** Respirators designed for protection against one hazard may be totally ineffective against another.

c. Employees shall ensure respirators are regularly cleaned, disinfected, and stored in a convenient, clean, and sanitary location.

d. The compressor for supplying air for breathing shall be equipped with the necessary safety and standby devices. This means if an oil lubricated compressor is used; it shall have a high temperature, equipment failure and carbon monoxide continuous monitoring alarm, a particulate filter, an activated charcoal canister for organic vapors and an oil moisture separator. All airline couplings must be incompatible with outlets for other gas systems. The exhaust on all gasoline and diesel compressors shall be separated from the inlet ducts by a minimum of 10 feet.

e. Employees shall be trained in the care of their respirator. Training shall include the following: Inspection for defects, cleaning and disinfection, repair and storage.

f. Prior to initial use, supervisors shall have breathing air for respirators supplied from cylinders or air compressors tested. The air shall comply with the following specifications for Grade D air: Oxygen 19.5-23.5%, Hydrocarbons less than 5 Mg/cubic meter, Carbon Monoxide less than 20 PPM, and Carbon Dioxide less than 1000 PPM. Oxygen shall never be used with airline respirators or in apparatuses that have previously contained or used compressed air.

g. Cylinders shall be visually inspected by supervisors in accordance with DOT requirements contained in 49 CFR parts 171-179 and 14 CFR part 103. Where DOT is not applicable, the inspections shall be conducted in accordance with Compressed Gas Association Pamphlets C-6 and C-8.

h. Supervisors shall not assign personnel to tasks requiring the use of respirators unless it has been determined that they are medically able to wear respirators while performing their work. See paragraph 10 of this Appendix.

7. Training Requirements.

a. Prior to using respirators, both supervisors and workers shall be instructed in their selection, use, and maintenance. This may be accomplished by commercial source or by videotapes.

b. As a minimum, the training will include the following:

(1) Instructions on the nature of the hazard involved, whether it is acute or chronic, and an appraisal of what may happen if the respirator is not used or used improperly.

(2) An explanation of why administrative or engineering controls are not feasible.

(3) A discussion of why the respirator selected is the proper one for the hazard involved.

(4) Instructions and training in the actual use of a respirator. This may include an opportunity to:

(a) Handle a respirator.

(b) Have it fitted properly.

(c) Test its facepiece-to-face seal using positive and negative fit test procedures.

(d) Wear it in normal air for an extended familiarization period.

(e) Wear it in a test atmosphere.

(5) Warnings on limitations of respirators:

(a) Air purifying respirators shall not be used in an oxygen deficient atmosphere. Supplied air systems shall be used in such cases.

(b) Particulate removing respirators provide no protection against gases and vapors.

(c) Half mask respirators provide no protection for the eyes.

(d) Chemical cartridges are for specific contaminants at certain concentrations, not all contaminants or very high levels.

(6) A discussion of the factors which may prevent a good face seal:

(a) Growth of beard.

(b) Sideburns extending beneath the respirator.

(c) A cap projecting under the facepiece.

(d) Temple bars on prescription glasses.

(e) Dentures.

(f) Unusual facial configuration.

(g) Vaseline, facelets, or knitted coverings.

(7) Precautions regarding the use and handling of respirators:

(a) Replace filter cartridges whenever difficulty in breathing is experienced, an odor is noted through the respirator, or at specified intervals for a contaminant without good warming properties.

(b) Perform a positive and negative fit test each time before wearing a respirator.

(c) Modifications of the respirator or straps are unacceptable.

(d) Proper storage of the respirator or facepiece is in an air-tight container or in an uncontaminated area.

(e) The facepiece should be washed and disinfected regularly between uses.

(8) Specific instructions regarding the air supply, hoses, couplings, and warning sounds where an air supplied system is used.

(9) Training on how to handle emergency situations.

8. Use of Respirators.

a. An additional person must be present in areas where the failure of a respirator could result in the wearer being overcome by a toxic or an oxygen deficient atmosphere. Communications (visual, voice or signal line) shall be maintained between both or all individuals present.

b. Supervisors shall ensure that their employees have an opportunity to handle the respirator, have it fitted properly, test its seal, and familiarize themselves with the respirator by wearing it at periodic training sessions.

c. It must be stressed that respirators shall not be worn when a good fit cannot be achieved. **A good fit cannot be achieved by anyone who has a beard, long sideburns, a long mustache, or stubble.** Facial hair does effect the fit of an air-supplied hood respirator. Also, the absence of dentures can affect the fit of a face piece.

d. If airline respirators are used, the supplied air source shall not be able to be expended and the hose length cannot exceed 300 ft. from the source to the user.

e. **The wearer of any type respirator shall not be allowed to wear contact lenses.** If a spectacle, goggle, face shield or welding helmet must be worn with a face piece, it shall be worn as not to adversely affect the seal of the face piece to the face.

9. Respirators.

a. Single-Use Dust/Mist Respirators.

(1) These respirators will be used for airborne dusts and mists with low acute toxicity, which do not irritate the eyes, and where the airborne concentration of the contaminant is not expected to exceed five times the permissible exposure limit. Examples of appropriate uses are for grinding or chipping no-lead paint and for working with wood in a carpentry or cabinet shop. **Inappropriate uses would be for pesticide application and for welding.**

(2) Selection. Approved respirators of this type include:

(a)	AO R1050	American Optical Company
(b)	3M 8710	3M Company
(c)	Willson 1400	Willson Products Division, ESB, Inc.

(3) Fitting. Fit testing will not be performed with single-use, dust/mist respirators. Instead, employees will be fully instructed on how to obtain a proper seal across the bridge of the nose and around the face. Whenever the employee or his supervisor has a question about the adequacy of fit for a particular respirator, qualitative fit testing using irritant smoke will be performed. Demonstration posters from manufactures may be obtained and displayed for the specific respirator used.

b. Cartridge-Type Respirators.

(1) General. With appropriate cartridges these air-purifying respirators can be used for a variety of dusts, mists, gases, and vapors of moderate acute toxicity where the airborne concentration is not expected to exceed ten times the permissible exposure limit. By using full-facepiece models, they can be used with material that irritate the eyes. Examples of appropriate uses of cartridge-type, air-purifying respirators are to reduce solvent exposure during painting in open areas and in pesticide applications. **Inappropriate uses are for spray painting or solvent cleaning in confined spaces, for fire fighting, and for emergency rescue.**

(2) Selection.

(a) Disposable Respirators. Disposable cartridge-type respirators may be used whenever possible to avoid cleaning and maintenance requirements (paragraphs (2)(e) and (2)(f)). These are available in half-mask facepiece styles from various companies.

(b) Reusable Respirators. Air-purifying respirators with reusable facepieces and replaceable cartridges will be used where (1) an adequate fit can not be obtained with a disposable respirator, (2) interchangability of cartridges is desired, or (3) a full facepiece is necessary. Such respirators are made by several manufacturers in both half and full facepiece styles.

Due to the improved wearer comfort provided, silicone rubber models are preferred. On half facepiece styles, those with a cradle suspension system and split upper straps are more desirable. For full-facepiece respirators, the availability of a nose cup to reduce fogging and of spectacle frames for employees who wear glasses are mandatory. Examples of approved respirators of this type are:

(1) Half-Mask Respirators.

(a) North 7700 Series, North Safety Equipment.

(b) Comfo Classic Series, Mine Safety Appliances.

(c) A O Quantifit Series, American Optical

(2) Full Facepiece Respirators.

(a) North 7600 Series, North Safety Equipment.

(b) Ultra-Twin Mine Safety Appliances.

(c) Cartridges. The Program Coordinator will select cartridges and filters that are designed for the contaminant(s) of concern. Manufacturer's literature for the facepiece being used will be consulted for the cartridge selection information. **Cartridges from one manufacturer will not be used with a facepiece from another manufacturer.**

(d) Precluded Contaminants. **Cartridge-type, air-purifying respirators will not be used for gases and vapors that do not have good warning properties or which generate high heats of reaction in the cartridge.** The following is a partial list of gaseous materials that cartridge-type, air-purifying respirators should not be used regardless of the concentration or time of exposure. This list **is not all inclusive** and the Program Coordinator will consult with the manufacturer or a Certified Industrial Hygienist whenever there is a question.

(1) Acrolein
(2) Arsine
(3) Bromine
(4) Carbon Disulfide
(5) Carbon Monoxide

(6) Dimethylaniline
(7) Dimethyl Sulfate
(8) Hydrogen Cyanide
(9) Hydrogen Fluoride
(10) Hydrogen Selenide
(11) Hydrogen Sulfide
(12) Mercury Vapor
(13) Methyl Bromide
(14) Methyl Chloride
(15) Nickel Carbonyl
(16) Nitro Compounds: Nitrobenzene
Nitrogen Oxides
Nitroglycerin
Nitromethane
(17) Ozone
(18) Phosgene
(19) Phosphine
(20) Phosphorus Trichloride
(21) Stibine
(22) Sulfur Chloride
(23) Toluene Diisocyanate
(24) Vinyl Chloride

(e) Oxygen Deficiency. **Cartridge-type air purifying respirators do not supply oxygen. They will be used only in well ventilated areas where the oxygen level is not less than 19.5 percent by volume.**

(4) Individual Issue. Where practical, respirators will be assigned to employees individually for their exclusive use. The employee's name will be marked on the facepiece. Exchanging respirators or assigning one respirator for use by several employees is unacceptable unless proper fit testing is done, cartridges are changed, and the facepiece is cleaned before use.

(5) Fitting. With the initial issue of a cartridge-type respirator, the Program Coordinator will ensure that it is fit tested on the employee. A variety of facepieces of different makes and sizes will be presented by the Program Coordinator to the employee for initial fitting (a medium size respirator will fit the majority of employees). The employee will select the facepiece that fits his face best based on negative and positive air pressure checks. The fit will be confirmed qualitatively using an irritant

smoke around the facial seal of the respirator. If a satisfactory fit cannot be obtained with a half-mask facepiece, then a full facepiece will be fit tested and used if a good fit is obtained. Fit testing for each employee using a cartridge-type respirator will be documented.

(a) Negative Pressure Test. This test can be performed on any respirator with an intake that can be covered with the palm of the hand. The employee dons the facepiece and covers the intake with his hands. He inhales so that the facepiece collapses slightly and holds his breath for ten (10) seconds. If the facepiece remains slightly collapsed and no inward leakage or air is noted, the face seal is considered satisfactory.

(b) Positive Pressure Test. With the facepiece on the exhalation valve closed by covering it the his or her hand, the employee exhales gently into the facepiece. The fit is considered satisfactory if a sight positive pressure can be maintained inside the facepiece and there is no evidence of outward leakage.

(5) Cleaning. Reusable respirators will be cleaned and disinfected after each day's use for those assigned individually and between uses for those used commonly. Cleaning will be the responsibility of the user. The Program Coordinator or his supervisor will show each employee how to clean his respirator in warm water with a mild detergent containing a bactericide as recommended by the manufacturer. After rinsing, respirators will be allowed to air dry in an uncontaminated area. During extended periods of use, towelettes soaked in alcohol may be used to clean the respirators during breaks.

(6) Maintenance. The employee and his supervisor prior to each use will do inspection of the respirators for defects. The primary problems that might be encountered and corrective actions, where appropriate, are as follows:

(a) Facepiece - check for:

(1) Excessive dirt (clean all dirt from facepiece).

(2) Cracks, tears, or holes (obtain new facepiece).

(3) Distortion (allow facepiece to "sit" free from any constraints and see if distortion disappears; if not, obtain new facepiece).

(4) Cracked, scratched, or loose fitting lenses (contact manufacturer to see if replacement is possible; otherwise, obtain new facepiece).

(b) Headstraps - check for:

(1) Breaks or tears (replace headstraps).

(2) Loss of elasticity (replace headstraps).

(3) Broken or malfunctioning buckles or attachments (obtain new buckles).

(4) Allows the facepiece to slip (replace headstraps).

(c) Inhalation valve, exhalation valve - check for:

(1) Detergent residue, dust particles, or dirt on valve or valve seat (clean residue with soap and water).

(2) Cracks, tears or distortion in the valve material or valve seat (contact manufacturer for instructions).

(3) Missing or defective valve cover (obtain valve cover from manufacturer).

(d) Filter element(s) - check for:

(1) Proper filter for the hazard.

(2) Approval designation.

(3) Missing or worn gaskets (contact manufacturer for replacement.

(4) Worn threads - both filter threads and facepiece threads (replace filter or facepiece, whichever is applicable).

(5) Cracks or dents in filter housing (replace filter).

(7) Storage. Each employee will be issued a recloseable plastic bag in which to seal their respirator or facepiece. The respirators will be stored in a noncontaminated area so that the facepiece and exhalation valve are not distorted. They will not be hung by their straps.

c. Self-Contained Breathing Apparatus.

(1) General. Self-contained breathing apparatus (SCBA) shall be used where the airborne concentration of the contaminant is high or there is an oxygen deficiency. These devices supply breathing air for a limited period and will be used only for emergency situations or short-term exposures. Examples of appropriate used of SCBA are for fire fighting and emergency rescue. **To use such devices for continued work at high exposure levels (e.g. spray painting in a confined space) would be inappropriate.** Also, SCBA does not provide skin protection and full protective clothing should be used where liquid material might be encountered that is toxic through skin absorption.

(2) Selection. Examples of approved SCBAs are as listed below:

(a) Air Pak II, Scott Aviation.

(b) North 800, North Safety Equipment.

(c) Air Mask Model 401, Mine Safety Appliances.

(3) Training. Special training is required for employee assigned to use SCBA. Whenever possible, initial training shall be obtained from a local fire department that uses such equipment and is willing to provide instruction. Slide or tape presentations and video cassettes are available from SCBA vendors and will be used for refresher training. Actual hands-on practice will be done at least annually.

(4) Cleaning and Maintenance.

(a) Facepieces shall be cleaned after each use prior to storage. Breathing air cylinders shall be refilled after each use.

(b) Since SCBA are intended for emergency use, they must be inspected regularly. The Project Program Coordinator shall do this monthly. The checklist contained in Annex IV of this Appendix will be used. Any deficiencies noted will be corrected as soon as possible.

(5) Storage. As a minimum, at locations using SCBA, two will be available. These will be stored in their original suitcases in separate locations no more than five minutes apart by foot.

d. Supplied Air Respirators.

(1) General. The use of supplied air or airline respirators shall be limited to special situations where continued activity is necessary in oxygen deficient or highly contaminated atmospheres. Examples of such situations are spray painting in small, unvented rooms and removal of asbestos insulation.

(2) Selection.

(a) Facepiece. Full facepiece masks of the pressure demand or continuous flow type will be used. Examples of such facepieces are:

(1)	North 85200 Series	North Safety Equipment
(2)	Ultravue	Mine Safety Appliances

(b) Air Supply. Air may be provided from a tank of compressed air cylinders or a compressor. In either case, the air provided to the respirator facepiece will meet certain quality parameters (paragraph d(3)). If compressed air cylinders are used, the procurement document will include specifications for air quality and cylinder pressure testing. If an air compressor is to be used, it should be a separate, dedicated unit rather than regularly available "plant" air. In either case, air purification and safety devices will be installed (paragraph d(4)).

(3) Air Quality. Air supplied to the facepieces will be Type I, Grade D breathing air or better in quality. This means that contaminant concentrations are limited as follows:

(a)	Oxygen	19.5 - 23.5%
(b)	Carbon Monoxide	20 ppm or less
(c)	Carbon Dioxide	1,000 ppm or less
(d)	Oil Mist	5 mg/m^3 or less
(e)	Odor	Not objectionable or pronounced

The Program Coordinator will test air coming from the compressor as delivered to the facepiece at least semiannually to ensure that it meets these quality standards. Testing will be done using an accredited testing laboratory. A copy of the results will be forwarded to the SOHO for 40 year retention as required.

(4) Compressor Requirements. The general requirements for compressors supplying breathing air are:

(a) The compressor inlet must be located in an area free from contamination. If outside, areas near and down wind from exhaust ducts/stacks and sources of vehicle exhaust should be avoided. If inside, areas with little air circulation, high temperatures, solvent use, combustion equipment, or other potential sources of contamination should be avoided.

(b) The compressor must have a failure alarm and high temperature alarm or shut off.

(c) Water trap and air purification system are required for the removal of condensed water, oil mist and other particulates, odors, gases and organic vapors.

(d) A continuous carbon monoxide alarm or a carbon monoxide converter should be used.

(e) In work where the atmosphere would be immediately dangerous to life, the air receiver must be of sufficient capacity to allow respirator wearer(s) to escape from contaminated atmosphere in event of compressor failure. Alternatively, a backup air supply system will be provided that will automatically activate should the primary system fail.

(f) Should plant air be used, only breathing air type lines are permitted downstream from the purification system.

(5) Maintenance. Prior to use, the employee and his supervisor will inspect the facepieces, hoses, and air supply system for defects. Problems that might be encountered are:

(a) Check facepiece, headstraps, valves, and breathing tubes, as for air purifying respirators.

(b) Hood, helmet, blouse, or full suit - if applicable check for:

(1) Headgear suspension (adjust properly for you).

(2) Cracks or breaks in faceshields (replace faceshield).

(3) Protective screen to see that it is intact and fits correctly over the faceshield, abrasive blasting hoods, and blouses (obtain new screen).

(c) Air supply system - check for:

(1) Breathing air quality.

(2) Breaks or kinks in air supply hoses and end fitting attachments (replace hose and, or fitting).

(3) Tightness of connections.

(4) Proper setting of regulators and valves (consult manufacturer's recommendations).

(5) Correct operation of air-purifying elements and carbon monoxide or high temperature alarms.

Maintenance will be performed on the compressor and air purification system according to the manufacturer's guidelines. This will include calibration of the carbon monoxide alarm for the activation at 20 PPM or higher.

(6) Storage. Facepieces and hoses will be stored in recloseable plastic bags in uncontaminated areas when not in use. They will be arranged so that distortion of the rubber parts does not occur.

10. Recordkeeping. the Program Coordinator at each facility will maintain records of the respiratory protection program as implemented. These records will include:

(1) Respirator selection questionnaires (Annex II).

(2) Users lists (Annex V).

(3) Fitting and training records, ENG Form 4937, May 1986 (Annex VI).

(4) Inspection sheets for SCBA (Annex IV).

(5) Compressed air checks (Copy to SAWSO).

The District's Medical Surveillance Contractor will maintain original records of employee medical evaluations.

11. Medical Requirements. All users of respirators shall be participants of the District's medical surveillance program. No employee shall be assigned tasks requiring the use of respirators if, based upon their most recent medical examination, the examining physician determines that the employee will be unable to function normally while wearing a respirator or if the safety and health of the employee or other employees will be impaired by their use of a respirator. The focus of the medical examination should be on pulmonary and cardiovascular related problems. Workers that have indications of coronary artery disease, myocardial infarction, angina pectoris or progressive or severe hypertension should only wear a continuous flow air-line respirator unless approval from their physician is obtained. Those who's duty it is to respond to emergencies should not wear any type of respirator if they have a cardiovascular deficiency. Other physical conditions, such as diabetes or grand mal epilesy may limit wearing of respirators. With any individual medical problem, the final decision regarding respirator use is the responsibility of the examining physician.

12. Program Evaluation. The Facility Manager or Program Coordinator in conjunction with the SOHO will periodically evaluate the entire respiratory protection program to ensure its continued effectiveness. This evaluation will include unannounced inspections, a review of records, and discussion with employees. Areas to be covered are shown in Appendix B - General Guidelines for Program Evaluations, ER 385-1-90. Deficiencies will be recorded. Reports of these evaluations, conclusions, and corrective actions will be kept in the SOHO.

ANNEX I

RESPIRATORY PROTECTION PROGRAM COORDINATOR

Facility:_____

Program Coordinator:_____

Normal Job Title:_____

Date of Assignment:_____

_____ _____
Facility Supervisor Date

ANNEX II

QUESTIONNAIRE

RESPIRATOR RECOMMENDATION

Facility:_____

Individual Seeking Recommendation:_____

Operation Involved:_____

Name of User:_____ Phone Number:_____

1. Material:

(a) Chemical Name:_____

(b) Trade Name: _____

(c) Formula: _____

(d) TLV or TWA:_____ OSHA 1910.1000_____ Current ACGIH_____

2. Form in which it will be used:
Liquid_____ Solid_____ Gaseous_____ (If so, is it an organic vapor?_____) Acid Gas_____ Other____

3. Maximum expected concentration:*

(a) _____ parts per million.

(b) _____ milligrams per cubic meter.

4. Will material be heated?_____ If so, to what temperature?_____°F.

5. What is the odor threshold of the material?*_____

*Consult Material Safety Data Sheet (MSDS) and contact SAWSO as necessary.

6. At what concentration is the material considered to be immediately dangerous to life or health?* _____

_____

7. Can the substance be absorbed through the skin?_____

8. Irritant to eyes?_____ Respiratory tract?_____ Skin?_____

9. At what concentration is it an irritant?* _____

10. If the substance is known to be flammable, what are the lower and upper flammable limits, in percent by volume?* _____

_____

11. What is the vapor pressure of the material?* _____

12. Will material be mixed with other chemicals? _____ If so, give details: _____

_____

13. Any possibility of oxygen deficiency? _____

14. Can good ventilation of the area be maintained? _____

15. Will exposure be continuous? _____ Or intermittent? _____

16. Will the respiratory device be used for routine exposures, or will it be used as an escape device? _____

_____

17. Provide as much detail as possible concerning exposure conditions. _____

_____

18. Provide illustrations of work area showing equipment, materials storage locations, etc. _____

_____

_____

Suggested respiratory protection device based on above information:

_____
_____
_____

Comments: _____
_____
_____

Signed: _____

Dated: _____

ANNEX III

RESPIRATOR SELECTION GUIDE

HAZARD	TYPE OF RESPIRATOR
GASES OR VAPORS	
Oxygen deficiency	Self-contained breathing apparatus, positive pressure mode. Combination air-line respirator with auxiliary positive pressure self-contained air supply.
Immediately dangerous to life or health (IDLH)	Self-contained breathing apparatus in positive mode. Combination air-line respirator with auxiliary positive pressure self-contained air supply.
Not immediately dangerous to life or health	Air-line respirator. Air-purifying, half mask or full or facepiece respirator with chemical cartridges or canister.
PARTICULATES	
Immediately dangerous to life or health (IDLH)	Self-contained breathing apparatus in positive pressure mode. Combination air-line respirator with auxiliary positive pressure self-contained air supply.
Not immediately dangerous to life or health	Air-line respirator. Air-purifying, half-mask or full facepiece respirator with filters (pads or cartridges). Air-line abrasive-blasting helmet.

COMBINATION GASES, VAPORS AND PARTICULATES	
Immediately dangerous to life or health (IDLH)	Self-contained breathing apparatus in positive pressure mode. Combination air-line respirator with auxiliary positive pressure self-contained air supply.
Not immediately dangerous to life or health	Air-line respirator. air-purifying, half-mask or full or facepiece respirator with chemical cartridges or canister and appropriate filters.

ANNEX IV

SELF-CONTAINED BREATHING APPARATUS INSPECTION SHEET

Device: _____ S/N: _____

Date Inspected: _____ Inspected By: _____

Location: _____ User Group: _____

Person Responsible for monthly Inspection: _____

CHECKLIST

Facepiece: _____ Fogproof: _____

Head Harness: _____ Air Cylinder Pressure: _____

Hose: _____ Cylinder Valve: _____

"O" Ring (Ref. Connector): _____ Bypass Valve: _____

Inhalation Valve: _____ Mainline Valve: _____

Exhalation Valve: _____ Pak Alarm: _____

Facepiece Lens: _____ Regulator Diaphragm: _____

Harness: _____ Regulator Function: _____

Backpack: _____ Demand: _____

Cleanliness: _____ Pressure Demand: _____

Instruction Sheet: _____ Storage Box: _____

Wrench: _____

Comments:

ANNEX V

RESPIRATOR USERS LIST

Facility: _____

Job or Operation	User	Approved Respirator

Program Coordinator: _____

Issue Date: _____

Supercedes: _____

ANNEX VI
ENG FORM 4937, RESPIRATORY FIT TEST/TRAINING RECORD

RESPIRATORY FIT TEST/TRAINING RECORD

(ER 385-1-90)

BEFORE COMPLETING THIS FORM, PLEASE READ THE PRIVACY ACT STATEMENT ON REVERSE SIDE.

EMPLOYEE'S NAME *(Type or Print)*		SOCIAL SECURITY NO.
FIELD OPERATING ACTIVITY	PROJECT/AREA OFFICE	JOB TITLE
PRESCRIPTION GLASSES REQUIRED YES ☐ NO ☐	SUPERVISOR'S NAME	TELEPHONE NO.

RESPIRATOR(S) TESTED: *(List initial and annual fit tests)*

1	MANUFACTURER/TYPE/MODEL/SIZE	METHOD[1]	RESULT[2]	ISSUED[3]	DATE TESTED
	DATE/RESULT MED. EVAL.[4]	TESTER'S NAME	EMPLOYEE SIGNATURE		
2	MANUFACTURER/TYPE/MODEL/SIZE	METHOD[1]	RESULT[2]	ISSUED[3]	DATE TESTED
	DATE/RESULT MED. EVAL.[4]	TESTER'S NAME	EMPLOYEE SIGNATURE		
3	MANUFACTURER/TYPE/MODEL/SIZE	METHOD[1]	RESULT[2]	ISSUED[3]	DATE TESTED
	DATE/RESULT MED. EVAL.[4]	TESTER'S NAME	EMPLOYEE SIGNATURE		
4	MANUFACTURER/TYPE/MODEL/SIZE	METHOD[1]	RESULT[2]	ISSUED[3]	DATE TESTED
	DATE/RESULT MED. EVAL.[4]	TESTER'S NAME	EMPLOYEE SIGNATURE		
5	MANUFACTURER/TYPE/MODEL/SIZE	METHOD[1]	RESULT[2]	ISSUED[3]	DATE TESTED
	DATE/RESULT MED. EVAL.[4]	TESTER'S NAME	EMPLOYEE SIGNATURE		

[1]METHOD(S): a-Banana Oil, b-Irritant Smoke, c-Quantitative *(Specify)* _____

[2]RESULT: Pass, Fail [3]ISSUED: Yes, No

[4]MEDICAL EVALUATION RESULT: Can, Cannot, Limited *(Specify)* _____

OTHER PERSONAL PROTECTIVE EQUIPMENT *(Which must interface with the respirator)*:

☐ Safety Glasses ☐ Goggles ☐ Face Shield ☐ Hard Hat ☐ Welding Helmet

☐ Earmuffs ☐ Other *(Specify)* _____

NOTE: No person having facial hair which interferes with the sealing surface or valve function of the respirator will be fit tested with or issued a negative pressure respirator.

Presence of facial hair *(Specify)*: _____

REMARKS

TRAINING *(List initial and annual update training)*

DATE	MONITOR	TYPE (1-6)[5]	EMPLOYEE'S SIGNATURE

[5]VIDEO TAPES: 1-Intro. 'End User', 2-Air Purifying, 3-Air Supplying, 4-Fit Testing

OTHER: 5-Specify _____ 6-Specify _____

ENG FORM 4937, May 86

(Proponent: DAEN-ECS-I)

The following information is provided in accordance with the requirements of the Privacy Act of 1974 (See Ar 340-21).

NOTICE TO EMPLOYEES REQUIRED TO BE FIT TESTED WITH RESPIRATORS

Fit Test Authority: 5 CFR 339.301 29 CFR 1910.134 and ER 385-1-90.

Purpose: The individual Respiratory Fit Test/Training Record serves at the document that provides respiratory protection fit test information accumulated during fit testing of Corps employees and other designated individuals. The document also serves as a historical record of an employees participation in Corps respirator fit testing programs.

Routine Use: Information from an employees respiratory protection record (1) to determine if an employee can obtain a viable fit test and is able to safely perform his/her assigned tasks while wearing respiratory protective devices, (2) to provide to physicians of employees included in programs of medical surveillance to evaluate criteria contained in 29 CFR 1910.134, and (2) accumulate, review and file the record at the employee's work location and the FOA Safety and Health office. A copy of the record shall be placed in the employee's official medical record file in the Personnel Office.

Disclosure: The refusal to provide this information may result in such measures as the employee not being able to continue performing his/her assigned job duties and responsibilities and may be subject to administrative penalties.

ANNEX VII

PROTECTION FACTORS FOR PARTICULATE
FILTER RESPIRATORS

Concentration in multiples of the PEL or TLV	Facepiece Pressure	Permissible Respirators
5 x	Negative	Single use dust
10 x	Negative	Half-mask dust
	Negative	Half or quarter mask, fume
	Negative	Half or quarter mask, high efficiency
	Negative	Half-mask supplied air
50 x	Negative	Full facepiece, high-efficiency
	Negative	Full facepiece, supplied air
	Negative	Self-contained breathing apparatus (SCBA)
1,000 x	Positive	Full facepiece, SCBA
	Positive	Full facepiece supplied air and auxiliary self-contained air supply
Fire fighting or emergency entry into unknown concentrations	Positive	Full facepiece SCBA
Escape only [1]	Positive	Any SCBA
	Positive	Any self rescuer

1 In an atmosphere which is immediately dangerous to life or health.

NOTES: 1. Half-mask and quarter-mask respirators should not be used. Particulate matter causes eye irritation at these concentrations.

2. Full facepiece supplied-air respirators should not be used in any atmosphere which is immediately dangerous to life or health unless it is equipped with an auxiliary air supply which can be operated in the positive pressure.

ANNEX VIII

PROTECTION FACTORS FOR GAS
OR
VAPOR RESPIRATORS

Concentrations in multiples of the PEL or TLV	Facepiece Pressure	Permissible Respirators
5 x	Negative	Half-mask chemical cartridge respirator with "Name" cartridges, or canister half mask, supplied-air
50 x	Negative	Full facepiece gas mask or chemical cartridge with "Name" cartridges or canister
	Negative	Full facepiece SCBA Full facepiece supplied-air
1,000 x	Positive	Half-mask supplied-air
2,000 x	Positive	Supplied-air with full facepiece, hood, helmet or suit
10,000 x	Positive	Full facepiece, SCBA
	Positive	Full facepiece supplied-air with auxiliary self-contained air supply
Fire fighting or emergency entry into unknown concentrations	Positive	Full facepiece SCBA
Escape only [1]	Positive	Any full facepiece SCBA
	Positive	Any self-rescuer

1 In an atmosphere that is immediately dangerous to life or health.

NOTES:

1. The "Name" means approved chemical canisters or cartridges against a specific contaminant or a combination of contaminants such as organic vapor, acid gases, organic vapor plus particulates of acid gases plus organic vapor.

2. Quarter or half-mask respirators should not be used if eye irritation occurs at the use concentration.

3. Full facepiece supplied-air respirators should not be used in any atmosphere that is immediately dangerous to life or health unless it is equipped with an auxiliary air tank that can be operated in the positive pressure mode.

4. Air purifying respirators cannot be used for contaminants having inadequate warning properties.

IRRITANT SMOKE FIT TEST PROCEDURE

1. RESPIRATOR SELECTION

a. The test subject shall be allowed to select the most comfortable respirator from a large array of various sizes and manufacturer that includes at least three sizes of elastomeric half facepieces and unit of at least two manufacturers.

b. The selection process shall be conducted in a room separate from the fit-test chamber to prevent odor fatigue. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to assess a "comfortable" respirator. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This may not constitute his formal training on respirator use, only a review.

c. The test subject should understand that he is being asked to select the respirator that provides the most comfortable fit for him. Each respirator represents a different size and shape, and if fit properly will provide adequate protection.

d. The test subject holds each facepiece up to his face and eliminates those that are obviously not giving a comfortable fit. Normally, selection will begin with a half-mask and if a fit cannot be found, the subject will be asked to go to the full facepiece respirator. (A small percentage of users will not be able to wear any half-mask respirator.)

e. The most comfortable facepieces are recorded; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in No. 6 below. If the test subject is not familiar with using a particular respirator, he shall be directed to don the mask several times and to adjust the straps each time, so that he becomes adept at setting proper tension on the straps.

f. Assessment of comfort shall include reviewing the following points with the test subject:

1. Chin properly placed.

2. Positioning of mask on nose.

3. Strap tension.

4. Fit across bridge of nose.

5. Room for safety glasses.

6. Tendency to slip.

7. Cheeks filled out.

8. Self-observation in mirror.

9. Adequate time for assessment.

g. The test subject shall conduct the conventional negative and positive pressure fit checks (i.e., see ANSI Z88.2.1980). Before conducting the negative or positive pressure checks, the subject shall be told to "seat" his mask by rapidly moving the head side to side and up and down, taking a few deep breaths.

h. The test subject is now ready for fit testing.

i. After passing the fit test, the test subject shall be questioned again regarding the comfort of the respirator. If it has become uncomfortable, another model of respirator shall be tried.

j. If during the first two weeks of on-the-job wear, the chosen facepiece becomes unacceptably uncomfortable, the employee shall be given the opportunity to select a different facepiece.

2. Fit Test - Irritant Smoke Procedure

a. The test subject shall be allowed to smell a weak concentration of the irritant smoke to familiarize him with its characteristic odor.

b. The test subject shall properly don the respirator selected as above, and wear it for at least ten minutes before starting the fit test.

c. The test conductor shall review this protocol with the test subject before testing.

d. The test conductor shall perform the conventional positive pressure and negative pressure fit checks. Failure of either check shall be cause to select an alternate respirator.

e. Break both ends of a ventilation smoke tube containing stannic oxycholride, such as the MSA part No. 5645, or equivalent. Attach a short length of tubing to the end of the smoke tube. Attach the other end of the smoke tube to a low-pressure air pump set to deliver 200 milliliters per minute.

f. Advise the test subject that the smoke can be irritating to the eyes and instruct him to keep his eyes closed while the test is performed.

g. The test conductor shall direct the stream of irritant smoke from the tube towards the face seal area of the test subject. He shall begin at least 12 inches for the facepiece and gradually move to within one inch, moving around the whole perimeter of the mask.

h. The following exercises shall be performed while the smoke is challenging the respirator seal. Each shall be performed for one minute.

(1) Normal breathing.

(2) Deep breathing. Be certain breaths are deep and regular.

(3) Turning head from side to side. Be certain movement is complete. Alert the test subject not to bump the respirator on the chest. Have the test subject inhale when his head is at either side.

(4) Nodding head up and down. Be certain motions are complete. Alert the test subject not to bump the respirator on the chest. Have the test subject inhale when his head is in the fully up position.

(5) Talking - slowly and distinctly, count backwards from 100.

(6) Normal breathing.

i. If the irritant smoke produces an involuntary reaction (cough) by the test subject, the test conductor shall stop the test. In this case, the tested respirator is rejected and another respirator shall be selected.

j. Each test subject passing the smoke test without evidence of a response shall be given a sensitivity check of the smoke from the same tube to determine whether he reacts to the smoke. Failure to evoke a response shall void the test.

k. Steps d, g, and h of this protocol shall be performed in a location with the exhaust ventilation sufficient to prevent general contamination of the testing area by the test irritant smoke.

l. Respirators successfully tested by the protocol may be used in contaminated atmospheres up to ten times the PEL. In other words, this protocol may be used to assign protection factors not exceeding ten.

SACCHARIN SOLUTION AEROSOL FIT TEST PROCEDURE
(Secondary or Alternative Procedure)

1. Test threshold Screening

a. Threshold screening as well as fit testing employees shall use an enclosure about the head and shoulders that is approximately 12 inches in diameter by 14 inches tall with at least the front portion clear and that allows free movement of the head when a respirator is worn. An enclosed substantially similar to the 3M hood assembly of part # FT 14 and FT 15 combined is adequate.

b. The test enclosure shall have a 3/4-inch hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

c. The entire screening and test procedure shall be explained to the test subject prior to the conduct of the screening test.

d. The test subject shall don the test enclosure. For the threshold-screening test, he shall breathe through his open mouth with tongue extended.

e. Using a DeVilbiss Mode 40 Inhalation Medication nebulizer or equivalent, the test conductor shall spray the threshold check solution into the enclosure. The nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

f. The threshold check solution consists of 0.83 grams of sodium saccharin, USP in water. It can be prepared by putting 1 cc of test solution (see 3f below) in 100 cc of water.

g. To produce the aerosol, the nebulizer bulb is firmly squeezed so that it collapses completely then released and allowed to fully expand.

h. Ten squeezes are repeated rapidly and then the test subject is asked whether the saccharin can be tasted.

i. If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted.

j. If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the saccharin is tasted.

k. The test conductor will take note of the number of squeezes required to elicit a taste response.

l. If the saccharin is not tasted after 30 squeezes (step j), the test subject may not perform the saccharin fit test.

m. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

n. Correct use of the nebulizer means that approximately 1 cc of liquid is used at a time in the nebulizer body.

o. The nebulizer shall be thoroughly rinsed in water, shaken dry, and refilled at least each morning and afternoon, or at least every four hours.

2. Respirator Selection. Respirators shall be selected as described in the irritant smoke fit test procedure.

3. Fit Test.

a. The fit test uses the same enclosure described in 1a and 1b above.

b. Each test subject shall wear his respirator for at least 10 minutes before starting the fit test.

c. The test subject shall don the enclosure while wearing the respirator selected in paragraph 1 above. This respirator shall be properly adjusted and equipped with a particulate filter cartridge.

d. The test subject may not eat, drink (except plain water), or chew gum for 15 minutes before the test.

e. A second DeVilbiss model 40 Inhalation Medication nebulizer or equivalent shall be used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

f. The fit test solution is prepared by adding 83 grams of sodium saccharin to 100cc of warm water.

g. The test subject shall breathe through the open mouth with tongue extended.

h. The nebulizer shall be inserted into the hole in the front of the enclosure and the fit test solution shall be sprayed into the enclosure using the same technique as for the taste threshold screening and the same number of squeezes required to elicit a taste response in the same screening.

i. After generation of the aerosol, the test subject shall be instructed to perform the following exercises for one minute each.

(1) Normal breathing.

(2) Deep breathing. Be certain breaths are deep and regular.

(3) Turning head from side-to-side. Be certain movement is complete. Alert the test subject not to bump the respirator on the shoulders. Have the test subject inhale when his head is at either side.

(4) Nodding head up-and-down. Be certain motions are complete. Alert the test subject not to bump the respirator on the chest. Have the test subject inhale when his head is in the fully up position.

(5) Talking. Talk aloud and slowly for several minutes. The following paragraph is called the Rainbow Passage. Reading it will result in a wide range of facial movements, and thus be helpful to satisfy this requirement. Alternative passages that serve the same purpose may also be used.

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond his reach, his friends say he is looking for the pot of gold at the end of the rainbow.

j. Every 30 seconds, the aerosol concentration shall be replenished using one-half the number of squeezes as initially.

k. The test subject shall so indicate to the test conductor if at any time during the fit test the taste of saccharin is detected.

l. If the saccharin is detected the fit test is deemed unsatisfactory and a different respirator shall be tried.

m. Successful completion of the test protocol shall allow the use of the tested respirator in contaminated atmospheres up to 10 times the PEL. This protocol may used to assign protection factors no higher than ten.

APPENDIX P
HEARING CONSERVATION

1. Purpose. This chapter implements hearing conservation policy and guidance for personnel of the Wilmington District.

2. Applicability. This chapter applies to all elements of the Wilmington District.

3. References.

a. ER 385-1-89, Hearing Conservation.

b. EM 385-1-1, Safety and Health Requirements Manual.

c. EP 385-1-58, Medical Surveillance.

d. MIL STD 1472C, Human Engineering.

e. MIL STD 1474B, Noise Limits.

f. TB MED 501, Hearing Conservation.

g. 29 CFR 1910.95, OSHA, Occupational Noise Exposure.

h. 29 CFR 1926.52, OSHA, Occupational Noise Exposure.

4. Background.

a. Employees subjected to noise levels specified in CFR 1910.95 are required to be provided with hearing protection. When feasible, engineering controls shall be utilized to reduce the noise level.

b. Key elements in an industrial hearing conservation program are: noise measurement, use of engineering controls, use of personnel protective equipment, educational programs for employees, and audiometric testing.

4. General. Personnel working in areas where noise levels cannot be reduced below 85 dbA, regardless of length of exposure, shall be provided with ear plugs and/or ear muffs. Ear plugs properly used will attenuate approximately 30 dbA and ear muffs in good condition and properly used will attenuate approximately 20 dbA. Example: personnel working in a noise environment of 105 dbA must use hearing protection to reduce or attenuate 20 dbA from the 105 dbA noise level.

a. A physician, audiologist, or certified audiometric technician shall accomplish audiometric testing of employee.

b. Qualified personnel will analyze audiograms.

c. The employee shall be notified of any significant (15-20 dbA) threshold shift in hearing level.

d. A general "rule of thumb" in determining noise hazard areas is as follows: when the noise level makes if difficult to hold a normal conversation at close range using normal voice level, the area should be considered to be noise hazardous.

e. Some exposures that should be classified as noise hazardous include the following:

(1) Powered tools including chainsaws.

(2) Construction equipment.

(3) Dredge pump and engine rooms.

(4) Power Generators.

(5) Air compressors.

(6) Grass mowing equipment.

5. Responsibilities.

a. Supervisors shall:

(1) Be familiar with and implement the criteria established in this Appendix. They shall identify areas where employees are exposed to high noise levels; post those areas as

noise hazardous areas; develop, where feasible, engineering controls; educate on prevention of hearing loss; educate on and enforce the use of personal protective equipment. Noise hazards shall be included in the Position Hazard Analysis.

(2) Notify the Safety Office of suspected noise hazardous areas. The notification shall include the noise hazard involved, type of work done, and any action taken to eliminate the hazard. The Safety Office shall conduct noise surveys to determine the level of exposure. In areas where employees are subjected to noise levels of 85 dbA continuous or 140 dbA impulse regardless of duration, engineering and/or administrative controls (limiting the duration of exposure, etc) shall be implemented to reduce the noise hazard. In noise hazardous areas where engineering and/or administrative controls are not feasible, any employee exposed to 85 dbA or greater shall be provided hearing protection and will be entered into the District's Medical Surveillance Program.

(3) Requisition hearing protection equipment with the appropriate noise reduction level.

(4) Ensure that hearing protection devices conforming to ANSI S3.19 are issued and used by employees exposed to noise hazard areas.

(5) Ensure that applicable job descriptions contain the requirement that employees must wear hearing protection in the performance of their job.

(6) Ensure that employees receive orientation and ongoing training on hearing conservation.

(7) Ensure that employees exposed to a noise hazardous environment are included in the Districts Medical Surveillance Program. Baseline audiograms shall be administered to new and reassigned employees prior to assignment, but in no case later than 60 days after assignment.

b. Chief, Safety Office shall:

(1) Conduct noise surveys of known or suspected noise hazardous areas. Maintain records for 40 years.

(2) Monitor the program to ensure effective implementation and administration, to include retesting as required by program criteria or competent medical authority.

(3) Review analysis of audiograms.

(4) Provide supervisors with the requirements for further medical attention if indicated by analysis of baseline or follow-up audiogram.

(5) Arrange for annual audiograms for all employees exposed to noise levels above 85 dbA and for all employees required to wear hearing protective devices because of hearing deficiencies.

(6) Arrange for termination audiograms for all employees exposed to noise levels above 85 dbA that leave the District.

c. Employees shall:

(1) Wear proper hearing protection when exposed to noise environments exceeding 85 dbA or when directed by supervision.

(2) Report for audiometric testing when required.

APPENDIX Q
UNDERWATER DIVING OPERATIONS

1. Purpose. This regulation prescribes policies and procedures for underwater diving operations.

2. Applicability. This regulation is applicable to all Government and Contractor activities under the jurisdiction of the Wilmington District.

3. References.

a. EM 385-1-1, U.S. Army Corps of Engineers Safety and Health Requirements Manual.

b. U.S. Navy Diving Manual, Volumes I and II.

c. Commercial Diving Operations, Occupational Safety and Health Standards, 29 CFR 1910, Subpart T.

d. Consensus Standards for Commercial Diving Operations, Association of Diving Contractors (ADC), United States of America.

e. Commercial Diving Operations, United States Coast Guard.

f. The National Oceanic and Atmospheric Administration (NOAA) Diving Manual, Diving for Science and Technology.

4. Definitions. This regulation defines specific terms as used in the Wilmington District. Also, reference EM 385-1-1 and OSHA 29 CFR 1910 for definition of general terms in diving operations.

a. Diving Contractor - any company, whether serving as a prime or sub-contractor, performing underwater operations utilizing alternate air sources to accomplish mission objectives.

b. Government Diver - any governmental agency, which provides diving team services for the District, such as but not limited to Navy, Army, Marines, Air Force, Coast Guard and NOAA.

c. Construction Diver - any diver working in conjunction with marine construction, dredging operations, engineering yard operations, dam operations, and/or operations involving environment restrictions within Reference a. This includes confined space entry, crane operations, and mechanical systems requiring lock out/tag out procedures, and any other situations as declared by the District Diving Coordinator.

d. Scientific Diver - any diving operation required in conjunction with biological sampling and collection, and archaeological studies.

e. Diving Operation Inspection - utilization of a qualified COE diving inspector throughout the diving period, e.g., construction diving, hazardous environment diving, diving operations of less than 3 days or as determined by District Diving Coordinator (DDC) or Alternate District Diving Coordinator (ADDC).

f. Diving Operation Monitoring - utilization of a qualified COE diving inspector, who conducts an initial diving inspection meeting and then periodically inspects the diving operation. Monitoring is at the discretion of the DDC/ADDC, and is, at a minimum, for diving projects exceeding 3 days of operations, an operation that offers minimal opportunity for a diving accident, and/or an operation utilizing Government Divers.

5. Policy. All Wilmington District diving operations shall be conducted in a manner that will maximize efficiency and minimize the potential for personal injury, loss of life, occupational illness, and/or property damage. The District supports and emphasizes Paragraph 30.A.01 of EM 385-1-1, that diving shall not be utilized if the work objective can be more safely and efficiently accomplished by another means. Construction divers shall utilize surface-supplied air systems with diver/surface two-way voice communications. The District also encourages that all other divers, whether Government or scientific, utilize surface-supplied air systems as well. All diving operations will be subject to review and acceptance by the DDC/ADDC prior to commencement of any diving operation. In the absence of the DDC and ADDC, the dive inspector thoroughly familiar with the nature of the dive or another SAD District DDC will review the dive plan for compliance. Additionally, the DDC/ADDC will be notified and

dive plans submitted for all diving operations conducted by military dive teams. All diving operations will be inspected and/or monitored by qualified diving inspectors, in which the frequency of inspection will be determined by the DDC/ADDC during the dive plan review period. Any failure to meet the requirements stated herein or as referenced will be cause for delay or cessation of diving operations.

7. General.

a. Contracts issued for work or services within the District will reference this regulation whenever diving operations are anticipated as part of the contract work. It must be realized that diving is an inherently hazardous activity. Each dive operation will be carefully planned and executed according to the accepted dive plan. Each diving operation will be properly supported with adequate contractor personnel. Budget and schedule requirements, while a consideration in scheduling a dive, are not justification to deviate from dive safety measures. Only in the event of immediate life threatening situations may deviation of Standard Dive Practices occur from the accepted dive plan.

b. The Diving Contractor is responsible for diving efficiently and safely adhering to all applicable regulations and the accepted dive plan. Where a difference in standards exists, the most conservative shall apply. Divers will ensure the following:

(1) Commercial diving companies may be pre-qualified prior to commencing diving operations for the District. In order to be found qualified, the diving company must have a demonstrated knowledge and expertise in the type of diving operation to be performed, as set forth by industry standard and approved by the DDC.

(2) Divers shall have documented training and experience for the diving operation. Recreational dive training such as PADI, NAUI, SSI and YMCA is not in itself considered adequate training for commercial diving activities. A lack of experience or qualification to perform the task will be cause for rejection of the dive plan.

(3) Divers shall be qualified by a licensed physician to be fit for diving and shall be stated as such on their physicals. Currency of physicals will be within a year of the diving operation.

(4) Dive tenders shall have documented training and experience in the task assigned.

(5) All dive team members shall be currently certified by a nationally recognized organization in CPR and First Aid. At least two members shall be certified in oxygen first aid and have thorough knowledge of the oxygen system they utilize.

(6) All diving operations at a minimum will conform to EM 385-1-1, APPENDIX 30.

(7) All diving equipment furnished by the contractor will be identified in the dive plan and will comply with EM 385-1-1. During Surface Supplied Air operations, SCUBA will not be allowed as equipment for the stand-by diver. Use of SCUBA on any operation will be by DDC approval only.

(8) A diving craft of ample size to support the diving operation will be available for all dives as determined by the DDC. The type craft to be used will depend upon the location of the dive, number of personnel, and weather conditions. In addition to the dive team and vessel Captain, adequate space shall be made available for the diving inspector. As a minimum, the craft will be equipped with adequate first aid supplies, VHF marine radio capable of hailing channel 16, and a dive ladder and/or platform for safe entry and exit of the diver from the water.

(9) The international (ALPHA) and sport diver flags will be displayed in the direct vicinity of the diving operation when there are divers in the water.

(10) At no instances will free diving (breathhold) techniques be employed.

(11) Divers will wait 24 hours before flying after a dive.

(12) Copies of all dive logs will be submitted to the Safety Office.

(13) Submits three (3) copies of Safe Practices Manual, as written in compliance with ADC, fifteen (15) days prior to any diving operation for acceptance. The Diving Contractor will also provide updated versions to the Wilmington District when there are changes in operation, organization, personnel, and/or equipment. Copies will remain on file in the District Safety Office, with the DDC, and with the ADDC. A copy of the manual will be available by the contractor for use by all dive team members on all dive sites.

(14) Submits a dive plan for each diving activity for review and acceptance by the DDC/ADDC, and immediately advises both diving inspector and DDC/ADDC of changes that occur in the accepted dive plan. Additionally, in the development of the dive plan, consideration must be given to the environment where diving operations will be conducted, especially in terms of harmful materials that may be present in the water.

c. COE personnel involved in diving operations shall demonstrate the following:

(1) Personnel interested in performing duties as DDC, ADDC, and Inspectors should have at a minimum a basic SCUBA certification to ensure they have a basic knowledge of the hyperbaric and environmental conditions that Diving Contractors may experience. Names of personnel, who are considered for the diving program, will be submitted to and approved by the DDC, ADDC, and Safety Officer, prior to requesting prospect training. Diving Inspectors are required to attend and successfully complete a one (1) week PROSPECT course for Diving Inspector prior to conducting inspections for the District. Recertification is required every four (4) years. DDC and ADDC are required to attend either the three (3) week Diving Supervisor PROSPECT course or the four (4) week Diving Safety PROSPECT course. Recertification is required every four (4) years by attending the two (2) week Diving Refresher PROSPECT course.

d. The Commander will appoint a District Diving Coordinator and alternate who is responsible for organizing, integrating and monitoring the total dive program within the District. The DDC and ADDC must have completed the HQUSACE Dive Safety training. Duties include:

(1) Reviews all Safe Practices Manuals.

(2) Establishes District Dive Policy and ensures regulations are kept updated.

(3) Reviews medical certificates.

(4) Reviews all applicable contracts to ensure dive requirements are included.

(5) Reviews dive team qualifications and experience to ensure compliance with EM 385-1-1.

(6) Advises project managers on alternatives to and methods of diving.

(7) Reviews all dive plans for acceptance.

(8) Ensures when dive operations in the District are physically monitored.

(9) Ensures the District has ample personnel trained as diving inspectors to monitor dive operations.

(10) Performs Dive Inspector duties when necessary.

(11) Ensures that all assigned personnel have appointment letters.

(12) Conducts periodic Dive Inspector continuing education.

e. The Commander will appoint District Diving Inspectors. The diving inspector is the District representative at the dive site. The diving inspector is responsible for ensuring that the dive operation is adequately planned, equipped and staffed in accordance with the accepted dive plan. The diving inspector has

the authority to delay or stop a dive at anytime. The diving inspector's sole responsibility is the safe conduct of the diving operation. The diving inspector must have completed the required HQUSACE approved training. A waiver may be granted by the DDC until training is scheduled, if the candidate demonstrates extensive dive training and experience as represented by military records or commercial certifications. Duties include:

(1) Ensures adequacy of specified equipment.

(2) Ensure compliance with accepted dive plan.

(3) Requests changes of accepted dive plans with recommendations.

(4) Schedules time and travel for inspecting or monitoring dive operations and attends District sponsored diving meetings.

(5) Recommends frequency of monitoring dives.

(6) Maintains diving inspector certification.

(7) Maintains CPR/First Aid.

f. Each Branch that may be involved in diving operations should have a qualified diving inspector. This will ensure a lesser impact of having to utilize diving inspectors from another Branch. Training requirements shall be adequately funded by the office sponsoring the dive inspector and documented in the appropriate individual development plans and the SOHO.

g. All costs associated with the utilization of District Diving personnel shall be the responsibility of the Project, which requires the diving operation.

h. In addition to the personnel described above, the Project Manager, Resident Engineer, Project Engineer, Construction Representative and Supervisor at each project or facility are charged with ensuring the efficiency and safety of the diving operations within their areas of responsibility. They have the authority to stop a dive operation for an unsafe condition but may not override a dive operation decision made by the assigned diving inspector.

i. Prior to solicitation for diving services, the contracting office, technical manager and/or project manager will coordinate with the DDC to ensure all diving requirements are understood and incorporated in contract documents. Additionally, all correspondence sent outside of the District will be subject to review by the DDC or ADDC for technical accuracy.

APPENDIX R
QUALIFICATION, EXAMINATION, AND CERTIFICATION OF MOTORBOAT OPERATORS

1. Purpose. This Appendix establishes policy and procedures for the training, testing, and licensing of operators of District motorboats less than 26 feet in length.

2. Applicability. These requirements apply to all Wilmington District operators of motorboats less than 26 feet in length.

3. References.

a. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

b. ER 385-1-91, Training, Testing and Licensing of Small Boat Operators

4. Policy.

a. Technical Services Division will designate individuals as the responsible persons for administering all motorboat operators training. Those individuals will successfully complete the HQUSACE approved, 40-hour, Boat Operator's License Examiner Course as outlined in Annex I of this appendix. All instructors must successfully complete the approved 40-hour training course.

b. The SOHO shall be responsible for program administration, records management and licensing activities within the District. The Safety Office will also provide initial review of nominees for training to ensure medical compliance requirements are met.

c. All District elements will ensure that operators of motorboats are adequately trained, properly tested, and licensed prior to the official operation of any Government motorboat. Prior to completing a motorboat operator's course, unlicensed employees may practice boat operation under strict supervision of a licensed employee. Boat operation by unlicensed employees shall only be

used to gain experience prior to completing a HQUSACE Boat Operators Course.

4. Requirements.

a. Any person licensed to operate a motorboat shall be at least 18 years of age.

b. District employees operating motorboats or vessels subject to U.S. Coast Guard inspection and certification shall possess a valid U.S. Coast Guard license as specified on the Certificate of Inspection for the vessel being operated.

c. Motorboat operators shall have the full use of both hands, feet, and legs. Operators with red-green color blindness, or indication of night vision deficiency shall be limited to daytime operation only.

d. District operators of boats and vessels less than 26 feet in length shall successfully complete the 24-hour training requirement specified in Annex II of this Appendix. Operators requiring training under this regulation will retrain and successfully complete an eight-hour boat operator update course on a five-year cycle. Request for exceptions to this requirement must be submitted, through command channels to the HQUSACE Safety and Occupational Health Office for resolution.

e. District employees operating boats and vessels 26 feet or more in length but not subject to inspection and certification by the U.S. Coast Guard will possess a valid U.S. Coast Guard license appropriate for the size and type of vessel being operated, and the route that the vessel will operate. Since persons who are not Corps of Engineers employees often travel aboard District vessels, the U.S. Coast Guard license must be appropriate for carrying passengers.

f. District boat and vessel operators possessing a valid U.S. Coast Guard License must also obtain a small boat operators license by presenting a U.S. Coast Guard License and satisfactorily completing the boat handling skills portion of the boating course and the written examination.

g. Current District boat and vessel operators not possessing a U.S. Coast Guard License, who can pass the boat handling skills portion of the HQUSACE boating course and can satisfactorily complete the final written examination, may be exempt from the training requirements in Annex II of this Appendix. This demonstration of Skills and knowledge will be on a case by case basis and will include the standard written examination and actual demonstration of boat and trailer skills.

h. Rosters of training sessions will be forwarded to the Safety Office to verify training of boat operators. All completed examinations will be forwarded to the Safety Office and used to verify testing of motorboat operators. Optional Form 346, U.S. Government Operator's Identification Card will be issued, by the Safety Office, to individuals who satisfactorily complete the required training requirements and/or demonstrate the required proficiency in accordance with this regulation.

5. Job Requirement. For all positions requiring an employee to operate a boat or vessel as any part of the duties of that position, the Job Description and Vacancy Announcement or Recruiting Bulletin shall contain a statement specifying the type of license that the employee must possess.

6. Suspension of Revocation of License. Motorboat operator licenses may be suspended or permanently revoked for the following reasons:

a. Reckless, negligent, or careless operation.

b. Willful damage to a motorboat.

c. Violation of U.S. Coast Guard "Rules of the Road" in a manner to endanger life and property.

d. Operating a motorboat while under the influence of intoxicating beverages or drugs.

e. Misconduct that warrants suspension of license.

ANNEX I
U.S. ARMY CORPS OF ENGINEERS
BOAT OPERATOR LICENSE EXAMINER
TRAINING OUTLINE
(40 HOURS)

The following outline will be used in the HQUSACE approved training course to train, test, and license individuals as motorboat operator license examiners. Individuals must complete this course of instruction to be certified as a local license examiner.

DAY ONE

* Welcome and Administration
* USACE Boat Licensing Policy and Course Introduction
* Boating Knowledge Pretest w/o Critique
* Required Safety and Normal Equipment and Equipment Maintenance
* Boat Orientation
    (1) Starting Procedures
    (2) Checking Equipment
    (3) Getting Underway
    (4) Refueling Procedures
* Trailers and Trailer Maintenance
* Marlinespike Seamanship
* Navigation and Rules of the Road
* Fire Suppression
* Review and Critique

DAY TWO

* Fire Suppression (Practical)
* Course Familiarization (Classroom)
* 100 Yard Swim Test with Life Jacket
* Emergency Procedures (Practical)
    (1) Reaching, Throwing
    (2) Self Rescue, H.E.L.P., and Huddle
    (3) Overboard Drill, Roll Aboard
* Boat Operation, Course Familiarization (Practical)
* Secure Operation and Critique

DAY THREE

* Repetitive Boat Exercises (Practical)
  - (1) Serpentine Course
  - (2) Transition Serpentine
  - (3) Avoidance Course
  - (4) Docking
* Repetitive Boat Exercises and Role Playing
* Secure Operation and Critique

DAY FOUR

* Concurrent Boat Exercises (Practical)
* (1) Trailering
  - (2) Alongside Maneuvering
  - (3) Towing Vehicles
  - (4) Emergency Procedures
* Concurrent boat Exercises and Role Playing
* Secure Operations and Critique

DAY FIVE

* Evaluation of Boating Skills (Practical)
* Safety Manual (EM 385-1-1) Review
* Review/Post Test/Critique/Course Closure

ANNEX II
U.S. ARMY CORPS OF ENIGNEERS
BOAT OPERATORS TRAINING COURSE
(24 HOURS)

The following outline will be used to train employee operations of boats and vessel less than 26 feet in length. It is not necessary for the course days to run consecutively. The course schedule can be altered to meet local requirements as long as the subjects listed below are included in the total curriculum.

DAY ONE

* Welcome and Purpose of Course
* Written Boating Knowledge Pretest
* Required boating Safety Equipment and EM 385-1-1 Requirements
* Boats/Trailers/Maintenance
* Navigation and Rules of the Road
* Demonstration of Emergency Procedures

DAY TWO

* Fire Suppression (Practical)
* Boat Orientation (Practical)
    (1) Equipment Check
    (2) Starting Procedures
    (3) Getting Underway
* Practical Boating Skills (Practical)
    (1) Refueling Procedures
    (2) Equipment Maintenance
    (3) Marlinespike Seamanship
    (4) Mooring and Tying Off
* Course Familiarization w/Instructor (Practical)
    (1) Boat Handling Familiarization
    (2) Docking Course
    (3) Serpentine Course
    (4) Transition Serpentine Course
    (5) Obstacle Avoidance Course
* Boating Course w/o Instructor (Same as Above)

DAY THREE

* Boat Exercises
    (1) Trailer, Backing, Launching, and Retrieving
    (2) Alongside Maneuvering
    (3) Towing of Vessels
    (4) Emergency Procedures
* Evaluation of Boating Skills
    (1) Docking Course
    (2) Serpentine Course
    (3) Transition Serpentine Course
    (4) Obstacle Avoidance Course
* Post Test/Review/Critique

APPENDIX S
COLD WEATHER BOATING

1. Purpose. The purpose of this Appendix is to establish policy, responsibilities and procedures for solo cold weather boating.

2. Applicability. This Appendix is applicable to all government and contract personnel that are required to perform solo cold weather boating activities for the Wilmington District.

3. Policy. It is the policy of the Wilmington District that all cold water boating activities be conducted in a manner that will minimize the potential for personal injury, or loss of life resulting from the effects of hypothermia.

4. General. Cold weather boating exposes all participants to the effects of hypothermia. Hypothermia is the lowering of the body's core temperature. It is caused by exposure to cold, and aggravated by wet, wind, and exhaustion. It is most common in cold temperatures, but it can occur in some people when it is as warm as 70°. Most hypothermia cases develop in air temperatures between 30 and 50 degrees. Loss of body heat due to exposure to cold can lead to boating accidents and immersion in water. Immersion results in loss of body heat to the water, which is a major cause of deaths in boating accidents. Survival time for a boater immersed in 60° water is approximately 90 minutes.

5. Responsibilities. All solo boaters should follow the procedures outlined in paragraph 6 below. Additionally, it is recommended that the procedures outlined below be applied to all cold weather boating.

6. Procedures. When exposed to wind, cold or wetness, precautions should be taken to avoid the risks associated with hypothermia. Boaters should avoid exposure by staying dry, being aware of the wind, and understanding the cold. Boaters that cannot stay dry and warm should return to shore as quickly and safely as possible, keeping in mind that wind chill associated with high speeds across the water aggravates hypothermia. Boaters should never ignore shivering as this is a sign of the onset of hypothermia. When boating during cold weather the following procedures should be followed:

a. Boaters shall always wear a PFD and clothing that is appropriate for immersion in water (do not wear cotton). Solo boaters in remote areas should consider wearing an immersion suit when the water temperature is below 60° and the air temperature is below 45°. Solo boaters shall also wear a water-activated PFD distress light and hailing whistle.

b. Boaters to remote areas shall advise designated personnel of their destination and when they can be expected to return.

c. Boaters to remote areas shall maintain radio or cellular phone contact with designated personnel.

APPENDIX T
BLOODBORNE PATHOGENS PROGRAM

1. Purpose. The purpose of this Appendix is to establish a formal Bloodborne Pathogen Program to educate and protect District employees with the reasonable potential for occupational exposure to Hepatitis B Virus (HBV) and Human Immunodeficiency Virus (HIV).

2. Applicability. This Appendix is applicable to all Wilmington District and contract personnel who fulfill duties of Park Rangers, Lock and Dam Maintenance Mechanics, and employees designated as first-aid responders.

3. References.

a. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

b. 29 CFR 1910.1030, Bloodborne Pathogens

c. 5 U.S.C. 7901

4. DEFINITIONS.

a. **Occupational Exposure** means reasonably anticipated skin, eye, mucous membrane or parenteral contact with human body fluids or contaminated material.

b. **Contaminated** means the presence or reasonably anticipated presence of bloody fluids or infectious materials.

c. **Decontamination** means the removal or destruction of pathogens by physical or chemical means rendering them no longer infectious.

d. **Bloodborne Pathogens** means pathogenic microorganisms that are present in human blood that can cause disease in humans.

e. **Infectious body fluids** includes semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid and amniotic fluid.

f. **Parenteral** means piercing of the skin barrier or mucous membranes through such events as needlesticks, human bites, cuts and abrasions.

g. **Exposure Incident** means a specific eye, mouth, other mucous membrane, non-intact skin or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee's duties.

h. **Engineering Controls** means physical containers that isolate or remove the bloodborne pathogens hazard from the workplace.

i. **Universal Precautions** means to treat all human blood and body fluids as though they are infectious.

j. **Source Individual** is any person, living or dead with whom an employee had body fluid contact.

5. Employee Classification.

a. Supervisors will complete the enclosed form, SAW Form 656 (Annex II), for each employee (old and new hires) and forward the completed form to the SOHO. These forms will be completed in triplicate. The original will go to the SOHO, one copy will be kept in the supervisors' files and one copy will be given to the employee.

b. The SOHO will compile a list of employees who are classified as Category I and II (See SAW Form 656 for the Categories). These employees will be entered into the Bloodborne Pathogens Program.

c. The original copy of the SAW Form will be filed in the employee personnel records by the Civilian Personnel Advisory Center.

6. Training of Category I and II.

a. All Category I and II employees will receive training at the time of initial assignment and annually thereafter.

b. Training, as a minimum, will include all elements of 29 CFR 1910.1030.

7. Control Precautions.

a. Body fluids that may be infectious include semen, blood, vaginal secretions, cerebrospinal fluid, spinal fluid, amniotic fluid, peritoneal and pericardial fluid. The following precautions will be practiced by all employees in Category I or II:

(1) Universal precautions shall be practiced for all body fluids. This includes the use of personal protection equipment when handling any body fluid and disposing of contaminated materials in red bags or containers.

(2) Puncture proof containers will be provided by the Safety Office and used where it is necessary for employees to take their own hypodermic injections during working hours.

(3) Employees will be provided with personal protective equipment to include mouth shield, bio-hazard bags, and other equipment that may be required.

(4) Hepatitis B vaccine will be offered to all Category I and II employees. An employee who elects not to take the vaccine at initial training may elect to do so at any time throughout employment. There is no cost to the employee for the vaccine of its administration regardless of when it is given.

(5) Any exposure to body fluids including splashes to mucous membranes, needlesticks or mouth-to-mouth resuscitation will be reported to the Safety Office by the supervisor or the exposed employee immediately and the procedure for exposure initiated.

8. Decontamination.

a. Contaminated hands and skin surfaces will be washed immediately if soiled with body fluids.

b. Employees will remove clothing soiled with body fluids. The contaminated clothing will then be placed in a plastic leak proof bag and laundered in the washing machine using regular laundry soap.

c. If body fluids are spilled on tabletops, floors or other surfaces, they should be wiped up with rags or towels (while wearing gloves) and the area mopped with a solution of 1:10 bleach water.

d. Equipment should be wiped or soaked in 1:10 bleach water if the equipment is not disposable, and if disposable it should be placed in leak proof bags and disposed of as medical waste.

9. Post Exposure Protocol.

a. All exposures to body fluids, regardless of category of employee will be reported immediately to the supervisor and to the Safety Office. Both reports will include names of all persons involved, dates, time and description of the incident. A determination by the exposed employees must be included as to whether an occupational exposure was experienced by each of the participants.

b. A confidential medical evaluation will be made immediately. The physician providing the evaluation will be provided with:

(1) A copy of 29 CFR 1910.1030.

(2) Identification and documentation of the source, unless it is infeasible by state of local law.

(3) Route and circumstances of exposure.

(4) Status of the employee's HBV vaccination.

(5) A copy of the employee's job description.

c. The source individual's blood will be tested as soon as feasible after consent is obtained by the employee in charge on site to determine HBV and HIV infectivity. If consent cannot be obtained, written documentation of this shall be made and forwarded to the Safety Office.

d. If the source individual is known positive for HIV or HBV further testing is not necessary.

e. The employee shall be informed of applicable laws and regulations concerning disclosure of the identity and infectious status of the source individual. After which the SOHO will make the results of the source individuals testing available to the employee.

f. The SOHO shall request from the health care professional and provide to the exposed employee within 15 days from the medical evaluation information on the status of the vaccination and the health care professional's opinion on additional medical care.

g. All findings and information on the employee evaluation shall be confidential.

h. A record of all such incidents will be maintained in the SOHO.

10. Hepatitis B Vaccine.

a. After training has been accomplished, hepatitis B vaccine will be made available to all employees in Category I or II within 10 working days after assignment to tasks with potential for occupational exposure. The vaccine is not required if the employee has previously received the vaccination series or the vaccine is contraindicated, or the employee is immune.

b. All Category I and II employees will sign SAW Form 655 (Annex I) either accepting or declining the administration of hepatitis B vaccine.

c. Pre-screening will not be a prerequisite for receiving Hepatitis B vaccine.

11. Recordkeeping.

a. Supervisors will maintain a list of all employees classified as Category I or II.

b. The SOHO will maintain records of:

(1) All Category I and II employees will be maintained on SAW Form 656.

(2) All training with the date, employee name, social security number and signature, the name of the person presenting the training and the content of the training. Training records will be kept for three years from the date of training.

(3) The health care provider shall maintain vaccination records of Category I and II employees.

(4) Declination forms signed by personnel who, although performing category I or II duties, have chosen not to receive Hepatitis B vaccine.

(5) All medical information relating to post exposure evaluations which will be maintained for at least the duration of employment plus thirty years.

12. Responsibilities.

a. Supervisors will ensure that their employees are classified and attend the required training.

b. The SOHO will provide a source for training and a source for the vaccine.

c. Each employee should practice universal precautions and immediately report any exposure.

13. Labels and Signs.

a. Red bags will serve as labeling for contaminated waste.

b. All specimens will be placed in bags marked **BIOHAZARD MATERIAL**.

c. The red sharps containers are self-labeled.

d. Contaminated clothing will be placed in red bags and marked as clothing until they can be washed.

ANNEX II
CLASSIFICATION OF EMPLOYEES AT RISK FOR HBV AND HIV

U.S. Army Corps of Engineers, Wilmington District

Employee Name _____

Job Title _____

Location _____

Category _____

Employees will be placed in one of three categories determined by the duties they perform in their normal daily work. The following is a description of each category and the criteria used to establish the category for each employee in the program.

1. Category I - The employee performs tasks that involve an inherent potential for mucous membrane or skin contact with blood, body fluids, or tissue or a potential for spills or splashed. Universal precautions should be applied for all procedures when it is likely that the employee will have contact with blood or body fluids, to prevent transmission of bloodborne pathogens. Hepatitis B Vaccine is highly recommended for these employees.

2. Category II - The employee performs tasks that involve no exposure to blood, body fluids or tissue during the normal working routine, but the employee may be required to perform unplanned category I duties. Universal precautions should be used to perform any Category I procedures. Hepatitis B vaccine is recommended for these employees.

3. Category III - the employee performs duties that involve no exposure to blood, body fluids or tissue during the normal work routine. No special precautions are necessary to prevent transmission of bloodborne pathogens.

SAW Form 656

ACCEPTANCE/DECLINATION
(29 CFR 1910.1030)

ACCEPTANCE

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. I wish to receive the Hepatitis B vaccine.

Employee's Name
(Print)_____
Employee's
Signature _____Date_____
Supervisor's Name
(Print)_____
Supervisor's
Signature _____Date_____

DECLINATION

I understand that due to my occupational exposure to blood and other potential infectious materials I may be at risk of acquiring hepatitis B virus (HBV). I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. I understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I want to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Employee's Name
(Print)_____
Employee's
Signature_____Date_____
Supervisor's Name
(Print)_____
Supervisor's
Signature_____Date_____

SAW Form 655

HEPATITIS B VACCINE INFORMATION

1. Hepatitis B Virus is a viral infection caused by the hepatitis B virus (HBV) which causes death in 1-2% of patients. Most people with Hepatitis B recover completely, but approximately 5-10% becomes a chronic carrier of the virus. Most of the people have no symptoms, but continue to transmit the disease to others. Some may develop chronic active hepatitis and cirrhosis. HBV also appears to be a causative factor in the development of liver cancer. Thus, immunization against Hepatitis B can prevent acute hepatitis and also reduce sickness and death from chronic hepatitis, cirrhosis and liver cancer.

2. The Hepatitis B vaccine is a recombinant vaccine derived from yeast cells. A high percentage of healthy people who receive three doses of vaccine achieve protection against hepatitis B infection. Full immunization requires 3 doses of vaccine over a six-month period, although some people may not develop immunity even after 3 doses. The vaccine is given in the upper arm in the deltoid muscle. There is no evidence that the vaccine has ever caused hepatitis B or AIDS. However, persons who may have been infected with HBV prior to receiving the vaccine may develop clinical hepatitis in spite of immunization. The duration of immunity is unknown at this time, but is probably long-term.

3. Persons who have a known hypersensitivity to yeast **should not** receive the vaccine. Another type of vaccine will be made available for those personnel. The vaccine is also **not** recommended for pregnant women and nursing mothers.

4. Very few adverse reactions have been recorded. The most typical reported reactions are local site soreness, swelling and tenderness. Some other reactions reported are nausea, vomiting, abdominal pains and cramps, headache, light-headed, fatigue and weakness. There have been no reported deaths associated with this vaccine.

APPENDIX U
CONFINED SPACE ENTRY PROGRAM

1. Purpose. The purpose of this Appendix is to setforth practices and procedures required for safe entry into permit-required confined spaces.

2. Applicability. This Appendix applies to all government and contractor activities within the Wilmington District.

3. References.

a. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

b. 29 CFR 1910.146, Permit-Required Confined Spaces

c. DHHS (NIOSH) PUBLICATION NO. 87-113; "A Guide to Safety in Confined Spaces".

d. Control of Gas Hazards Aboard Vessels, ANSI-NFPA 306.

e. Criteria for a Recommended Standard, Working in Confined Spaces, National Institute of Occupational safety and Health (NIOSH), (1979).

4. General.

a. A confined space is a space that meets the following requirements:

(1) Is large enough and so configured that an employee can bodily enter and perform assigned work.

(2) Has limited or restricted means of entry and exit.

(3) Is not designed for continuous human occupancy.

b. A non-permit confined space is a confined space that does not contain or with respect to atmospheric hazards, the potential to contain any hazard capable of causing death or serious physical harm.

c. A permit-required confined space is a confined space that has one or more of the following characteristics:

(1) Contains or has the potential to contain a hazardous atmosphere.

(2) Contains a material that has the potential to engulf an entrant.

(3) Has an internal configuration that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a small cross-section.

(4) Contains any other recognized serious safety or health hazards.

d. Each facility or activity shall designate a competent person to manage and evaluate the facilities Confined Space Entry Program.

e. Each facility or activity shall maintain, on site, a Confined Space Entry Plan. The Plan shall comply with the requirements of EM 385-1-1 and 29 CFR 1910.146. The Plan shall contain the following information:

(1) All pertinent definitions contained in 1910.146 and EM 385-1-1.

(2) Training requirements.

(3) Responsibilities of authorized entrants, attendants and entry supervisors.

(4) Permit-required and non-permit entry procedures and site specific entry permits.

(5) Recommended personal protective equipment, retrieval and communication systems.

f. All permit-required confined spaces shall be identified with a sign reading "DANGER - PERMIT-REQUIRED CONFINED SPACE - DO NOT ENTER" to inform personnel of the existence and location of, and the danger posed by the permit-required confined space.

g. Facilities shall be re-evaluated at least once every three years.

5. Training.

a. All employees shall be instructed not to enter permit-required confined spaces without the proper permit outlining procedures and practices for the space.

b. Employees who are required to enter permit-required confined spaces or act as attendants or entry supervisor shall be trained in order to acquire the knowledge and skills necessary for the safe performance of their work. The employees must also be familiar with the types of hazards associated with the entry and the control measures used to ensure safe conditions.

c. Training shall conform to requirements of reference 3a and 3b.

d. The instructor upon successful completion of participants shall certify all training.

6. On Site Rescue Teams.

a. Each member of the rescue team shall be trained in the use of personal protective equipment and equipment necessary to perform a rescue.

b. Each member of the rescue team shall practice making a rescue at least once every twelve months. The practice drill shall simulate actual conditions within the permit-required confined space.

c. Each member of the rescue team shall receive the same level of training as authorized entrants and shall be trained in basic first aid and cardiopulmonary resuscitation (CPR).

7. Off Site Rescue.

a. The rescue service shall be informed of the associated hazards they may confront during a rescue.

b. The rescue service shall be provided access to all permit-required confined spaces for which rescue may be necessary so the service can develop appropriate plans.

8. Retrieval Systems. Retrieval systems shall be as recommended in each facility's Confined Space Entry Plan.

9. Recordkeeping. Records shall be maintained at each facility by the facility manager documenting training, including safety drills, inspections, tests and maintenance, and any atmospheric tests made to include time, date, PEL concentrations, PPE used, employees' names, etc.

ANNEX I
ACTIVITY HAZARD ANALYSIS-CONFINED SPACE ENTRY

Listed below are some potential hazards associated with entering a confined space and the possible means of controlling those hazards. The list may not be all-inclusive. Specific activity hazard analyses (AHA) shall be prepared for the hazards anticipated in each confined space that is entered. SAW Form 652 shall be used for preparing AHAs.

1. HAZARD: Toxicity

Causes:
- Toxic levels of substances in a confined space (CS).
- Decomposition of organic material in the CS.
- Mixture of substances in the CS.
- Substances being used in the CS (e.g. cleaning solvents).
- Residual vapors from previous contents of CS.
- Welding fumes or vapors.

Controls:
- Evaluate previous history of the CS to avoid reactions with residual chemicals, wall scale, and/or sludge that can be highly reactive.
- Check for compatibility of materials when structural members and/or equipment are introduced (e.g. aluminum ladder, cleaning solvents).
- Utilize proper respiratory equipment based on air monitoring.

2. HAZARD: Insufficient oxygen.

Causes:
- Rust.
- Use of other gases (e.g. nitrogen, carbon dioxide, etc).
- Welding.

Controls:
- Maintain atmospheric oxygen level of 21% by volume by providing thorough ventilation and exhaust as per conditions in the CS.

- Self-contained breathing apparatus.

3. HAZARD: Explosion or Fire in the CS

Causes: - Combination of combustible gases in the CS and a spark from an activity of an employee in the CS (dip-testing tank, welding, electric tools, light bulbs, matches).

Controls:
- Use non-sparking tools (NFPA).
- No matches, lighters or other flame producing sources allowed in CS.
- Explosion proof bulbs.
- Provide adequate ventilation to prevent an oxygen enriched atmosphere.

4. HAZARD: Explosion or Fire at Point of Entry

Causes:
- Employee welding, using power tool or other spark generating activity at point of entry.
- Driving automobile near CS containing combustible materials.

Controls:
- Use of non-sparking tools.
- Barricade entry point within reasonable distance.
- Prohibit vehicles within immediate area.

5. HAZARD: Electrocution/Electric Shock

Cause: - Conductive walls of CS picking up an electrically "hot" source in the CS.

Control:
- Ensure that all electrical apparatus used comply with Standards.
- Lockout electrical sources.

6. HAZARD: Caught In/Crushing

Cause: - Entering machine/area that has not been locked out, having it activated.

Control: - Manually isolating each piece of equipment before workers enter or while they work in a CS. Follow specific procedures for mechanical lockout.

7. HAZARD: Struck by falling objects in CS.

Causes:
- Falling objects from walls of CS.
- Objects falling through point of entry.

Controls:
- Barricade entry of CS.
- Wear appropriate personal protective equipment (e.g. hardhat).
- Assess hazards prior to entry.

8. HAZARD: Falls While in CS.

Causes:
- Wet, oily floors, configuration of internal surfaces.
- Holes/breaking through part of CS.
- Falls over objects and tools.
- Poor lighting.
- Uneven surfaces.

Controls:
- Ensure floor and base are clean and dry.
- Wear proper foot protection.
- Locate, identify, and barricade existing holes.
- Provide adequate illumination.
- Practice good work habits (housekeeping).
- Use guardrails and scaffolding properly.

9. HAZARD: Bodily Reactions, Strains, and Abrasions.

Causes:
- Entering, leaving cramped sharp-edged, high-level or hazardous point of entry into a CS.
- Maneuvering within a CS.
- Low head room (striking head).

Controls:
- Wear personal protective equipment.
- Training to ensure awareness.
- Reduce bulkiness of clothing, equipment, etc.
- Engineer controls to eliminate condition.

10. HAZARD: Eye Injuries.

Causes:
- Falling dust.
- Grinding, chipping, other operations that cause flying debris.

Control:
- Wear proper eye protection at all times.

11. HAZARD: Contact With Temperature Extremes.

Causes:
- Steam discharge.
- Welding surfaces.
- Weather conditions.
- Compressed gases (e.g. nitrogen).

Controls:
- Wear appropriate clothing, PPE.
- Limit time of exposure.
- Know symptoms of excessive exposure.
- Frequent breaks to ensure high fluid intake to compensate for hot climates and for hot conditions inside PPE.

APPENDIX V
HAZARD COMMUNICATION PROGRAM

1. Purpose. The purpose of this Appendix is to establish a Hazard Communication Program and to inform and educate District personnel on the occupational health hazards associated with the chemicals in their workplace.

2. Applicability. This Appendix is applicable to all Wilmington District personnel and to all contractors conducting business with the Wilmington District.

3. References.

a. 29 CFR 1910.1200, Hazard Communication

b. 29 CFR 1926.59, Hazard Communication

4. General. The District's Hazard Communication Program has been developed in accordance with 29 CFR 1910.1200 to ensure that all chemical substances that are brought into the workplace have been evaluated for their physical and health hazards and that information concerning these hazards is transmitted to those employees with potential for exposure. Only those chemicals that have been classified as a health or physical hazard in accordance with 29 CFR 1910.1200 are required to be included in the Hazard Communication Program. Consult with the SOHO if there is an uncertainty as to a chemical's inclusion.

5. Major Elements. There are five major elements of the District's Hazard Communication Program; Chemical Assessment and Inventory; Hazardous Chemicals Labeling System; Material Safety Data Sheets (MSDS); and Employee Training. All elements are covered in the document titled Hazard Communication Program for the Wilmington District.

APPENDIX W
PUBLIC SAFETY

1. Purpose. This Appendix establishes a coordinated safety program for the purpose of preventing public accidents.

2. Applicability. This Appendix applies to all Wilmington District elements involved with public recreation activities.

3. References.

a. AR 385-10, The Army Safety Program

b. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

c. EM 1110-1-400, Recreation Planning and Design Criteria

d. EM 1110-2-410, Design of Recreation Areas and Facilities - Access and Circulation

e. ER 1110-2-400, Design of Recreation Sites, Areas and Facilities

f. ER 1130-2-550, Recreation Operations and Maintenance Policies

g. EP 310-1-6, Sign Standards Manual

h. 36 CFR 327, Rules and Regulations Governing Public Use of Resource Development Projects Administered by the Chief of Engineers

4. Policy. The Wilmington District has a responsibility for the safety of the visiting public who use District facilities for recreational activities. In order to meet this responsibility, District facilities must be planned, designed, constructed, operated, and maintained in a manner that will best provide safety for the user.

5. Responsibility. A successful safety program requires a coordinated effort from all concerned District elements.

Operations branch is the basic element responsible for operation, maintenance, and management of the District's water resource projects. They must have the primary responsibility for the implementation of the public safety program. Supporting elements include the Safety Office, Planning, Engineering, Office of Counsel, Public Affairs and Real Estate. Responsibilities of the elements are listed below:

a. Operations Branch.

(1) Develop and update as required public and employee safety action plans that will address employee, public and water safety.

(2) Promote safety awareness for the public and Operations employees to prevent and reduce accidents at water resource projects.

(3) Ensure that employees responsible for public safety are well trained and have sufficient knowledge to perform their duties with confidence.

(4) Improve safety programs at water resource projects through enhanced interagency cooperation.

(5) Ensure compliance with all current regulations involving safe design, construction, and operation of public use areas; employee work practice; safety equipment; and safety training.

(6) Provide the visiting public with a safe recreational experience.

(7) Project signs shall be in accordance with the Sign Standards Manual, EP 310-1-6.

b. Safety and Occupational Health Office.

(1) Assists District elements in organizing, directing, and monitoring the effectiveness of the public safety program.

(2) Ensures that District elements are abreast of the latest developments in public safety.

(3) Assists Operations personnel with the performance of compliance inspections.

(4) Performs safety surveys of public use areas.

(5) Reviews plans and specifications for the development of public use areas to ensure compliance with safety standards.

(6) Assists with the development, procurement, and distribution of water safety program promotional material.

(7) Maintains records of public drowning and injuries.

c. Planning Branch. Plan and develop recreation facilities in such a manner as to reduce the drowning potential of the user. Items to be considered are:

(1) Ensure that recreation sites, including swimming beaches are developed in areas with safe shorelines. Shorelines should not have dangerous submerged drop-offs, boulders, and strong currents.

(2) Plan for boat launch facilities with safe boarding access and vehicular access that would eliminate the public from accidentally driving head-on into the water.

(3) Ensure that all planning and design is in accordance with EM 1110-1-400.

d. Engineering Branch.

(1) Design recreation facilities to reduce the drowning potential.

(2) Provide safe shorelines in public use areas where swimming and wading are likely to occur by eliminating submerged physical hazards.

(3) Design swimming beaches as required by ER 1110-2-400, EM 1110-1-400.

(4) Review marina concessionaire development plans and design specification to ensure compliance with current criteria.

(5) Design boat launch facilities to provide safe boarding access.

(6) Ensure launch ramps are laid out in a manner that reduces the potential of visitors form accidentally driving into the water.

(7) Provide safe vehicular access along shoreline roads to prevent accidental entry into the water.

e. Office of Counsel.

(1) Provide legal research for determining liability due to drowning and other injuries.

(2) Review wording of signs and other written instructions and materials for adequacy.

(3) Review marina concessionaire contracts to ensure that safety provisions are included and are enforceable.

f. Public Affairs Office.

(1) Inform employees, the general public, media, civic organizations, and industry of our safety program and our accomplishments in the safety arena.

(2) Develop radio and television public safety announcements for our projects.

(3) Develop water safety handouts to be given to the public.

g. Real Estate.

(1) Prepare marina concessionaire contracts in a manner that will require the concessionaire to abide by all current 385 series safety standards, NFPA, and environmental laws.

(2) Ensure that implementation of safety provisions is checked during compliance inspections.

APPENDIX X
CONTROL OF HAZARDOUS ENERGY
(LOCKOUT/TAGOUT)

1. Purpose. This Appendix establishes requirements and procedures for the control of hazardous energy (Lockout/Tagout) for the purpose of disabling machines and equipment to prevent the unexpected energizing, start-up, or release of stored energy.

2. Applicability. This Appendix applies to the control of energy during servicing and maintenance of equipment by government and contractor personnel within the Wilmington District.

3. References.

a. ER 385-1-31, The Control of Hazardous Energy (Safe Clearance)

b. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

c. 29 CFR 1910.147, The Control of Hazardous Energy (Lockout/Tagout)

4. Definitions.

a. Energy Isolating Device. A mechanical device that physically prevents the transmission or release of energy.

b. Energy Source. Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

c. Lockout. The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

d. Lockout Device. A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in a safe positions and prevent the energizing of equipment. Included are blank flanges and bolt slip blinds.

e. Tagout. The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

f. Tagout Device. A prominent warning device, such as a tag and a means of attachment, that can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and equipment being controlled may not be operated until the tagout device is removed.

g. Zero Energy State. Before any piece of equipment can be services or worked on in any way, it must be in a "zero energy state." This means no energy is coming into or is inside the equipment. Equipment that is just turned off is not at a zero energy state because it could easily be turned on again. Isolating the energy source and using locks and tags ensures the equipment reaches and stays at a zero energy state.

5. General. Each facility shall have a written lockout/tagout plan.

a. Lockout/Tagout.

(1) If an energy isolating device is not capable of being locked out, the energy control plan shall utilize a tagout system.

(2) If an energy isolating device is capable of being locked out, the energy control plan shall utilize lockout, unless it can be demonstrated that the use of a tagout system will provide a level of safety equivalent to that obtained by using a lockout system.

(3) After January 2, 1990, whenever replacement or major repair, renovation or modification of equipment is performed, and whenever, new equipment is installed, energy isolating devices for such equipment shall be designed to accept a lockout device.

b. Equipment may be powered by different types and combinations of energy sources:

(1) Electrical energy is the flow of currents through wires and circuits.

(2) Hydraulic energy is any type of liquid, including water, under pressure.

(3) Pneumatic energy is gas, including air, under pressure.

(4) Mechanical energy is potential or "built-up" energy, such as spring energy, that may cause equipment parts to move without warning.

c. Each facility shall have written lockout/tagout procedures which clearly and specifically outline the scope, purpose, authorization, rules, steps and techniques to be utilized for the control of hazardous energy and means to enforce compliance with these procedures. An example listing of steps is enclosed at Annex I of this Appendix for reference.

d. Authorized employees shall demonstrate energy control is in effect prior to any maintenance or service being conducted and submit a request for safe clearance using ENG Form 1927-R. A copy of this form is enclosed at Annex II of this appendix.

e. Each facility shall maintain a safe clearance log. All safe clearances will be entered into the log when issued and when released.

f. Protective materials and hardware.

(1) Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware used for controlling energy shall be provided for isolating, securing or blocking of equipment from energy sources.

(2) Lockout and tagout devices shall be singularly identified; shall be the only devices used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

(a) Lockout and tagout devices shall be capable of withstanding the environment in which they are exposed for the maximum period of time that exposure is expected.

(b) Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

(c) Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkaline chemicals are handled and stored.

(3) Lockout and tagout devices shall be standardized with the facility in at least one of the following criteria: color, shape, or size; and additionally, in the case of tagout devices, print and format.

(4) Substantial.

(a) Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

(b) Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal.

(5) Identifiable.

(a) Lockout and tagout devices shall indicate the identity of the employee applying the device.

(b) Tagout devices shall warn against the hazardous condition if machine or equipment is energized and shall include a legend such as the following: **Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate.**

(c) No lockout or tagout device shall be removed by anyone other than the individual that placed the device.

(6) Inspections.

(a) A qualified individual shall conduct a periodic inspection of the energy control procedures at least annually to ensure that established procedures and requirements are being followed.

(b) Periodic inspections shall be performed by an authorized person other than the one utilizing the energy control procedures being inspected.

(c) Periodic inspections shall be conducted to correct any deviation or inadequacies identified.

(d) Periodic inspections shall include a review between the inspector and each authorized and those affected employees regarding the procedures and responsibilities being used.

(e) Periodic inspections will be documented for each piece of machinery or equipment. This certification shall identify the machine or equipment on which the energy control procedure was being used, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

6. Responsibility.

a. Supervisors.

(1) Will establish a program and utilize procedures for appropriate control of hazardous energy (lockout/tagout) for their facility.

(2) Will ensure that all necessary personnel receive required training regarding the control of hazardous energy.

b. Safety and Occupational Health Office. Will ensure that all programs involving the control of hazardous energy (lockout/tagout) are in compliance with district, and federal regulations.

7. Training. Training shall be provided for each affected employee to ensure that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired. Training shall include the following:

a. All authorized employees will receive initial and annual training in the recognition of applicable hazardous energy sources, the types and magnitude of the energy present in the workplace, and the methods and means necessary for energy isolation and control.

b. All affected employees shall be instructed in the purpose and use of the energy control procedures.

c. All other employees whose work operations are or may be in an area where energy control procedures may be used shall be instructed about the procedure and about the prohibition relating to attempts to restart or re-energize machines or equipment that are locked out or tagged out. This training may be accomplished during regularly scheduled safety meetings.

d. **Lockout or tagout shall be performed only by the authorized employee who are performing the servicing or maintenance.**

e. Training will be documented. Certification shall contain each employee's name, dates of training, name of person(s) conducting the training, where the training was performed, and the subjects covered.

8. Personal Protective Equipment. All appropriate personnel protective equipment will be used when applying lockout and tagout procedures.

ANNEX I
CONTROL OF HAZARDOUS ENERGY
LOCKOUT/TAGOUT PROCEDURES
STEPS TO SAFETY

1. TRACING THE ENERGY - The energy sources powering the machine or equipment needing work must be located. A floor plan can help the authorized employee trace the flow of energy to its sources.

2. SHUTTING DOWN EQUIPMENT - The on/off switch, starter button, or local disconnect is turned to "off" to shut equipment down. There may be more than one point of shutdown therefore all of them must be turned off.

3. ISOLATING THE ENERGY SOURCE - Isolation devices are applied to all energy sources to block energy from coming into, moving within, or causing unexpected movement of equipment parts.

4. LOCKOUT/TAGOUT - A lock and tag (or a tag by itself) are attached to the isolation device and at other locations if required. The authorized employee may give the locks and tags a quick tug to make sure they are securely attached.

5. RELEASING STORED ENEGRY - Equipment may contain stored or residual energy that could cause harm if released unexpectedly. To make the equipment safe, stored energy is either released or blocked.

6. TESTING FOR ZERO ENERGY - To make sure there is zero energy, the authorized employee tries to turn the equipment on. If it comes on, steps 1 through 5 are repeated. If the equipment does not start up, the employee can work safely.

7. REMOVING LOCKS AND TAGS - When the work is done locks and tags are removed by the authorized employee (or by the supervisor, under special circumstances). Afterward, the equipment may be restarted so that normal operations can resume.

Industrial accidents can result in serious injury and even death to you or nearby workers. You can help prevent accidents by working safely and following all lockout/tagout procedures. Never take short cuts to bypass the lockout, and never remove someone else's lock or tag unless established procedures are followed.

APPENDIX Y
Testing and Inspection of Permanently Installed Overhead and Gantry Cranes

1. Policy and Scope.

a. To set forth the District Policy regarding the testing and inspection of permanently installed overhead and gantry cranes at Corps of Engineers owned installations wherever they may be located within the District.

b. Such installations include, but are not limited to, powerhouses and pumping stations.

2. References.

a. EM 385-1-1, Safety and Health Requirements Manual.

b. ANSI Standard 8 30.2--1990, "Overhead and Gantry Cranes."

3. Testing.

a. Prior to initial use, all new, reinstalled, altered, extensively repaired, or modified cranes shall be tested by a qualified person to insure compliance with references 2a and 2b.

b. This test shall include the following functions:

(1) Lifting and lowering.

(2) Trolley travel.

(3) Bridge travel.

(4) Limit switches.

(5) Locking, limiting, safety and indicating devices, if provided.

c. The trip setting of hoist limit devices shall be determined by tests with an empty hook traveling in increasing speeds up to the maximum speed. The actuating mechanism of the upper limit device shall be located so that it will trip the device under all

conditions, in sufficient time to prevent contact of the hook or load block with any part of the trolley or crane.

d. In addition to the above described operational tests and prior to initial use, all new, reinstalled, extensively repaired, modified, and altered cranes shall be tested and inspected by or under the direction of a designated or authorized person. The person performing the test and inspection shall furnish a written report confirming the load rating of the crane. The load rating should not be more than 80% of the maximum load sustained during the test. Test loads shall not be more than 125% of the rated load, unless otherwise recommended by the manufacturer. The test reports shall be placed on file where readily available to appointed personnel. The rated load test, if made, shall consist of the following operations as a minimum requirement.

(1) Hoist the test load a distance to assure that the load is supported by the crane and held by the hoist brake(s)

(2) Transport the test load by means of the trolley for the full length of the bridge.

(3) Transport the test load by means of the bridge for the full length of the runway in one direction with the trolley as close to the extreme right hand end of the crane as practical. And in the other direction with the trolley as close to the extreme left hand end of the crane as practical.

(4) Lower the test load, and stop and hold the load with the brake(s).

e. Load capacity so established shall be entered on ENG Form 3364, as set forth in paragraph 18.C.02, and a copy of this form furnished to District Safety Office.

4. Inspections. A competent person, using the checklist contained in Annex I of this Appendix, shall make annual inspections of such hoisting machinery. The original of this annual inspection shall be maintained in the files at the installation with a copy furnished District Safety
Office.

Annex 1
ANNUAL INSPECTION OF OVERHEAD CRANES PERMANENTLY INSTALLED IN POWERHOUSES AND PUMPING STATIONS AND OTHER INSTALLATIONS IN THE WILMINGTON DISTRICT

1. Is it clearly legible from the ground or floor?

2. If there is more than one hoisting unit, does each hoist, or its load block, have the rated load marked on it in such fashion that it is clearly legible from the ground or floor?

3. Where passageways or walkways are provided on the structure supporting the crane, are there obstructions placed so that personnel will be jeopardized by movements of the crane?

4. Are wind forces in excess of 30 psf expected? If so are special anchorages, tie downs at the home position, or remotely operated rail clamps for all positions (to supplement the primary braking system) provided. Is a wind-indicating device provided for outdoor cranes? Does the device give a visible and audible alarm to operator at a predetermined wind velocity?

5. Are the crane runway columns securely anchored to the foundation? Are they deformed, cracked, or corroded?

6. Is the crane runway structure free of excessive vibration under operating conditions?

7. Are the runway girders or foundations true and parallel?

8. Are the rails securely attached to the girders or foundation?

9. Are the rails level, straight, and spaced to crane span unless specifically designed otherwise?

10. Are the rails adequately spliced? Are joints smooth?

11. Are stops designed to withstand the forces applied to the bumpers? Do the stops engage the bumpers or bumper pads mounted to the bridge?

12. Are lubricating points accessible without the necessity of removing guards or other parts?

13. Are there loose bolts or rivets?

14. Are sheaves and drums cracked or worn?

15. Are pins, bearings, shafts, gears, rollers, locking and clamping device worn, cracked, or deformed?

16. Are brake system parts, linings, pawls, and ratchets excessively worn?

17. Is the power plant for the crane performing properly?

18. Are the crane hooks deformed or cracked?

19. Are there signs of pitting or deterioration of controller contractors, limit switches, and push button stations?

20. Check the wire ropes for the conditions set forth in paragraph 17.C.02, EM 385-1-1.

21. Does the cab have operating handles within reach of the operator when facing the area to be served by the load block or while facing the direction of travel of the cab? Does the operator have a full view of the cab? Does the operator have a full view of the load block in all positions? If not, are close circuit TV, mirrors, radio, telephone, or signal person(s) utilized during times when load block is not visible to operator? Has the cab been constructed to meet ANSI Standard B 30.2-1990 for overhead and gantry cranes?

22. Does the crane have acceptable and safe access in the form of fixed ladder, stairs, or platform?

23. If the crane has a toolbox, is it securely fastened?

24. Is there a portable fire extinguisher (with a minimum rating of 10 B:C) installed in the cab?

25. Does the cab have sufficient lighting, either natural or artificial, to enable the operator to see the controls?

26. Is electrical equipment located or enclosed so that it is not exposed for inadvertent contact?

27. Are live parts of electrical equipment protected from exposure to grease, or dirt and moisture?

28. Is the crane equipped with a device(s) to disconnect all motors from the line in the event of power failure?

APPENDIX Z
SAFETY MANAGEMENT EVALUATION

1. Purpose. This Appendix establishes policy and programs for surveying, analyzing, and evaluating Safety Programs throughout the Wilmington District.

2. Applicability. This Appendix applies to all installations (construction field offices, area/resource manager offices, locks and dams, powerhouses, floating plants, etc) within the Wilmington District.

3. References.

a. AR 385-10, The Army Safety Program

b. OCE Supplement 1 to AR 385-10

c. ER 385-1-85, Safety and Occupational Health Program Management Evaluation

d. SADvR 385-1-18, Safety Management Evaluation

4. General Policy. It is the policy of the District Commander that the Safety Management Program of each installation of the Wilmington District be surveyed, analyzed, and evaluated annually to determine its effectiveness and compliance with all Federal statutes, U.S. Army and Corps of Engineers safety and health policies.

5. Program Evaluation.

a. The Safety Programs of applicable divisions, staff offices, and their field installations (e.g., construction field offices, resource manager's offices, powerhouses and floating plants) in Wilmington District will be evaluated annually by the SOHO. An evaluation of the safety management effort and effectiveness will be furnished the District Commander by the District Safety Office within 30 days of the evaluation. Formal evaluation criteria will be established and utilized in conducting the evaluation. Program administration, work area safety and accident experience will be included.

b. Guides are provided in Annex I and will be revised as necessary to update programs and place emphasis on special areas, new requirements, or changes in the program. These guides are applicable to construction, operations, resources manager's offices, etc. Non-applicable portions should be deleted as appropriate.

ANNEX I
SAFETY MANAGEMENT EVALUATION CHECKLIST

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
SAFETY MANAGEMENT Administration and Documentation				
Copy of Commander's Policy Statement	1			
Copy of DR 385-1-1	1			
Copy of Safety Management Action Plan	1			
Documentation of Safety Training	1			
Documentation of Medical Exams	1			
Current Position Hazard Analyses	1			
Activity Hazard Analyses on File	1			
Confined Space Entry Log	1			
Documentation of Safety Meetings	1			
Documentation of Safety and Health Indoctrination	1			
TOTAL SCORE	**10**			
Emergency Information				
Emergency Evacuation Plans	1			
Employee Accountability Following Evacuation	1			
Emergency Telephone Numbers	1			
TOTAL SCORE	**3**			
Accident Reporting				
Records of First Aid Treatment	1			
Accident Reporting Meets Reporting Requirements	1			
TOTAL SCORE	**2**			
Performance Standards				
All Supervisors Have Measurable SOH Standards Incorporated into Their Performance Standards	1			
TOTAL SCORE	**1**			
Safety Training				
All Safety Training is Current	1			
TOTAL SCORE	**1**			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
SAFETY MANAGEMENT CONT. Hazard Communication				
Proper Labeling	1			
Current Inventory of Hazardous Chemicals	1			
Conspicuously Located MSDSs	1			
Site Map Showing Location of Substances	1			
TOTAL SCORE	**4**			
Public Safety				
Public Safety Promotion Programs	1			
Conducts Safety & Health Inspections of Leased Facilities	1			
TOTAL SCORE	**2**			
Contractor Safety				
Accident Prevention Plan Review and Acceptance	1			
Activity Hazard Analysis Review and Acceptance	1			
Equipment Testing and Inspection	1			
Diving Plan Review and Acceptance	1			
Compliance Inspection (Frequency, Documentation and Follow-up	1			
Procedures to be Used to Gain Contractor Compliance	1			
TOTAL SCORE	**6**			
Hazardous and Toxic Waste Activities				
Appropriate Personnel Receive Training	4			
Site Safety and Health Plan Review & Acceptance	6			
TOTAL SCORE	**10**			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
HOUSEKEEPING				
Sanitation				
Adequate Supply of Drinking Water Provided	1			
Drinking Water Supplied From an Approved Source	1			
Dispensed by Means That Prevent Contamination	1			
Fountain Dispensers Have Guarded Orifices	1			
Non-potable Water Conspicuously Posted	1			
Appropriate Toilet Facilities Provided	1			
Adequate Ventilation in Toilet Facilities	1			
TOTAL SCORE	**7**			
Signs				
Danger	1			
Caution	1			
General Safety	1			
Fire and Emergency	1			
Information	1			
Exit	1			
TOTAL SCORE	**6**			
Material and Tool Storage				
Availability of Material Handling Devices	1			
Safe Storage Height (< 20 ft)	1			
Accessways Are Kept Clear	1			
No Materials Stored on Scaffolds	1			
Lumber Stor. Limited to 1 MBF, 10 ft. from Bldg	1			
Lumber Stacked on Sills and Stacked Level 20 ft Max (16ft if Handled Manually)	1			
Bagged Mat'ls Stepped Back & Cross-keyed	1			
Brick Stacked Not Over 7 Ft	1			
Block Stacked in Tiers on Level Ground	1			
Reinforcing Steel Stored in Orderly Piles Away Walkways and Roadways	1			
Structural Steel Secured to Prevent Sliding Off	1			
Steel Poles, Pipe, Bar Stock and Other Cylindrical Stacked to Prevent Spreading or Tilting	1			
TOTAL SCORE	**12**			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
HOUSEKEEPING CONT. Tripping Hazards				
Tools, Materials, Extension Cords, Hoses, or Debris Located so as to Not Cause Tripping Hazards	1			
Stairways, Passageways, Gangways, and Accessways are Free of Matl's and Obstructions	1			
Forms and Scrap Lumber and Debris are Kept From Work Areas and Around Bldg Storage Yards and Other Structures	1			
TOTAL SCORE	**3**			
FIRE SAFETY Fire Protection				
Is There a MOU in Place with Local Fire Depts	1			
Are Current Evacuation and Fire Prevention Plans In Place	1			
Are Exits Maintained to Provide Free and Unobstructed Egress	1			
Are Exits Clearly Visible	1			
Are Work Areas Free of Accumulations of Combustible Debris	1			
Is All Fire Extinguishing Equipment Inspected for Defects and Inspected for Defects (Annually)	1			
Are Approved Fire Extinguishers Provided at all Temporary Buildings and Places Where Combustibles Are Stored	1			
Are Motorboats Equipped With Fire Extinguishers	1			
TOTAL SCORE	**8**			
Flammable and Combustible Storage				
All Sources of Ignition Are Prohibited in Areas Where Flammable and Combustible Liquids are Stored	1			
At Least One Portable Fire Extinguisher Rated at 40-B:C Within 100 Ft	2			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
Flammable and Combustible Storage Cont.				
Adequate Ventilation to Prevent Accumulation of Flammable Vapors to Hazardous Levels	1			
Approved Containers Used for Storage of Flammable and Combustible Liquids	1			
Storage Cabinets in Compliance with NFPA 30	1			
Combustible Cleaning Materials Are Stored in Closed Metal Containers				
TOTAL SCORE	**6**			
Fuel Handling				
No Smoking of Open Flame Signs	1			
Portable Fire Extiinguisher (20-B:C) Provided on All Tank Trucks	1			
Portable Fire Extinguisher (40-B:C) Provided Within 100 Ft of Each Refueling Area	1			
TOTAL SCORE	**3**			
PERSONAL PROTECTIVE EQUIPMENT				
Was PPE Selection Based on Hazard Assessments	1			
Were Employees Trained on the Proper Use of PPE	1			
Is Eye and Face Protection Provided and Used	1			
Is Hearing Protection Provided and Used	1			
Is Head Protection Provided and Used	1			
Is Respiratory Protection Provided and Used	1			
Is Proper Fall Protection Provided and Used	1			
Is Appropriate Electrical Protective Equipment Provided and Used	1 1			
Are Personal Floatation Devices Provided and Used	1			
Is Rescue Equipment Available for Confined Space Entry	1			
TOTAL SCORE	**11**			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
INDUSTRIAL AND CONSTRUCTION SAFETY				
Electrical Safety				
All Wiring and Equipment Listed by a Nationally Recognized Testing Laboratory	1			
Flexible Cords are Hard Usage or Extra Hard Usage	1			
Flexible Cords are Used in Continuous Lengths	1			
All Circuits Grounded	1			
All Receptacle Outlets That Provide Temporary Electrical Power Have GFCI	1			
Batteries of the Non-sealed Type Stored in Enclosures With Outside Vents	1			
Eyewash and Emergency Drenching Facilities	1			
TOTAL SCORE	**7**			
LockOut/TagOut				
Hazardous Energy Control Plan (LO/TO) in Place	1			
Approved LO/TO Devices	1			
LO/TO Training	1			
TOTAL SCORE	**3**			
Hand and Power Tools				
Tested and Certified by a Nationally Recognized Testing Laboratory	1			
Equipped With Proper Guarding	1			
Nonconducting Hoses on Hydraulic or Pneumatic Tools	1			
TOTAL SCORE	**3**			
Rigging				
Rigging Properly Stored	1			
Running Lines Within 6 ft-6in of Ground or Working Level is Guarded	1			
Eye Splices made in an Approved Manner	1			
Positive latching Device Used When Hoisting Loads	1			
TOTAL SCORE	**4**			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
INDUSTRIAL AND CONSTRUCTION SAFETY CONT: Mechanized Equipment				
Inspected and Certified to be in Safe Operating Condition	1			
Records of Test Maintained at the Job Site	1			
Daily Shift Inspections	1			
ROPS	1			
FOPS	1			
Seat Belts Provided and Used	1			
Reverse Alarm	1			
Anti-Two Block Device on Non-Duty Cycle Cranes	1			
Boom Angle Indicator	1			
Control Barriers for Truck and Crawler Cranes Aboard Barges	1			
TOTAL SCORE	**10**			
Welding				
Proper Ventilation	1			
Respiratory Protection (When Required)	1			
Fire Extinguishing Equipment Provided	1			
Free of Combustibles	1			
Free of Explosive Gases	1			
TOTAL SCORE	**5**			
Pressurized Equipment				
Temporary Equipment Inspected Semi-Annually	1			
Permanent Equipment Inspected Annually	1			
Hydrostatic Testing of Unfired Pressured Vessels Installation After Lay-Up After Repairs Every Three Years	 1 1 1 1			
Records of Inspections	1			
Compressed Gas Cylinders Stored in Well Ventilated Locations	1			
Cylinders Containing the Same Gas Stored in Segregated Groups	1			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
INDUSTRIAL & CONSTRUCTION SAFETY CONT. Pressurized Equipment Cont.				
Cylinders Separated from Flammable or Combustible Liquids and Other Ignitible Materials by At least 40 ft or by Fire Wall with a 1-Hour Rating	1			
Smoking Prohibited Around Cylinders	1			
TOTAL SCORE	**11**			
Safe Access and Fall Protection				
Is There a Ramp, Ladder, or Personnel Hoist Available Where There are Vertical Breaks > 19"	1			
Are Guardrails, or Other Forms of Provided at Locations from Which Workers May Fall 6 Ft. or More	1			
Have Employees Received Fall Protection Training	1			
Does Guardrail Have Top, Mid and Bottom Rails	1			
Are Fixed-Rail Ladders 16" Clear Between Rails	1			
Are Wood Toprails a Minimum of 2x4	1			
Are Wood Midrails a Minimum of 1x6	1			
Are Post a Minimum of 2x4 at 8'oc	1			
Are Pipe Railings, Top & Bottom a Minimum of 1-1/2"	1			
Are Post a Minimum of 1-1/2"	1			
Are Individual Rung/Step Ladders 16" Clear Between Rails	1			
Are Toeboards a Minimum of 1x4	1			
Are Portable Ladders 11.5" Clear Between Rails	1			
Do Ladders Have Slip-Resistant Feet	1			
Is Anti-Two Block System Installed for Crane Supported Personnel Hoist	1			
Are Scaffolds Plumb and Level	1			
Do Scaffolds Bear on Base Plates	1			
Are Working Levels of Work Platforms Fully Planked	1			
Is Planking Secured From Movement	1			
Does Planking Extend 6" Over End Supports	1			
Is Scaffolding With Height That Exceeds Four Times the Width of the Base Secured to the Wall or the Structure	1			
TOTAL SCORE	**21**			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
INDUSTRIAL & CONSTRUCTION SAFETY CONT: Excavation and Trenching				
Are Sides of Excavations Guarded	1			
Is Water Prevented From Entering the Excavation	1			
Is Excavated Material Placed at Least 2 Ft From the Edge	1			
Are Provisions Provided to Prevent Personnel Vehicles, and Equipment from Falling into Excavations	1			
Are Two or More Means of Egress Provided for Excavations 4 Ft Deep and Greater Than 25 Ft Long	1			
Are Cofferdams Provided with Standard Railings or Other Protection	1			
Are Two Means of Access Provided on Cofferdams	1			
TOTAL SCORE	**7**			
Concrete and Masonry Construction, and Steel Erection				
Are Rebar Caps in Place	1			
Powered Troweling Machines Are Provided with Automatic Control Switches	1			
Structural and Reinforcing Steel is Supported or Guyed to Prevent Overtuning	1			
Limited Access Zone Established for Masonry Wall Construction	1			
Masonry Walls Greater Than 8 Ft is Adequately Braced	1			
TOTAL SCORE	**5**			
Confined Space Entry				
Facility or Activity Has a Permit-Required Confined Space Entry Plan	1			
All PRCS Are Identified with Appropriate Signage	1			
All Testing and Monitoring is Provided	1			
Comments:				

SAFETY MANAGEMENT EVALUATION				
Gov't Unit or Contractor Name: _____ Activity or Project Name:	Evaluated By: _____ Date:			
Program Element	Maximum Score	Applicable Score	Actual Score	Comments
INDUSTRIAL & CONSTRUCTION SAFETY CONT: Confined Space Entry Cont:				
Ventilating Equipment is Provided	1			
Communications Equipment is Provided	1			
All Required PPE is Provided	1			
Rescue Equipment is Provided	1			
Is a Log of Confined Space Entries Maintained	1			
TOTAL SCORE	**8**			
GRAND TOTAL	**181**			

EVALUATION RATING:

Comments:

Evaluation Score = Actual Score/Applicable Score(100%)

APPENDIX AA
ASBESTOS INDENTIFICATION AND PROTECTION PROGRAM

1. Purpose. This Appendix establishes a formal asbestos operations and maintenance program to educate and inform District personnel of the health risks and proper maintenance procedures when working with asbestos containing materials.

2. Applicability. This Appendix is applicable to all U.S. Army Corps of Engineers, Wilmington District personnel and all contractors conducting business with the Wilmington District.

3. References.

a. 29 CFR 1910.1001, Asbestos

b. AR 200-1, Environmental Protection and Enhancement, Chapter 10

c. EPA 20 T-2003, "Managing Asbestos in Place. A Building Owners Guide to O&M Programs for Asbestos Containing Materials"

4. General. Asbestos is a known human carcinogen. Although it is difficult to quantify the precise risk posed by exposure to asbestos in buildings and facilities, unnecessary exposure to asbestos should be avoided. The goal of this Appendix is to inform personnel of the presence of asbestos in the workplace and provide guidance for the routine and emergency maintenance involving asbestos. Adherence to this guidance will help maintain an environment free of asbestos contamination within District buildings and facilities.

5. Program Objectives. The objectives of this program are to:

a. Clean up asbestos fibers previously released.

b. Prevent future release by minimizing asbestos containing materials (ACM).

c. Monitor the condition of asbestos within the District buildings and facilities.

The program will remain in effect until all asbestos containing materials are removed from all District facilities.

6. Asbestos Containing Material (ACM) Classification. Asbestos containing material is any material with a concentration of greater than 1% asbestos by weight. Asbestos is generally classified into 3 categories:

a. Surfacing Material. This is ACM which is sprayed or troweled on structural members, ceilings and plaster coatings. This material is also an excellent fire proofing material.

b. Thermal Insulation. This ACM is usually found on pipes, boilers, mufflers, and duct work. It is an excellent material for insulation where heat and moisture control are necessary.

c. Miscellaneous Materials. This ACM is found in floor tiles, wall board, cement, brake pads, and other applications where either strength or durability are necessary.

Asbestos material in the first two categories pose the highest risk of exposure. These materials tend to release fibers easily when disturbed. This tendency is called Friability. Asbestos contained in the third category is bonded with other material, however fibers can be released through actions of cutting, grinding or breaking of the material. For this reason **ALL** asbestos containing materials should be handled as friable.

7. Implementing the Program. The program shall be implemented for a building or facility as soon as asbestos material of any type is confirmed. A program coordinator shall be designated for that building or facility. The program coordinator will be responsible for the procedures applied to building/facility, routine cleaning, maintenance, general operations and renovation. Use of proper procedures for the aforementioned operations will help ensure the asbestos material will remain in good condition. These procedures involve:

a. Notification to employees that asbestos is present within the building or facility.

b. Training workers in the proper procedures for cleaning and maintenance in areas where asbestos is present.

c. Periodic inspection of the ACM to determine it's condition.

d. Medical Surveillance for personnel who routinely work around asbestos material.

8. Program Elements. Several aspects of the program remain the same for all types of asbestos containing materials. For clarity, these aspects are repeated for each type of ACM.

a. Special Practices For Surfacing Materials. Due to the ease with which sprayed or troweled on ACM becomes friable, it is often the major source of airborne contamination within buildings and facilities. Surface areas covered with this type of ACM tend to be large. Fibers are released from this material through touching, bumping, or from aging of the material. To reduce the potential for airborne release of fibers the following procedures shall be observed when this material is discovered:

(1) Notification and Education. Inform all occupants, maintenance, and custodial personnel of the presence of asbestos within the building or facility. All personnel shall know the exact location of the asbestos and instructed not to disturb or damage the material. All maintenance and custodial workers shall be properly trained in the cleaning and maintenance of asbestos materials. These personnel shall be physically qualified to wear a respirator and shall be included in the District Respiratory Protection Program and the Asbestos Surveillance Program. Appropriate warning labels will be attached adjacent to the asbestos and non-asbestos material. Warning labels shall read as follows:

WARNING ASBESTOS PRESENT. HAZARDOUS DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT

ASBESTOS FREE MATERIAL

(2) Work Practices For Cleaning And Custodial Operations. Routine cleaning involving asbestos shall be performed with the occupants out of the area to be cleaned. Dry brooms, mops, rags, or standard vacuum cleaners shall **not** be used in areas that contain asbestos. This equipment tends to re-suspend the asbestos fibers

creating a health hazard. **All** cleaning in areas containing asbestos shall be performed within the following guidelines:

(a) Mops, brooms, and cloths shall be kept moist using water or a dust suppressant.

(b) All cleaning materials shall be changed frequently to ensure that fibers are not escaping.

(c) Spray with water any debris found in the area and remove using dust pan.

(d) Use a vacuum which contains a High Efficiency Particulate Air (HEPA) filter on all carpets.

(e) Wet mop all floors and wet wipe all horizontal surfaces.

(f) All mop heads, cloths, and debris shall be placed in plastic bags properly labeled, and disposed of in accordance with federal and local regulations.

(g) All reusable equipment shall be washed thoroughly, dried, and placed in a separate area from normal cleaning equipment.

(3) Work Practices For Maintenance Activities. Normal maintenance activities can disturb ACM sites and cause a release of fibers. It is necessary for all workers involved in the maintenance activities where there are asbestos materials to be properly trained in the handling and removal of asbestos materials. The District SOHO shall be informed of these activities prior to the commencement of work. Problems with maintenance activities in areas containing asbestos usually involve three activities:

(a) Conducting routine maintenance and repair work.

(b) Entering areas with potentially high concentrations of fibers.

(c) Expanding or rehabilitating a work space.

If disturbance of ACM is **unlikely**, no precautions other than normal care in performing the work is needed. If minor disturbance is **likely**, the area should be sprayed with a mist of amended water (water and a surfactant) before work begins. All electrical systems shall be shut off before any water is applied to an area. If there is a possibility of **significant** disturbance the SOHO shall be notified prior to the start of work. In all situations involving ACM the worker shall wear, as a minimum, a half-face respirator with HEPA filters.

(4) Special Practices For Thermal Insulation. ACM thermal insulation presents a less significant hazard for fiber release. Unless the ACM is damaged, the protective jacket will contain any fiber release. The program for thermal insulation is focused on identification and informing the affected personnel of the location of the ACM.

(a) Notification and Education. Refer to 6(b).

(b) Work Practices for Cleaning and Custodial Operations. Refer to 6(c).

(c) Work Practices for Maintenance Activities.

(1) Maintenance activity which could affect ACM includes ACM covered pipes, boilers, valves, and duct work. Maintenance usually involves plumbing and HVAC repair. Only those personnel properly trained in asbestos handling and removal and physically qualified to perform this work shall perform maintenance activities involving ACM disturbance.

(2) If disturbance of the ACM is **unlikely**, normal precautions only need to be observed. **NOTE** vibration created from maintenance activities in one are can cause a disturbance and fiber release in another area. If this situation arises, correct the problem where the fiber release is expected prior to any other maintenance work. If there is a **significant** possibility of fiber release, notify the SOHO prior to commencement of work. After minor ACM insulation has been properly removed, replace the insulation with non-asbestos mastic, insulation, and protective jackets. All ACM material shall be disposed of in accordance with federal and local regulations.

(5) Special Practices for Miscellaneous ACM. Most of the ACM that is neither surfacing or thermal insulation falls into this category. These materials are usually hard and non-friable. Fibers can be released through cutting, grinding, or other manipulations of the material.

(a) Notification and Education. Occupants, custodial, and maintenance workers shall be informed of the presence and location of ACM in the area. Maintenance workers shall be trained in the handling and removal of ACM safely.

(b) Work Practices for Maintenance Activities. Where disturbance of the ACM cannot be avoided the following procedures shall be in effect:

(1) The ACM shall be misted with amended water to help prevent fiber release. Ensure all electrical connections have been shut off prior to misting activities.

(2) Cutting, drilling, or grinding of the material shall be performed with equipment which has HEPA vacuum systems.

(3) Avoid removing, sanding or stripping floor tiles containing ACM. If tiles are removed **DO NOT** sand the backing material remaining on the floor.

(4) In all cases this maintenance work shall be performed with the occupants out of the area.

9. Periodic Inspections. At least twice a year an inspection of ACM in all buildings and facilities shall be conducted by personnel trained and certified by AHERA to perform building inspections. This action will help ensure that any damage or deterioration of the ACM will be detected and corrective action taken. Results of the inspection will be documented and placed in the permanent asbestos file for the particular building or facility.

10. Procedures for a Fiber Release Episode. A minor episode such as, a small piece of insulation falls, water damaged insulation or accidental disturbance of sprayed on ACM can be

cleaned up using standard wet cleaning and maintenance practices for ACM described in Section 6.1.2. Workers shall wear half-face respirators with HEPA cartridges as a minimum protection during clean up. The damaged area shall be repaired with asbestos-free material and the ACM shall be disposed of in accordance with federal and local regulations. If a major release occurs, maintenance workers shall evacuate the affected area of personnel, shut down ventilation systems to contain fibers in as small an area as possible, and seal the area with 6-mil plastic sheeting. Appropriate warning labels shall be placed adjacent to the affected area. The District SOHO shall immediately be notified after taking these precautions. Most major releases fall outside the expertise of maintenance workers and will have to be cleaned up by a certified asbestos contractor.

11. Respiratory Protection Program. The District Respiratory Protection Program shall be in force during **all** phases of the program that involves exposure to asbestos fibers. The District SOHO shall provide sources for respirator fit testing and training for personnel involved in asbestos related work. **ALL** custodial and maintenance workers involved in asbestos related work shall be included in the Respiratory Protection Program.

12. Medical Surveillance. Any employee exposed to asbestos fibers in a concentration greater than 0.1 fibers per cubic centimeter of air (f/cc) shall be included in the Asbestos Surveillance program. **ALL** custodial and maintenance workers involved in ACM related activities shall be included in the Asbestos Surveillance program.

13. Training. All of the work practices and procedures outlined in this program shall be utilized by District buildings and facilities that contain ACM. The program shall become part of the permanent file for each affected building or facility. The file shall be available to all personnel who work within the building or facility. This program will be the basis of the District training and awareness program for in-house and new employees. Training shall be coordinated through the SOHO and contain as a minimum the following items:

a. The uses and health effects of asbestos.

b. The location of ACM within the building or facility.

c. The asbestos control program for the building or facility.

d. The District Asbestos Identification and Protection Program.

14. Recordkeeping. All aspects of the District Asbestos Identification and Protection Program shall be maintained and stored at the District SOHO. Records for each employee included in the Asbestos Surveillance program shall be maintained for a period of 40 years. All asbestos related training, including annual refresher training shall be maintained at the SOHO.

APPENDIX BB
HAZARDOUS MATERIAL EMERGENCY RESPONSE

Procedures for hazardous material emergency response are contained in CESAW PLAN 500-1-7 and are applicable to all Wilmington District activities.

APPENDIX CC
A SUMMARY OF OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATIVE, TRAINING AND INSPECTION REQUIREMENTS

1. Purpose. This Appendix has been prepared to aid in determining the appropriate administrative, training and inspection requirements that are applicable to District activities. It details a good number of items but should not be considered all-inclusive.

2. Applicability. This Appendix applies to all U.S. Army Corps of Engineers, Wilmington District personnel and all contractors conducting business with the Wilmington District.

3. References.

a. 29 CFR 1910, Occupational Safety and Health Standards for General Industry

b. 29 CFR 1926, Occupational Safety and Health Standards for the Construction Industry

c. EM 385-1-1, US Army Corps of Engineers Safety and Health Requirements Manual

4. Administrative Submittals Required.

a. Project Safety and Health Plan. The project safety and health plan is required by paragraph 01.A.05 of EM 385-1-1. The plan shall be developed and implemented on USACE facilities and activities where employees are engaged in other than routine office and administrative functions (i.e., O&M, recreational resource management, surveying, inspection and testing, construction management, warehousing, transportation, etc). It should address applicable items listed in Appendix A of EM 385-1-1 in addition to District requirements. Items to be addressed include the following: normally the location for the Project's Confined Space Entry Program, Hazardous Energy (LOTO) procedures, Bloodborne Pathogen Exposure Control Plan, Respiratory Protection Program, Hearing Conservation Program, Hazard communication Program, Asbestos O&M Program, critical lift procedures, as well as any other required project specific program or procedures). The plan shall be reviewed annually and updated if required.

b. Accident Prevention Plan (APP). Accident prevention plans are applicable to contractor work and are required by paragraph 01.A.07 of EM 385-1-1. The plan shall be prepared by the prime contractor prior to commencement of work at the jobsite. The plan shall be prepared by qualified personnel and signed by a competent person and a representative of the prime contractor's project management team. The plan shall be comprehensive and cover the work performed by subcontractors, suppliers and vendors. **Separate or individual plans submitted by subcontractors are not acceptable.** The plan shall be reviewed by the Safety Office.

c. Activity Hazard Analysis (AHA). An AHA is required by section 01.A.10 of EM 385-1-1 for each USACE activity as warranted by the hazards associated with the activity (generally for all USACE field operations including inspections for structural stability). An AHA is a document that outlines the steps required to accomplish an activity, the actual or potential hazards of each step and the measures to eliminate or control those hazards. In general, an AHA is appropriate to identify the controls for a major phase of work. Employees need to review the AHA for a particular activity prior to beginning it, each time the AHA is modified to address new hazards, and as often as necessary to ensure they adhere to safe work procedures. For contractors, an AHA must be developed before beginning each work activity involving a type of work presenting hazards not experienced in previous project operations or where a new crew or subcontractor is performing the work. Work may not begin until the AHA for that activity has been accepted by the COR and discussed with all appropriate personnel.

d. Asbestos Abatement Plan. An asbestos abatement plan is required by paragraph 06.B.05 of EM 385-1-1 when there is an identified asbestos hazard. The written plan details compliance with OSHA and EPA asbestos abatement requirements and shall be submitted to the SOHO for review and recommended acceptance prior to initiation of work at the jobsite.

e. Blasting Safety Plan. As per section 29 of EM 385-1-1, prior to bring explosives on site, the contractor shall develop and blasting safety plan. It shall be reviewed by the SOHO and accepted by the COR prior to initiation of site work.

f. Confined Space Entry Program. As per paragraph 06.I.04 of EM 385-1-1, each USACE and contractor activity, and each USACE facility shall maintain a permit-required confined space (PRCS) program. The program shall include, as a minimum, PRCS entry procedures, monitoring, ventilation, communications and other safety equipment, training, medical clearances, PPE, permit requirements, and other pertinent data. Each PRCS program, COE or contractor shall be submitted to the SOHO for review and prior to acceptance.

g. Critical Lift Plan. As per paragraph 16.C.18 of EM 385-1-1, critical lift plans are required for every USACE and contractor non-routine lift that requires detailed planning and additional or unusual safety precautions. Critical lifts include the following:

(1) Lifts made when load weight is 75% of the rated capacity of the crane.

(2) Lifts that require the load to be lifted, swung or placed out of the operator's view.

(3) Lifts made with two or more cranes.

(4) Lifts involving non-routine or technically difficult rigging arrangement.

(5) Hoisting personnel with a crane of derrick.

(6) Any lift that the lift or crane operator believes should be considered critical.

h. Dive Operations Plan. As per Section 30 of EM 385-1-1, a dive plan shall be developed, submitted, and implemented by contractors for each separate dive operation. It shall be submitted to the District Diving Coordinator or Alternate for review and acceptance prior to the commencement of dive operations. A copy of the accepted plan shall be at the diving location.

i. Employee Emergency Evacuation and Fire Prevention Plans. As per paragraph 01.E of EM 385-1-1 and OSHA Standard 1910.38, a written plan shall be developed and reviewed with each employee upon initial assignment, and shall be kept at the workplace and

made available for periodic employee review. The plan shall designate the persons who will assist in the safe and orderly emergency evacuation of employees and visitors.

j. Fall Protection Plan. As per paragraph 01.A.09 of EM 385-1-1, an activity hazard analysis (AHA), shall be prepared for government and contractor activities in which workers are exposed to falls of 6 feet of more. The AHA shall be prepared prior to any work being performed and made a part of the Accident Prevention Plan for contractor activities. Where applicable, the AHA shall be made a part of government Project Safety and Health Plans. The AHA should include types of fall protection being used and name of competent individual.

k. Position Hazard Analysis (PHA). As per paragraph 01.A.06 of EM 385-1-1, a position hazard analysis is required for each USACE position. The PHA is a document that lists the duties or tasks of an employee's position, the potential or actual hazards of each duty and the measures to eliminate or control those hazards. The PHA should be reviewed by the individual employee upon assignment, **reassignment,** anytime new hazards are created, and annually to reinforce the understanding of all hazards and controls. PHAs shall be updated as required to incorporate new hazards and controls.

l. Lead Abatement Plan. As per paragraph 06.B.05 of EM 385-1-1, where there is a potential or identified lead hazard, a written plan detailing compliance with OSHA and EPA lead abatement requirements shall be developed, and submitted to the SOHO for review and recommended acceptance prior to initiation of work on site.

m. Site Safety and Health Plan (SSHP). As per paragraph 28.B of EM 385-1-1, a SSHP shall be developed and implemented when employees are engaged in HTRW activities, to include preliminary assessments and underground tank work. The SSHP must have a cover sheet for appropriate signatures; shall be submitted, reviewed and recommended for acceptance by the SOHO prior to commencement of work.

n. Wildfire Control Plan. As per paragraph 09.K of EM 385-1-1, a wildfire control plan shall be developed at all facilities and areas with potential exposure to wildfire. The plan shall be distributed to all key wildfire control officers and shall be updated at least annually.

2. Training Requirements. An initial list of occupational safety and health training requirements for District personnel is provided below. This list deals with USACE required training as well as that which is specifically stipulated by OSHA standards and other regulations.

Note: Within the following descriptions, the term "Competent Person" is used. This normally means "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them." Normally someone who, by way of his or her training, experience, and knowledge is considered well versed in the subject matter. Competency is normally determined by the Site manager, however, the Safety Office may be consulted for final determination.

a. All Terrain Vehicles (ATV). As per paragraph 18.D.01 of EM 385-1-1, every operator of an ATV shall complete an ATV training course, of approximately 4 hours, prior to operation of the vehicle. Every operator must possess a valid state driver's license. Refresher training is recommended.

b. Asbestos Abatement. As per 29 CFR 1926.1001 and OSHA Instruction CPL 2-2-63, asbestos abatement training shall be provided prior to initial assignment of related duties and annually thereafter. **Note: Employees that receive the initial training and do not receive the annual refresher training will be required to re-take the initial training prior to subsequent assignment of related duties.**

(1) Inspecting Buildings for Asbestos-Containing Materials. All employees who will be conducting surveys and assessments for ACM will receive approximately three days of training. Employees responsible for evaluating data gained from the survey will receive the same training. The training must be an EPA approved AHERA course. An 8-hour refresher is required.

(2) Managing Asbestos in Buildings. All employees who have completed the course Inspecting Buildings for ACM and who will be responsible for developing and implementing management plans for asbestos in buildings (and other facilities) will receive two days of training from a commercially available source, with an annual 8-hour refresher.

(3) Supervision of Asbestos Abatement Projects (Competent Person). All employees who perform, supervise, or oversee asbestos work are required to take this course. For those limited to Class III and IV work, training equivalent to the 16-hour O&M course is acceptable. Otherwise this training must be obtained at a comprehensive 5-day EPA Model Course for Supervisors. This training includes individual respirator fit-testing, 14 hours of hands-on training and a written examination of 100 multiple choice questions with a passing level of 70%. The course shall consist of 40 hours, available commercially with an annual 8-hour refresher.

(4) Designing Asbestos Response Actions. This course is required for design professionals involved in asbestos response actions. An advanced course must have Supervision course or equivalent to register. The course is approximately 32 hours and is available commercially with an annual 8-hour refresher.

(5) Abatement Courses.

(a) Class I for removal of thermal insulation containing more than 1% asbestos from pipes, fittings, boilers, tanks, ducts, etc requires four days of Asbestos Abatement Worker Training. This training also includes individual respirator fit-testing, 14 hours of hands-on training and a written examination of 50 multiple choice questions with a passing level of 70%. The course is approximately 32 hours and is available commercially with an 8-hour annual refresher.

(b) Class II for roofing, flooring, siding, ceiling tiles or transite panels requires 8-hours. The training is abbreviated because it does not entail the in-depth training about enclosures, ventilating equipment, medical surveillance, air monitoring and respiratory protection required for Class I abatement. Training shall include hands-on training.

(c) Class III for repair and maintenance operations (O&M Worker Training) where ACM or Presumed ACM (PACM) is likely to be disturbed. The course shall include hands-on training and be at least 16-hours in length.

(d) Class IV for maintenance and custodial activities during which employees contact but do not disturb ACM or PACM. This is a 2-hour "asbestos awareness" training for maintenance and custodial workers. Annual refresher training is required but the length of such training is not specified. Can be obtained from an in-house "competent" person or from an outside vendor.

(e) Occupant Asbestos Awareness Training. Facility managers of building containing ACM shall notify building occupants through written notices or awareness training sessions about the building's O&M program.

c. Bloodborne Pathogens (BBP) Training. This training is required by 29 CFR 1910.1030. The purpose is to prevent the spread of BBP for employees reasonably anticipated to have occupational exposure to blood or other potentially infectious materials. Training is at the time of initial assignment to tasks involving such exposures and at least annually thereafter. Initial training for train-the-trainers is approximately. Training for others, approximately 4-hours, is required annually. Training is available commercially. An Exposure Control Plan is required for each worksite with appropriate hazards.

d. Boat Operations. EM 385-1-1 and ER 385-1-91 requires employees operating boats less than 26 feet in length to successfully complete a HQUSACE-approved boat operator's course and be licensed prior to official operation of a USACE vessel. Training is available from in-house licensed examiners.

(1) District Motorboat Director. Must be a graduate of the 40-hour HQUSACE-approved Motorboat License Examiner Training Course.

(2) Other District Motorboat Instructors. Must be graduates of the 40-hour HQUSACE-approved Motorboat License Examiner Training Course. To maintain this certification, USACE employees must participate as an instructor in at least on 24-hour motorboat training course or 8-hour refresher every three years. If an instructor fails to meet this requirement, their certification is revoked and can only be reinstated once the employee attends and passes another 40-hour Examiner Training Course.

(3) Motorboat Operators must complete a 24-hour HQUSACE-approved Motorboat Operator Training Course and be licensed prior to official operation of vessels. All motorboat operators must attend an 8-hour refresher training course every five years to maintain certification. Those operating boats greater than 26 feet require a valid US Coast Guard license appropriate for the size and type vessel they operate.

e. Permit-Required Confined Space Entry. Section 06.I of EM 385-1-1 and 29 CFR 1910.146 requires that all employees that are required to enter a permit-required confined space (PRCS) be trained to acquire the understanding, knowledge and skills necessary for the safe performance of their assigned duties and responsibilities. This includes rescue teams involved in any PRCS work, as well as those that monitor the programs of others. Training shall be provided prior to assignment of PRCS related duties, before a change in assigned duties, whenever conditions affecting PRCS change, whenever installation officials have reason to believe that there are inadequacies in knowledge or use of the procedures. Annual rescue drills shall also be conducted. Each employee must be certified by the instructor as being trained. For persons required to monitor the programs of others (e.g., construction inspectors, QA's) an 8-hour awareness course must be taken. Training ranges from 8 to 32-hours, depending on the degree of detail needed and can be obtained from in-house or commercial sources.

f. Crane Safety. EM 385-1-1 and 29 CFR 1926.550 requires the employer to designate a competent person to inspect all hoisting machinery and equipment prior to and during use. A thorough annual inspection of the hoisting machinery shall be made by a competent person or a government or private agency recognized by the US Department of Labor. As stipulated in Appendix G of EM 385-1-1, all USACE crane operators shall successfully complete, every three years, a 24-hour crane operators course. The course shall include a written and a practical operating examination. An 8-hour annual refresher course shall also be provided to each operator (practical only, written or oral exam required until third year). Contractor and derrick operators shall be designated as qualified by a source that qualifies crane and derrick operators (i.e., an independent testing and qualifying company, a union, a governmental agency, a qualified consultant).

g. Defensive Driving. SAWDR 385-1-1 and SADvR 385-1-1 requires all team members that drive government vehicles, rental cars or POVs while on official duty to complete a defensive driving course prior to assuming driving duties. After initial training, the course shall be completed every three years thereafter to reinforce proper driving procedures. Training is approximately 4-8 hours and is available on the local area network.

h. Diving. EM 385-1-1 and ER 385-1-86 requires that training be provided prior to initial assignment of related duties.

(1) Corps Divers shall successfully complete a basic SCUBA diving course recognized by the National SCUBA Training Council and a HQUSACE-approved diving course. They must also complete at least 12 working or training dives per year and successfully complete an HQUSACE-approved Diving Refresher course at least every four years. Prior to each dive, all members of a dive team shall attend a pre-dive conference that addresses safety, among other things. Additionally, all divers must have current certification in CPR and first aid. Specific information about the diving program can be found in ER 385-1-86.

(2) Dive Supervisors must be a graduate of the HQUSACE-approved Diving Supervisor Training course prior to supervising diving activities. Supervisors shall be able to swim and be capable of performing in-water rescue activities during the Diving Supervisor's Training course. Supervisors must participate in 12 working or training dives per year to maintain proficiency. If required working or training dives are not accomplished within 18 months, dive supervisor must attend the HQUSACE-sponsored Diving Supervisor Refresher course to regain certification. All diving supervisors must attend s Supervisor Refresher course at least every four years.

(3) Diving Inspectors must be a graduate of the HQUSACE-approved Diving Safety, Diving Supervisor or Diving Inspector Course and shall maintain certification by attending a HQUSACE-sponsored course every four years.

(4) District Diving Coordinator (DDC) must be a graduate of the HQUSACE-approved Diving Safety or Diving Supervisor Training course and shall maintain certification by attending the diving refresher course every four years.

(5) Alternate Diving Coordinator must be a graduate of the HQUSACE-approved Diving Safety or Diving Supervisor Training course and shall maintain certification by attending the diving refresher course every four years.

i. Drilling. Paragraph 16.M.04 of EM 385-1-1 requires all members of drilling crews be trained based on equipment operating manual and hazards analysis for the activity. Training shall be provided at the time of job assignment by the foreman, supervisor with coordination from the SOHO if needed. On-going on-the-job training should address pertinent issues.

j. Emergency Evacuation and Fire Prevention Plans. EM 385-1-1 and 29 CFR 1920.38 requires that all employees be trained upon initial assignment to an organization and at least annually thereafter (the frequency depends on the facility). The training shall deal with handling emergency situations, including the use of emergency and rescue or life saving equipment, drills and implementing the elements of the plans.

k. Emergency Spill Response (HAZWOPER - Hazardous Waste Operations and Emergency Response). Twenty nine CFR 1910.120 requires employees to be trained to provide their designated level of response to hazardous substance spills. The levels are First Reponder Awareness Level, First Responder Operations Level, Hazardous Materials Technicians, Hazardous Materials Specialist and On-Scene Incident Commander. After the initial 40-hour spill response training, team members are required to have an 8-hour refresher annually, including an emergency drill in response to a simulated hazardous chemical spill. All training is obtained from a commercial source.

l. New Employee Orientation. All employees, including temporary, labor, summer-hires, interns, students and trainees shall be trained about his/her job hazards and related control measures. Training shall be accomplished by way of the position hazard analysis, the organization's safety and health policies. Additional discussions shall include responsibilities and procedures for safe work practices, accident reporting procedures for identifying and correcting unsafe work conditions and practices, provisions for medical facilities and emergency response and all other applicable safety and health requirements.

m. Ergonomics - Cumulative Trauma Prevention. Section 06.K of EM 385-1-1 requires all workers performing activities that stress the body's capabilities be trained to perform their work in a manner to prevent cumulative trauma. Work activities include lifting, handling, carrying, rapid and frequent application of high grasping forces, and repetitive hand and arm manipulations. The training is approximately 2 hours and is available from commercial sources.

n. Explosive Actuated Tools. Section 13.E of EM 381-1-1 requires that only qualified operators use explosive actuated tools. Qualified operators are persons that have been:

(1) Trained by an authorized instructor (one who has been trained, authorized and provided an authorized instructor's card by the tool manufacturer or by an authorized representative of the tool manufacturer).

(2) Passed a written examination provided by the manufacturer of the tool.

(3) Possesses a qualified operator's card supplied by the manufacturer and signed by both the instructor and the operator.

o. Fall Protection. Paragraph 21.A.16 of EM 385-1-1 and 29 CFR 1926.503 requires fall protection training for each employee that may be exposed to fall hazards. The employer must ensure that a competent person teaches affected employees about the nature of fall hazards in the work area. Retraining shall occur as necessary to maintain employee understanding and knowledge of compliance. The employee must have written certification for all fall protection training received. Training normally ranges from 2-4 hours, depending on the level of training needed. The training is available from commercial sources.

p. Portable Fire Extinguishers. Paragraph 09.E. 04 of EM 385-1-1 and 29 CFR 1910.157 requires training for employees that may use portable fire extinguishers while responding to fires. Training shall be provided upon assignment of related duties and at least annually thereafter. Training may be performed in-house, by videos, or by local fire department representatives.

q. First Aid/CPR. Paragraph 03.A.02 or EM 385-1-1 and 29 CFR 1910.151 requires that adequate numbers of employees are trained to provide emergency first aid when medical assistance is not readily available. When a medical facility or physician is not available within 5 minutes, at least two first aid attendants shall be available on each shift, having current certification in first aid and CPR from the American Red Cross or equivalent. Employees that work alone in remote areas shall also be first aid certified.

r. Forklifts and Powered Industrial Vehicles. Twenty nine CFR 1910.178 requires training for all employees that operate forklifts, tow motors, platform lift trucks and other powered industrial trucks. A program must be in place that addresses training in the safe operation of these vehicles and certification (issuing valid permits, OF 346). Initial training is required with annual refresher. Training is available from in-house competent person or commercial source.

s. Hazard Communication (HAZCOM). EM 385-1-1 requires that a hazardous communication program be implemented, in accordance with 29 CFR 1910.1200, for all employees potentially exposed to hazardous chemicals in the workplace. Training consists of an initial four-hour DOD Federal Hazard Communication Program videotape with workbook, a worksite-specific review of material safety data sheets (MSDS) and the HAZCOM Standard, a review of the MSDS for each new hazardous chemical introduced into the workplace and annual worksite-specific refresher training. The worksite-specific training normally requires less than an hour.

t. Hazardous, Toxic and Radiological Waste, HTRW. Section 29 of EM 385-1-1 and 29 CFR 1910.120 requires all employees involved in an HTRW activity, their supervisors, and management responsible for the activity to receive training before they are allowed to engage in HTRW activities that could expose them to hazardous substances or other related safety and health hazards. Employees are prohibited from participating in or in the on-site supervision of, HTRW activities unless they have been certified as having successfully completed the training to a level required by their position function and responsibilities. Initial worker training, approximately 40 hours off site and 3 days OJT under supervision of a trained supervisor can be obtained from a commercial source. Refresher worker training, approximately 8 hours can be obtained from a commercial source. Supervisor

training, approximately 40 hours initial plus 3 days OJT, plus 8 hours of specialized training. Workers on site occasionally for a specific limited task such as, but not limited to, ground water monitoring, land surveying, or geophysical surveying shall receive a minimum of 24 hours of instruction off the site, and the minimum of one day actual field experience.

u. Hearing Conservation. EM 385-1-1 requires that a hearing conservation program be developed to conform to DODI 6055.12 and AR 40-5. Employees exposed to continuous sound levels equal to or greater than an 8-hour time-weighted average of 85 decibels (dBA) or impact noise equal to or greater than 140 dBA. Training is at the time at initial assignment and as required thereafter. Competent project staff shall provide training.

v. Ladders. Twenty nine CFR 1926.1060 requires that a competent person train each employee that uses ladders about the following:

(1) The nature of the workplace's fall hazards.

(2) The proper construction, placement, use and care of all stairways and ladders.

(3) The maximum intended load carrying capacities of ladders.

(4) The standards contained in Subpart X, 29 CFR 1926.

Retraining shall occur as necessary to maintain employee understanding and knowledge for compliance.

w. Lead Abatement. Twenty-nine CFR 1926.62 requires training prior to a related job assignment for team members subject to exposure at or above the lead action level or where the possibility of related skin or eye irritation exists. Related job assignments include abrasive blasting, welding, torch cutting, burning, scraping, sanding demolition, salvage, removal or encapsulation of lead containing structures. These are assignments that should normally be contracted to lead abatement firms. If COE team members do perform these assignments, they need to fulfill all of the training and certification

requirements of OSHA, EPA and the state having jurisdiction. There are Lead Abatement Supervisor (40 hours) courses, Lead Inspector Courses (24 hours), Lead Risk Assessor (16 hours) and Lead Abatement Worker (24 hours) as well as 8-hour refreshers for each. The courses are available from commercial sources.

x. Lifesaving and Safety Skiffs. Section 05.J of EM 385-1-1 requires that personnel be trained in launching and operating the safety skiff. Lifesaving personnel shall perform a lifesaving drill before initiation of work at the site and periodically thereafter (at least monthly or whenever new personnel are involved).

y. LockOut/TagOut, Control of Hazardous Energy. Section 12 of EM 385-1-1, ER 385-1-31 and 29 CFR 1910.147 requires lockout/tagout training for all employees involved with hazardous energy control procedures. Training is provided initially and at least annually thereafter as is necessary to maintain proficiency in related procedures. Training will include recognition of hazardous energy sources in the workplace, the types and magnitudes of energy associated with them and related lockout/tagout procedures. Training available commercially or by competent in-house personnel.

z. Monthly Supervisor Safety Meetings. As required by EM 385-1-1, the project/site manager holds these meetings with the project's supervisors to review accident experiences, countermeasures, ongoing or new hazardous activities and related control measures and other subjects to prevent accidents and ensure compliance with safety and occupational health requirements. These meetings are often held in conjunction with monthly safety meetings.

aa. Personal Protective Equipment. As required by Section 5 of EM 385-1-1 and 29 CFR 1910.132, training shall be provided, prior to initial use, for all employees required to wear PPE. Additionally, training shall be provided each time that new PPE is required and as needed to maintain proficiency in the use, maintenance and disposal of PPE. In addition to addressing the above PPE issues, supervisors need to teach their employees what specific PPE is required for their occupational hazards, how to properly don, doff, adjust and wear it, and the PPE's limitations.

bb. Powered Hand Tools. As required by 29 CFR 1926.302, all employees that are required to use powered hand tools should pass a proficiency test prior to use of such tools.

cc. Respiratory Protection. As required by 29 CFR 1910.134, all employees required to wear respirators, regardless of the length of use, shall be trained on the proper use. Training is as for other PPE, but also includes details of the facility's Respiratory Protection Program. This training must be provided by a competent person who has successfully completed an OSHA Respiratory Protection Course or equivalent training.

dd. Safe Lifting. As required by paragraph 14.A of EM 385-1-1, all employees shall be provided training on safe lifting techniques. The training is normally provided in-house. Refresher is recommended on an as-needed basis.

ee. Weekly Toolbox Meetings. As required by paragraph 01.B.03 of EM 385-1-1, foreman or supervisors shall conduct tool box meetings at least weekly to review past activities, plan for new or changed operations, establish or review activity hazard analyses and safe work procedures and provide team members other pertinent safety and health training. These meetings usually address the specific safety needs of the individual group.

ff. Welding Safety. EM 385-1-1 and 29 CFR 1910.253 requires welders, cutters and their supervisors to be trained in the safe operation of their equipment. American Industrial Hygiene Association's publication entitled "Welding Safety and Health" is recommended by EM 385-1-1 for use during this training. Employees in charge of oxygen or fuel-gas equipment shall be instructed about the safe use of this equipment and judged as competent by their employer for its use prior to being placed in charge of it.

gg. Wildfire Control. EM 385-1-1 requires training for all personnel on wildfire control teams. The training includes fire behavior suppression methods, communications, and the use and care of protective and fire fighting equipment.

3. Periodic Inspections, Tests or Checks. What follows is a summary of periodic inspections, tests or checks that may be required by each facility, along with the frequency and reference. This list is not considered to be all-inclusive.

a. Breathing Air - Supplied from Cylinders or Compressors. The quality of breathing air from compressors that employees use is required to be maintained at Type 1, Grade D as defined by the Compressed Air Association.

(1) Regularly used compressor air is analyzed before initial use and a minimum of every 6 months or as needed. If compressor-supplied breathing air is used infrequently the air is tested within six months prior to usage. The results of these tests are valid for no more than six months from the time of sampling.

(2) Breathing air analysis is obtained from Texas Research Institute, 9063 Bee Caves Road, Austin TX 73733, phone 512-263-2101. All air analysis results are kept as documentation.

b. Confined Space Entry Program - Program Review and Drills. Each member of the rescue/emergency team shall practice making PRCS rescues at least once every 12 months. Facilities shall be re-evaluated at least once annually for the presence of confined spaces. At least annually, the designated official shall review the canceled permits for the past 12 months and revise the program as necessary (06.I.01.d, 05.f, 09.b).

c. Cranes & Hoists. Inspection required before initial use for all new and altered cranes; before initial use on a Corps project and periodically thereafter (1-12 months or as recommended by the manufacturer). In accordance with the manufacturer's recommendations (see EM 385-1-1, paragraph 16.C.12) the inspections shall be conducted by a qualified person and shall cover items listed in Appendix H of EM 385-1-1. An inspection program and schedule should be developed for all cranes/hoists and documentation kept. Load performance test shall be performed every four years.

d. Elevators: Passenger and Freight, Electric (ASME A17.1, Section 1001).

(1) Routine inspection and test shall be made at intervals not longer than six months and shall include inspections of hoistway and car doors or gates and their operating, locking, and contact devices. These inspections and tests shall be made by an inspector employed by the authority

having jurisdiction or by a person authorized by the authority having jurisdiction.

(2) Periodic inspection and tests shall be performed at intervals not longer than 1 year and include oil buffers (car and counterweight buffers), safeties (all working parts of the car and counterweight safeties), as well as testing the safeties with a no-load, slow speed test. These periodic inspections and tests performed by a competent elevator inspector, it shall authorize a qualified person to witness the inspection and tests on its behalf.

(3) Five year inspection test requirements consist of a rate-load, rated speed test and inspection of the car safeties, a no load, rated speed test and inspection of the counterweight safety, a tripping speed test and inspection of governors, a rated load speed test of the car oil buffer and a no load, rated speed test of the counterweight oil buffer.

e. Elevators: Passenger and Freight Hydraulic Elevators (ASME A17.1, Section 1004).

(1) Routine inspection and tests shall be made at intervals not longer than six months. These inspections and tests shall be made by an inspector employed by the authority having jurisdiction or by a person authorized by the authority having jurisdiction.

(2) Periodic inspection and tests shall be performed by a competent elevator mechanic at intervals not longer than 1 year. The COE inspector shall witness these periodic inspections and tests. Where the COE does not employee a qualified inspector, it shall authorize a qualified person to witness the inspection and tests on its behalf. The COE inspector shall witness these periodic inspections and tests.

(3) A 3-year inspection and test requirement also exists for pressure tanks, switches and unexposed portions of pistons.

(4) Five-year inspection test requirements consist of a rated-load, rated speed test and inspection of the car safeties, a no load, rated speed test and inspection of the counterweight

safety, a tripping speed test and inspection of governors, a rated load, rated speed test of the car oil buffer and a no load, rated speed test of the counterweight oil buffer.

****

NOTE on persons authorized to make elevator inspections and tests: The inspector shall meet the qualification requirements of the ASME QEI-1. Inspectors and inspection supervisors shall be certified by an organization accredited by ASME in accordance with the requirements of ASME QEI-1.

****

f. Emergency Eyewashes and Showers. Plumbed and self-contained showers shall be activated weekly to flush the line and to verify proper operation. Eye or face sash units shall be activated weekly to flush the line and to verify proper operation. Hand held drench hoses shall be activated weekly to flush the line and verify proper operation.

g. Fall Protection Equipment. Personal fall protection equipment shall be inspected before use each day to determine that it is in safe working condition. Defective equipment shall be immediately replaced. The manufacturer's recommendations shall be followed in the fitting, adjustment, use, inspection, testing and care of personal fall protection equipment. Personal fall protection equipment shall be used only for employee safeguarding. **Any such equipment subjected to impact loading shall be immediately removed from service and shall not be used again for employee safeguarding.** Employee and tools weight limit for personal fall protection equipment is 310 pounds.

h. Fire Survey. Annual survey of suitability and effectiveness of fire prevention and protection measures at each project or installation shall be made by a qualified persons and records maintained.

i. First Aid Kits. Contents shall be checked prior to their utilization and at least weekly when work is in progress (contractors) to ensure expended items are replaced or at least monthly at COE facilities.

j. Fixed Fire Suppression Systems. As required by NFPA 12, Carbon Dioxide Extinguishing Systems shall be physically inspected and weighed (or liquid level checked) semi-annually to ensure no leakage has occurred. Results shall be recorded on the container, tag attached to container or in a central location. If the net content shows a loss of 10% or more, the containers should be refilled. High-pressure cylinders shall not be recharged without hydrostatic tests (and re-marking) if more than 5 years have elapsed from the date of the last test. High-pressure cylinders continuously in service without discharging may be retained in service for a maximum of 12 years from the date of the last hydrostatic test. At the end of 12 years, they shall be discharged and retested before being returned to service. NOTE: Transporting charged carbon dioxide cylinders that have not been tested within 5 years may be illegal. Federal and local regulations should be consulted (paragraph 1-8.5.1, NFPA).

k. Fixed Ladders. All fixed ladder systems (on locks, access to cranes, towers, sumps, etc) shall be maintained in a safe condition. Inspections for rust, corrosion and deterioration shall be made at least annually, with more frequent inspections made if needed. Records shall be maintained of annual or regularly scheduled inspections and maintenance of fixed ladder systems (ANSI A 14.3).

l. Floating Plant Drills. On all floating plant which have a regular crew or on which people are quartered, the following drills shall be held at least monthly, during each shift (unless USCG requires more frequent): abandon ship or boat drills, fire drills, person overboard or rescue drills. The first set of drills shall be conducted within 24 hours of the vessel's occupancy or commencement of work (19.A.04.e-g). A record of all drills and emergency system checks (to include deficiencies noted and corrective action taken) shall be made in the station log.

m. Hazard Communication Inventory. For each project, an inventory of hazardous chemicals that can be found on site must be made at least annually, signed and dated. A Material Safety Data Sheet (MSDS) must be available at the facility or project site for each material included on the inventory.

n. Hydraulic Steel Structures - ER 110-2-8157. An inspection plan should be developed for each HSS.

(1) Initial Fracture Critical Members (FCM) Inspection. Special inspections are required for FCM on all existing HSS (stoplogs, bulkheads used for dewatering, related lifting beams) where failure of the FCM would result in probable loss of life and shall be completed prior to their next use.

(2) Initial FCM inspections of other HSS should have been completed by 31 December 1998.

(3) All FCM must be inspected every five years. If dewatering is required to complete this inspection, the engineer shall decide whether such inspections are required.

(4) Periodically, each HSS should be dewatered and thoroughly inspected every 25 years. More frequent may be required.

o. Lifesaving Drills. At least one skiff shall be immediately available at locations where employee work over or immediately next to water. Lifesaving personnel shall perform a lifesaving drill before the initiation of work at the site and periodically thereafter (at least monthly or whenever new personnel are involved).

p. LOTO Program-Inspections Program. A review of facility procedures by the responsible official, normally the site manager, shall be conducted annually. Annual refresher training is required for all affected personnel (ER 385-1-31). A review and audit shall be conducted annually by a District Team (OP and SO).

q. Personal Flotation Devices (PFD's). Before and after each use, the PFD shall be inspected for defects that would alter its buoyancy or strength.

r. Personal Protective Equipment. Manufacturer's use, inspection, testing and maintenance instructions shall be maintained with the PPE.

s. Portable Fire Extinguishers (NFPA 10, Chapter 4).

(1) Inspections. Extinguishers shall be inspected when initially placed in service and monthly thereafter. Inspection is a quick check to ensure the following:

(a) That is available in its designated place.

(b) Not obstructed and is visible.

(c) Safety seals and tamper indicators are not broken or missing.

(d) Free of obvious damage, corrosion, leakage and clogged nozzle.

(e) Proper pressure gauge reading or indicator in operable range or position.

(f) For wheeled units, the condition of the tires, wheel carriage, hose and nozzle.

The inspection shall be documented.

(2) Maintenance. Fire extinguishers shall not be subjected to maintenance not more than 1 year apart, at the time of hydrostatic test or when specifically indicated by an inspection.

(3) Hydrostatic testing (NFPA 10, Chapter 5). Hydrostatic testing shall be performed by persons trained in pressure testing procedures at intervals not exceeding those specified in Annex II.

t. Pressurized Equipment Systems.

(1) Low-pressure air and gas compressors (500 psi and less) shall be inspected and tested as below, every 12 months or at any time a malfunction or erratic operation indicates the need.

(a) Make a detailed visual inspection of the entire unit, paying particular attention to the exterior conditions or the receiver, gages, unloaders, relief devices, fittings, valves and hoses.

(b) Install a calibrated gage on the received discharge shutoff valve.

(c) Operate the compressor and check the operational gages for accuracy by comparing the pressure reading

to the calibrated gage pressure reading. Check operation of all valves and ensure proper operation of the unloader. Check the operation of the safety valve.

(2) High pressure air and gas compressors (greater than 500 psi) shall be inspected and tested at 12 month intervals or any time a malfunction or erratic operation indicates the need. In addition, these shall also be subjected to a hydrostatic pressure test every 24 months or at any time a receiver shows evidence of bad dents, corroded areas, leakage, or other condition that indicate weakness which might render the receiver unsafe. All inspection and tests, including hydrostatic pressure tests, shall be in accordance with TB 43-0151.

u. USACE Motorboats and Auxiliary Equipment. All USACE motorboats and auxiliary equipment shall be inspected annually using the checklist at Appendix C of ER 385-1-91. Inspection results shall be maintained at the project and shall be made available upon request during a program audit.

ANNEX I
TRAINING REQUIREMENTS MATRIX

Type Training			Frequency						Remarks
				1	2	3	4	5	
	initial	weekly	monthly	year	years	years	years	years	
ATV	4 hrs								Periodically
Asbestos Abatement									
Inspector	24 hrs			8 hrs					Medical Clear.
Mgmt Planner	16 hrs			8 hrs					
Supervisor/Comp. Person	40 hrs			8 hrs					Medical Clear.
Designer	32 hrs			8 hrs					
Abatement Worker	32 hrs			8 hrs					Medical Clear.
O&M Worker	16 hrs			8 hrs					Medical Clear.
Awareness	2-4 hrs			8 hrs					
Bloodborne Pathogens									
Trainer	20 hrs				16 hrs				
Employer	4 hrs			4 hrs					
Boat Operator									
District Director (SO)	40 hrs					Teach			
District Instructors	40 hrs					Teach			
District Operators	24 hrs							8 hrs	
Confined Space Entry									
Awareness (QAs & Others)	2-8 hrs								
Entrants	16 hrs								
Attendants	16 hrs								
Rescuers	32 hrs			4-8 hrs					
Supervisors	24 hrs								
CPR	4 hrs			4 hrs					
Crane Operator									
Instructor/Trainer	24 hrs*								Addt'l trng & exp.
Operators	24 hrs			8 hrs*		Test			W/ test @ 3rd yr.
Defensive Driving	4 hrs					4-8 hrs			PC Based
Diving									
Divers	120 hrs						80 hrs		12 dives/year
Dive Inspectors	40 hrs						40 hrs		
Dive Supervisor	160 hrs						80 hrs		12 dives/year
District Dive Coordinator	40 hrs								
Drowning Prevention	X								
Emerg. Evac./Fire Prev.	X			X					
Emerg. Spill Response									
First Responder Aware.	4 hrs			2 hrs					
First Responder Ops. Level	8 hrs			8 hrs					
Hazmat Technicians	40 hrs			8 hrs					
Hazmat Specialist	40 hrs			8 hrs					
On-Scene Incident Cdr	40 hrs			8 hrs					

Type Training			Frequency						Remarks
				1	2	3	4	5	
	initial	week.	month.	year	years	years	years	years	
New Employee Orientation	X								
Ergonomics	2 hrs								
Explosive Actuated Tools	X								
Fall Protection	2-8 hrs								Refresh as needed
Fire Extinguisher	2 hrs			1 hr					
Standard First Aid/CPR	8 hrs			CPR					
Forklifts	4-8 hrs			4 hrs					
Hazard Communication	4 hrs			1 hr					
HTRW*	40 hrs			8 hrs					Addt'l 24 hrs OJT
Hearing Conservation	4 hrs			1 hr					
Ladders	X								Refresh as needed
Lead Abatement									
Supervisor	40 hrs			8 hrs					Medical Clear.
Inspector	24 hrs								Medical Clear.
Worker	24 hrs			8 hrs					Medical Clear.
Life Saving/Safety Skiffs	X								Drill @ 6-12 mos
LockOut/TagOut	4 hrs			2 hrs					
Supervisor Safety Meeting			X						
Employee Safety Meeting		X							
Personal Protective Equip.	X								Refresh as needed
Powered Hand Tools	X								
Respiratory Protection									
Trainers	2-4 hrs								Medical Clear.
Users	2-4 hrs								Medical Clear.
Safe Lifting	X								Refresh as neede
Welding Safety	X								Refresh as neede
Wildfire Control	X								Refresh as neede

ANNEX II
FIRE EXTINGUISHER
HYDROSTATIC TESTING REQUIREMENTS

Extinguisher Type	Test Interval (Years)
Stored Pressure Water, Loaded Stream, and or Antifreeze	5
Wetting Agent	5
AFFF (Aqueous Film Forming Foam)	5
FFFP (Film Forming Fluoroprotein Foam)	5
Dry Chemical with Stainless Steel Shells	5
Carbon Dioxide	5
Dry Chemical Stored Pressure, with Mild Steel Shells, Brazed or Brass Shells, or Aluminum Shells	12
Dry Chemical, Cartridge or Cylinder or Cylinder Operated, with Mild Steel Shells	12
Halogenated Agents	12
Dry Powder, Stored Pressure, Cartridge or Cylinder Operated with Mild Steel Shells	12

NOTE 1: Stored pressure water extinguishers with fiberglass shells (pre 1976) are prohibited from hydrostatic testing due to manufacturer's recall.

NOTE 2: Non-rechargeable fire extinguishers shall not be hydrostatically tested but shall be removed from service at a maximum of 12 years from the date of manufacture. Non-rechargeable halogenated agent fire extinguishers shall be disposed of in accordance with paragraph 4-3.3.3.

NOTE 3: Every 6 years, stored pressure fire extinguishers that require a 12-year hydrostatic test shall be emptied and subjected to the applicable maintenance procedures.