

5060-017-313

**HEALTH AND SAFETY PLAN FOR  
BUILDINGS 33 AND 34 WASTE SAMPLING  
AND ANALYSIS INVESTIGATION AT NAVAL  
EDUCATION TRAINING CENTER (NETC)  
GOULD ISLAND, NEWPORT, RHODE ISLAND**

**PREPARED BY:  
ENSR CONSULTING & ENGINEERING**

**SUBMITTED BY:  
HALLIBURTON NUS  
ENVIRONMENTAL CORPORATION**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION  
NAVY (CLEAN) PROGRAM**

**CONTRACT NO. N62472-90-D-1298  
CONTRACT TASK ORDER NUMBER (CTO) - 0036**

**APRIL 1992**

 **HALLIBURTON NUS**  
*Environmental Corporation*

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SCIENTISTS

**ENSR**<sup>TM</sup>

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**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) PROGRAM**

**Submitted to:  
Northern Division  
Environmental Branch, Code 18  
Naval Facilities Engineering Command  
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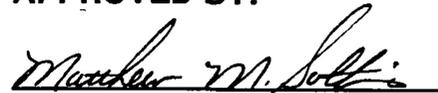
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**APRIL 1992**

**SUBMITTED BY:**

  
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Health and Safety Plan  
for  
Waste Inventory and Characterization  
Buildings 33 and 34  
at  
Gould Island

Naval Education and Training Center  
Newport, Rhode Island

Comprehensive Long Term Environmental Action NAVY (CLEAN)

Contract Task Order 0036

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## LIST OF ACRONYMS/ABBREVIATIONS

CGI	combustible gas indicator
CHSM	CLEAN Health and Safety Manager
CHSO	Company Health and Safety Officer
CLEAN	Comprehensive Long-Term Environmental Action Navy
CRZ	contamination reduction zone
f/cc	fibers per cubic centimer
HASP	Health and Safety Plan
HEPA	high efficiency particulate air
HSMP	CLEAN Health and Safety Management Plan
LEL	lower exposure limit
MSDS	Material Safety Data Sheet
NETC	Naval Education Training Center
OSHA	Occupational Safety and Health Administration
PCB	polychlorinated biphenyls
PEL	permissible exposure limits
PID	photoionization detector
PM	Project Manager
PPE	personal protective equipment
PPM	parts per million
SSO	Site Safety Officer
TOC	total organic compounds
TWA	time-weighted average

## 1.0 INTRODUCTION

### 1.1 HASP REQUIREMENTS

This site-specific Health and Safety Plan (HASP) has been developed by the HALLIBURTON NUS Team to establish the health and safety procedures required to minimize any potential risk to personnel who will perform activities related to the proposed investigation to locate, inventory and sample potentially hazardous materials in and around the former Power Plant (Building 33) and the former Acetylene Building (Building 34) at the Naval Education Training Center (NETC), Gould Island, Newport, Rhode Island. The provisions of this HASP apply to all HALLIBURTON NUS Team personnel and personnel subcontracted to HALLIBURTON NUS who will potentially be exposed to safety and/or health hazards related to activities described in Section 3.0 of this HASP.

This HASP has been written to comply with the requirements of the Occupational Safety and Health Administration (OSHA) Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120), as well as guidance set forth in the Comprehensive Long-Term Environmental Action Navy (CLEAN) Health and Safety Management Plan (HSMP) developed by HALLIBURTON NUS (August 1991). All activities covered by this HASP must be conducted in complete compliance with this HASP and with all applicable Federal, State and local health and safety regulations. Personnel covered by this HASP who cannot, or will not comply will be excluded from Site activities.

Subcontract personnel who choose to follow this HASP must distribute a copy of this HASP to each employee who will work at the Site. Each employee must sign a copy of the attached Health and Safety Plan sign-off sheet (see Appendix A). However, subcontractors to the HALLIBURTON NUS Team may develop their own HASP related to their specific on-site activities. Such a HASP must be minimally as protective as the HALLIBURTON NUS Team's and must be submitted for the HALLIBURTON NUS Team's review at least two weeks prior to the start of on-site activities.

### 1.2 HASP MODIFICATIONS

Note that this HASP only pertains to the proposed tasks. Tasks covered by this HASP are listed in Section 3.0. A task-specific HASP will be developed at a later date for any other subsequent investigative/remedial activities at the Site.

The procedures in this HASP have been developed based on current knowledge regarding the specific chemical and physical hazards which are currently known or anticipated for the investigative activities which are to be conducted at this Site. This information was collected during the Site Reconnaissance visit on March 3, 1992 by the HALLIBURTON NUS Team.

Should additional information become available regarding Site hazards, or should operations at the Site change, it may be necessary to modify this HASP. All proposed modifications to this HASP must be

reviewed and approved by the HALLIBURTON NUS Team health and safety members and Project Manager (PM) before such modifications are implemented.

Any significant modifications must be incorporated into the written document as addenda and the HASP must be reissued. The HALLIBURTON NUS PM will ensure that all personnel covered by this HASP receive copies of all issued addenda. Sign-off forms will accompany each addendum and must be signed by all personnel covered by the addendum. Sign-off forms will be submitted to the HALLIBURTON NUS PM. The HASP addenda should be distributed during the daily safety meeting so that they can be reviewed and discussed. Attendance forms will be collected during the meeting to document the review of new information.

### **1.3 RESPONSIBILITIES**

Responsibility for the implementation of health and safety at the Site is an integrated effort among the HALLIBURTON NUS Team PM, the CLEAN Health and Safety Manager (CHSM), the Company Health and Safety Officer (CHSO), the designated Site Safety Officer (SSO), the subcontractors and field staff.

The CHSM (Matthew Soltis) and the CHSO (Kathleen Harvey) are responsible for developing, interpreting and modifying, when necessary, the site-specific HASP. When required, the CHSM and CHSO are responsible for auditing the project to verify compliance with the HASP.

The PM (Steven Croce) and SSO (appointed by the PM prior to beginning on-site activities) are responsible for implementing the requirements of the HASP. The PM is required to inform the CHSM and CHSO of project developments and maintain an open line of communication with each. The PM is responsible for distributing a copy of this HASP to the subcontractor and to all members of the HALLIBURTON NUS Field Team. The PM is responsible for collecting the training and medical documentation and the HASP sign-off sheets from the HALLIBURTON NUS Field Team and subcontractors (see Section 9.0 of this HASP) and forwarding these records to the CHSM.

The SSO is responsible for directing and implementing the HASP in the field and ensuring that all site personnel follow the requirements of the HASP. In consultation with the CHSM and CHSO, the SSO has the authority to correct all health and safety deficiencies and to immediately stop work in cases where imminent danger is perceived. The SSO is responsible for initiating emergency response and coordinating site evacuation when necessary. An alternate SSO will be named at the commencement of investigative activities. The alternate SSO will assume the responsibilities of the SSO in his/her absence. The names of the SSO and alternate SSO will be entered on page 10-4 of this HASP once they have been appointed.

## 2.0 SITE DESCRIPTION/HISTORY

### 2.1 FACILITY HISTORY AND PREVIOUS USES

Gould Island is located in Narragansett Bay off of Newport, Rhode Island (see Figure 2-1). The island has been used for various purposes for several decades by the Naval Underwater Systems Center (NUSC) and the Naval Education and Training Center (NETC). Building 33 is the former Power House and was used to supply compressed air, electricity and steam for process and heating purposes. Building 34, constructed in 1942, is described as the Acetylene Generator Building on site plans. Figure 2-2 shows the site plan for Building 33.

### 2.2 EXISTING FACILITY CONDITIONS

#### 2.2.1 Building 33

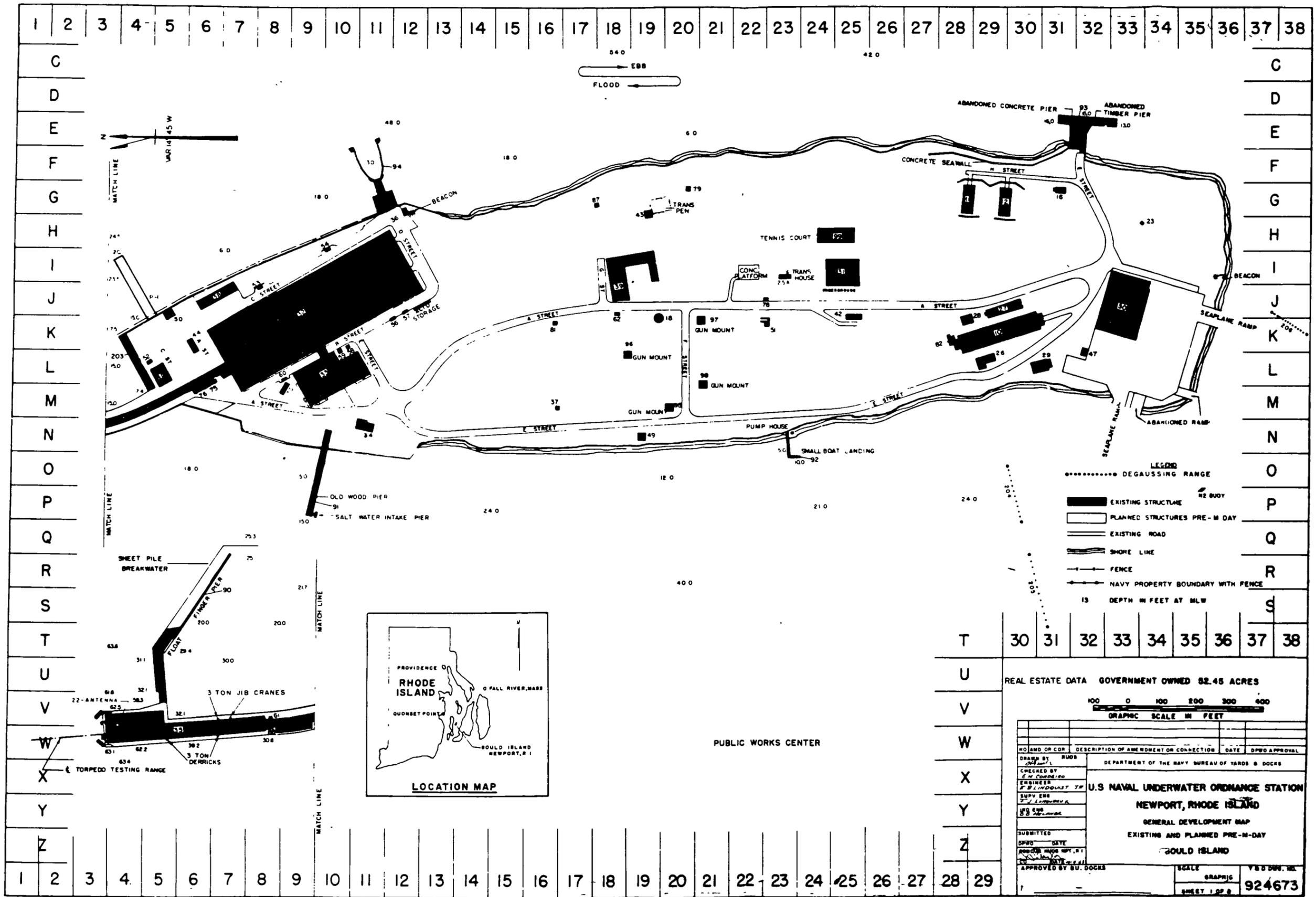
The former Power House (Building 33) is a one-story building with a basement. The building is divided into three main areas: the boiler house, with five boilers; the pump area and the power house. The south end of Building 33 contains four diesel generators. The northern end contains six large compressors and four smaller compressors. At the time of the site reconnaissance, the basement was flooded with approximately six inches of water.

During the site reconnaissance, 10 bags of sodium sulfite were found in the boilerhouse. Some of the bags were partially opened. Several small (five-gallon) pails of primarily oil or a water/oil mixture were located in this area. In the pump area, some sediment was observed in the piping trench along the outside wall. The room described as the battery room in the pump area did not appear to contain any significant hazardous materials. In the power house, three 5-gallon cans were found on the south side of the area. One of these was full and its label indicated that it contained insulating oil. Several additional pails with oily surfaces or partially full of an oil/water mixture were noted near the diesel generators. An empty parts cleaner was located near the compressors.

Three gas cylinders (labeled acetylene, oxygen and carbon dioxide) were noted in the power house area. An additional six carbon dioxide cylinders were observed in the basement. The basement also contained several 5-gallon cans of miscellaneous materials, including one marked as "Endcor Protective Coating" and a can of Rustoleum.

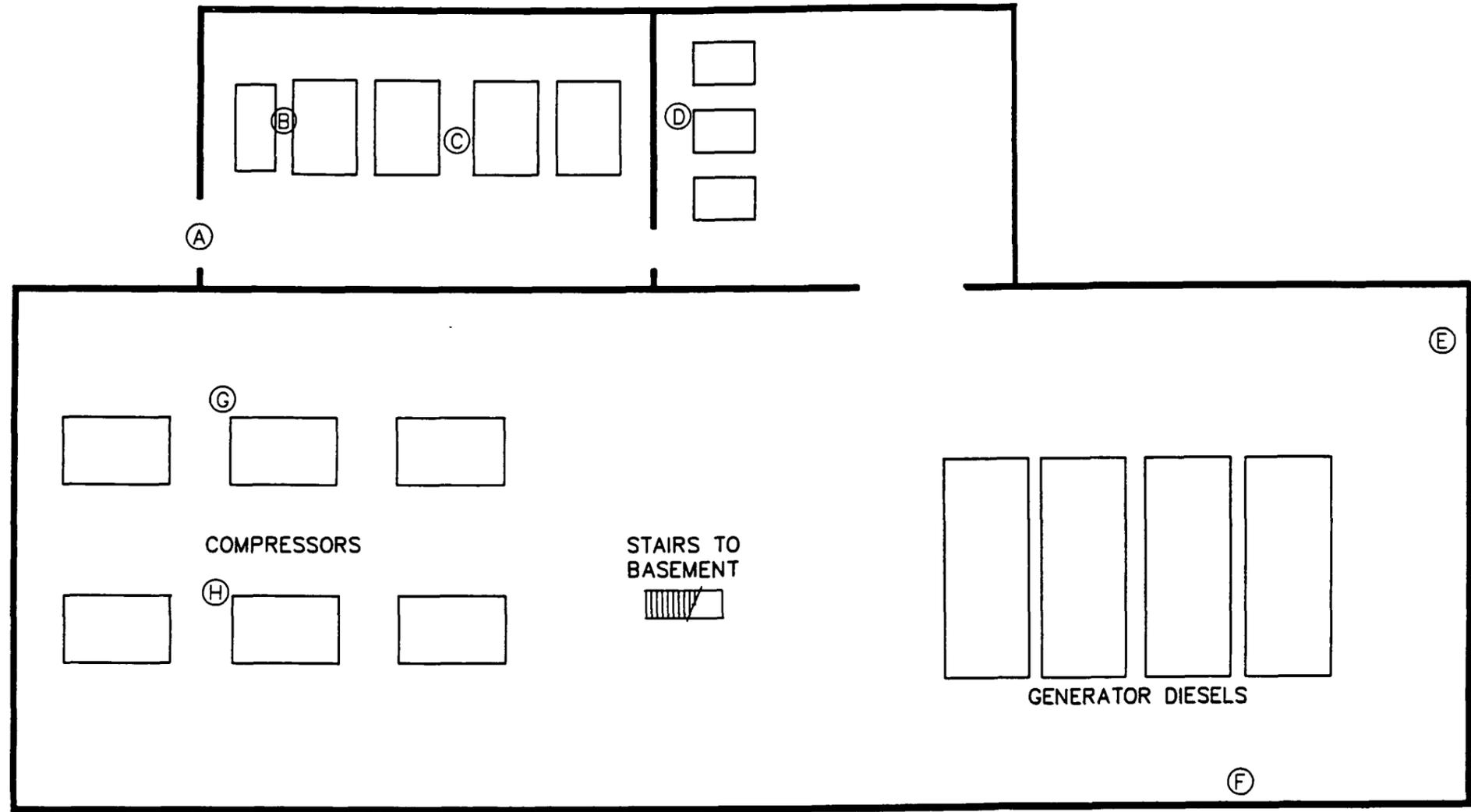
A significant amount of asbestos material was observed, much of which is in a deteriorated and friable condition.

A Quonset Hut is located on the north side of Building 33. Approximately 10 bags of asbestos cement were observed in the hut.



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FIGURE 2-1  
FACILITY LOCATION MAP  
NETC GOULD ISLAND  
NEWPORT, RI



LOCATIONS

- (A) PAIL WITH HARDENED MATERIAL
- (B) 10 BAGS SODIUM SULFITE
- (C) 3 PAILS WITH OIL AND WATER/OIL
- (D) SEDIMENT/DIRT IN PIPING TRENCH
- (E) INSULATING OIL/GAS CYLINDER
- (F) 2 PAILS (RUSTED)/OILY SURFACE
- (G) GAS CYLINDER (ACETYLENE)/GAS CYLINDER (OXYGEN)
- (H) 1 PINT BOTTLE (GLYCERINE)

REF: POWER AND BOILER HOUSE FLOOR PLAN  
 JAN. 28, 1942; JOHN BRACKETT, NY, NY



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FIGURE 2-2  
 WASTE INVENTORY BUILDING 33 (POWER HOUSE)  
 NETC GOULD ISLAND  
 NEWPORT, RI

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**2.2.2 Building 34**

The former Acetylene Generator Building (Building 34) is shown on a site plan with an area covering 1,204 square feet. The building was constructed in 1942. Even though there is overgrown vegetation making access to the building difficult, once inside there were hazardous materials observed inside the main part of the building. The building does have a basement and piping which were not viewed during the site reconnaissance and will need to be accessed during the waste inventory and characterization activities in order to fully assess their condition.

### 3.0 SCOPE OF WORK

The specific tasks associated with the investigation to locate, inventory and sample the potentially hazardous materials identified in Buildings 33, 34 and the Quonset Hut include:

- Inventory all containers, equipment, trenches etc.
- Screen trenches, pits and sumps, as well as containers, for the presence of organic vapors and explosive atmospheres.
- Open, if possible, all containers and collect samples for laboratory analysis.

As sampling of asbestos is not included as a task of the Sampling and Analysis Plan, the asbestos cement observed in the Quonset Hut does not pose a health and safety issue.

## 4.0 HAZARD ASSESSMENT

The following list of chemical contaminants of concern has been developed for the proposed investigation to locate, inventory and sample potentially hazardous materials in Buildings 33 and 34 on Gould Island. This list is based on the findings of the Site Reconnaissance performed in March 1992. This HASP will be amended should additional information become available concerning the types of contamination present, or suspected of being present, on this property, or if investigations are performed in other areas of the Site not discussed in this document.

- Asbestos (floor debris)
- Oils, greases, lubricants (in containers)
- Polychlorinated biphenyls (electrical equipment)
- Sodium sulfite (Building 33 boilerhouse)

Although asbestos samples are not being collected, the presence of friable asbestos debris and insulation throughout the two buildings is the major employee exposure concern during this investigation. The presence of oils, greases and perhaps polychlorinated biphenyls (PCBs) does present a potential dermal contact hazard during sampling activities. However, direct dermal contact can be avoided by using the proper gloves.

### 4.1 CHEMICAL HAZARDS

#### 4.1.1 Asbestos

Much of the asbestos-containing pipe insulation has fallen from the overhead steam lines. The floors in both buildings are covered with asbestos debris. Although much of the debris has been soaked with rainwater and is almost in a slurry form, there is still a great potential for the debris to become airborne when it is walked on. In some instances during this sampling project, it may be necessary to disturb debris even further in an effort to identify and inventory all the containers and drums within the buildings. Depending on the dose and the length of time exposed, the inhalation of asbestos fibers can cause 1) asbestosis; a chronic, progressive lung disease resulting in the scarring of the lung tissue which then restricts pulmonary function; 2) mesothelioma; a rare form of cancer of the pleural membrane of the lung and/or the peritoneal membrane of the abdomen; and 3) lung cancer, especially if a history of cigarette smoking is known.

#### 4.1.2 Oils, Greases and Lubricants

During the site reconnaissance, containers with oily surfaces and containers filled with primarily oil or a water/oil mixture were identified. Currently, there are no federal exposure limits set for this category of materials, other than oil mist, which is not applicable in this instance. Direct dermal contact with the materials is the likely route of exposure during sampling. Prolonged contact with oils and greases may result in local dermatitis.

#### **4.1.3 Polychlorinated Biphenyls**

The electrical equipment present within the buildings may contain fluids or oils that are contaminated with PCB. Since the vapor pressures of the various types of PCB's are very low (0.001 mm Hg), the sampling of any such fluids does not pose an inhalation hazard unless the source is heated or generates an airborne mist. Again, the potential for exposure to the material is direct, dermal contact with the liquid or a piece of equipment contaminated with PCB-containing oils. Prolonged skin contact with PCB's may result in a dermatitis known as chloracne.

#### **4.1.4 Sodium Sulfite**

Bags of sodium sulfite were found in the boilerhouse in Building 33. Sodium sulfite is a white crystal or powder. It was probably used as a boiler water treatment chemical. Sodium sulfite is alkaline and as such, the dusts may be irritating to the eyes and mucous membranes. Prolonged skin contact may result in irritation or a rash.

#### **4.1.5 Other Chemicals**

Material safety data sheets (MSDSs) for the sampling equipment decontamination solutions that the HALLIBURTON NUS Team will use during the investigations are provided in Appendix B of this document.

It is the SSO's responsibility to ensure that all containers of sampling equipment decontamination solutions are labeled in accordance with OSHA's Hazard Communication Standard. The likely route of exposure to these solutions is through direct dermal contact, although a splash hazard is also possible. To reduce the potential for contact with the decontamination solutions personal protective equipment (PPE), as described in Section 6.1 of this HASP, will be worn.

### **4.2 PHYSICAL HAZARDS**

#### **4.2.1 Cold Stress**

Cold injury is classified as either localized, as in frostbite, frostnip or chilblain; or generalized, as in hypothermia. The main factors contributing to cold injury are exposure to humidity and high winds, contact with wetness and inadequate clothing.

The likelihood of developing frostbite occurs when the face or extremities are exposed to a cold wind in addition to cold temperatures. The freezing point of the skin is about 30° F. The fluids around the cells of the body tissue freeze, causing the skin to turn white. This freezing is due to exposure to extremely low temperatures. As wind velocity increases, heat loss is greater and frostbite will occur more rapidly. The first symptom of frostbite is usually an uncomfortable sensation of coldness, followed by numbness. There may be a tingling, stinging or aching feeling in the effected area. The most vulnerable parts of the body are the nose, cheeks, ears, fingers and toes.

Symptoms of hypothermia, a condition of abnormally low body temperature, include uncontrollable shivering and sensations of cold. The heartbeat slows and may become irregular, the pulse weakens and the blood

pressure changes. Pain in the extremities and severe shivering can be the first warning of dangerous exposure to cold.

Maximum severe shivering develops when the body temperature has fallen to 95° F. This must be taken as a sign of danger and exposure to cold must be immediately terminated. Productive physical and mental work is limited when severe shivering occurs.

When the ambient temperature, or a wind chill equivalent, falls to below 40° F (American Conference of Governmental Industrial Hygienists recommendation), site personnel who must remain outdoors should wear insulated coveralls, insulated boot liners, hard hat helmet liners and insulated hand protection. Wool mittens are more efficient insulators than gloves. Keeping the head covered is very important, since 40% of body heat can be lost when the head is exposed. If it is not necessary to wear a hard hat, a wool knit cap provides the best head protection. A face mask may also be worn.

Persons should dress in several layers rather than one single heavy outer garment. The outer piece of clothing should ideally be wind and water proof. Clothing made of thin cotton fabric or synthetic fabrics such as polypropylene is ideal since it helps to evaporate sweat. Polypropylene is best at wicking away moisture while still retaining its insulating properties. Loosely fitting clothing also aids in sweat evaporation. Denim is not a good protective fabric. It is loosely woven which allows moisture to penetrate. Socks with a high wool content are best. If two pairs of socks are worn, the inner sock should be smaller and made of cotton, polypropylene or a similar type of synthetic material that wicks away moisture. If clothing becomes wet, it should be taken off immediately and a dry set of clothing put on.

If wind conditions become severe, it may become necessary to shield the work area temporarily. The SSO and the PM will determine if this type of action is necessary. Heated break trailers or a designated area that is heated should be available if work is performed continuously in the cold at temperatures, or equivalent wind chill temperatures, of 20° F.

Dehydration occurs in the cold environment and may increase the susceptibility of the worker to cold injury due to significant change in blood flow to the extremities. Limit the intake of caffeine however.

#### **4.2.2 Slip, Trip, Fall**

Employees should be aware of obstructions in aiseways and, if necessary, remove large objects to allow an uncluttered work area. The basement in Building 33 at the time of the site reconnaissance was flooded with six inches of water. Employees should use caution when climbing the access ladder if protective shoe coverings are wet and slippery. The presence of asbestos debris on the floors also poses a potential slip hazard. The best way to avoid a slip hazard is to walk around it rather than through it whenever possible.

#### **4.2.3 Flammability**

Acetylene and oxygen compressed gas cylinders were identified in Buildings 33 and 34. Acetylene is a colorless gas with an ethereal odor. It is also very flammable (flash point 0°F). Oxygen is noncombustible but actively supports combustion and thus poses a moderate fire risk as an oxidizing agent. When these two cylinders are opened, they will be opened one at a time and all ignition sources in the area will be

removed prior to opening. If possible, these cylinders, as well as the carbon dioxide cylinders, should be placed on a welding cart and transported outside prior to opening. Since both acetylene and carbon dioxide are asphyxiants it is preferable that they be opened in the outdoors, rather than inside the buildings. This is especially important in the event of an accidental release of gas.

Only spark-proof tools will be used to open container lids.

Table 4-1 summarizes the hazards associated with the performance of each identified task.

TABLE 4-1

**TASK SPECIFIC HAZARD ASSESSMENT TABLE  
BUILDINGS 33 AND 34, NETC GOULD ISLAND  
NEWPORT, RHODE ISLAND**

Task	Hazard	Control Measures
All Proposed Activities	Inhalation Vapors Dermal Contact Slip, Trip, Fall	Continuous Monitoring Use of PPE Keep floor free of accumulated debris
	Flammability	Spark-proof tools Monitoring
	Cold Stress	Appropriate Clothing Work/Break Cycles Warm Liquids

## 5.0 AIR MONITORING

### 5.1 DIRECT READING INSTRUMENTS

It is not likely that any organic vapors will be detected given the nature of the contamination (oils and oil/water mixtures) visually identified (no air monitoring was conducted) in the site reconnaissance. However, an HNu Systems PID-101 photoionization detector (PID) equipped with a 10.2 ev lamp will screen the containers. If vapors are detected during the screening, the HNu will continuously measure the presence of total organic compounds (TOC) in the breathing zone of Team members performing container sampling activities.

If any organic vapors are detected they will likely be petroleum based, such as ethylbenzene, toluene or xylene. All these compounds have permissible exposure limits (PEL) of 100 parts per million (ppm) and reported photoionization sensitivities of 10 to an HNu with a 10.2 ev lamp. An action level for the donning of respiratory protection is based on sustained (15 minute) HNu readings from the breathing zone of Team members is 50 units. (Please note that Level C respiratory protection will be donned at all times by employees, regardless of HNu readings, due to the presence of friable asbestos).

A Bacharach Sniffer 503-A combustible gas indicator (CGI), calibrated to pentane, will be used to screen the containers for explosive atmospheres. A reading of 10% of the lower explosive limit (LEL) will require the use of electrical equipment, including hand-held, portable lights, that is approved for use in Class I atmospheres. This particular monitoring instrument is also capable of detecting oxygen and will be used to screen the basement area prior to entry to ensure that the atmosphere contains at least 19.5 % oxygen. If the basement atmosphere contains less than 19.5 % oxygen, entry into the basement is prohibited until confined space entry procedures are developed for this project.

HNu and CGI calibration procedures will be performed daily, or in the case of the CGI, prior to each use, in accordance with the SOPs for the HALLIBURTON NUS Environmental Management Group, SOP ME-01 (Appendix C). Calibration information will also be recorded in the field notebook.

#### **ACTION LEVELS FOR DONNING RESPIRATORY PROTECTION FOR ORGANIC VAPORS**

##### Level C

50 units as determined by HNu

##### Level B

1,000 units (limit of the organic vapor cartridge) as determined by the HNu

## 5.2 PERSONAL AIR SAMPLING

Personal air sampling will not be conducted during the proposed investigations. Air sampling for asbestos will not be necessary since the OSHA action level (0.1 fibers per cubic centimeter [f/cc] as an 8 hour time weighted average [TWA]) or excursion level (1.0 f/cc as a 30 minute average) will not likely be exceeded.

## 6.0 PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) will be donned as described below for the tasks covered by this HASP to protect employees from coming in direct contact with oily contamination, sample equipment decontamination solutions, hazard categorization reagents and asbestos debris.

### 6.1 PROTECTIVE CLOTHING

1. Hard Hat
2. Safety Glasses
3. Chemically resistant steel-toed boots
4. Protective shoe covers (nuke boots)
5. Tyvek coveralls w/hoods
6. Polycoated tyvek coveralls w/hoods
7. Latex gloves
8. Nitrile gloves
9. Leather palmed gloves

#### Building Entry

Items: 3,4,5 and respiratory protection

These items must be worn by all employees whenever they enter the buildings due to the amount of asbestos debris on the floors and the deteriorated state of the existing asbestos pipe insulation. Respiratory protection, as described below, is also required to enter the buildings.

#### Container Sampling/Electrical Equipment Sampling

Items: 2,5,7,8

#### Equipment Decontamination

Items: 2,7,8

### 6.2 RESPIRATORY PROTECTION

Due to the presence of friable asbestos and the potential for the material to become easily airborne, employees entering Buildings 33 and 34 will wear Level C respiratory protection at all times.

Level C: full-mask air-purifying respirators equipped with organic vapor cartridges and high efficiency particulate air (HEPA) filters

The combination cartridges have been selected in the event that organic vapors are detected. If total organic vapor concentrations are sustained in the breathing zone of Team members at or above 50 units, as indicated by the PID, such protection is necessary.

All personnel who are expected to don respiratory protection must have been fit-tested within the past year for the brand and model of respirator they will wear during these investigations.

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the face seal. For workers wearing corrective lenses, special spectacles designed for their use with respirators must be available.

### **6.3 OTHER SAFETY EQUIPMENT**

The HALLIBURTON NUS Team will bring the following additional safety equipment to the site:

- First aid kit
- Portable, hand-held eyewash bottle
- Coleman lights w/200,000 candlepower each (not approved for Class I atmospheres)
- 2, 5 pound, A-B-C type fire extinguishers
- Spark proof tools
- Explosion-proof flashlights

First aid kits will be inspected to ensure adequate supplies are available prior to leaving for the site. In the event that this project is longer than one week in duration, the SSO will inspect the kit at least once a week and replace depleted materials as needed.

## 7.0 SITE CONTROL

To prevent both exposure of unprotected personnel and migration of contamination due to tracking by personnel or equipment, work areas and associated PPE requirements will be clearly identified.

### 7.1 WORK ZONES

The HALLIBURTON NUS Team designates work areas or zones as suggested in the "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities," NIOSH/OSHA/USCG/EPA, November, 1985. They recommend the areas surrounding each of the work areas to be divided into three zones:

- Exclusion or "Hot" Zone
- Contamination Reduction Zone (CRZ)
- Support Zone

#### 7.1.1 Exclusion Zone

The exclusion zones will be the buildings themselves. All personnel entering the exclusion zones must wear the prescribed level of PPE.

#### 7.1.2 Contamination Reduction Zone

A CRZ will be established directly outside of Buildings 33 and 34. Personnel will begin the sequential decontamination process (see Section 8.0) in this central decontamination zone.

#### 7.1.3 Support Zone

The outside areas associated with each building will serve as support zones. Eating, drinking and smoking will be allowed only in this area and only after employees have completed proper personal decontamination procedures.

### 7.2 PROTECTIVE MEASURES

The following measures are designed to augment the specific health and safety guidelines provided in this HASP.

- The "buddy system" will be used at all times by all field personnel. No one is to perform investigative activities alone. All Field Team members must be intimately familiar with the procedures for initiating an emergency response.
- Avoidance of contamination is of the utmost importance. Whenever possible, avoid contact with contaminated (or potentially contaminated) surfaces or materials. Walk around (not through)

puddles and discolored surfaces. Do not kneel on the ground or set equipment on the ground. Protect air monitoring equipment from water and contamination by bagging.

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the exclusion and CRZ.
- Hands and face must be thoroughly washed upon leaving the work area and before eating, drinking or any other activities.
- Beards or other facial hair that interfere with respirator fit are prohibited.
- The use of alcohol or illicit drugs is prohibited during the conduct of field operations.
- All equipment must be decontaminated or properly discarded before leaving the site.
- An OSHA poster (form 2203) will be brought to the work location. Such a poster is presented in Appendix D.

## 8.0 DECONTAMINATION

Proper decontamination is required of all personnel and equipment before leaving the Site. Personal decontamination will be accomplished by following a systematic procedure of removing PPE. The decontamination procedures for sampling equipment are presented in the Work Plan.

Disposable PPE, such as Tyvek coveralls, gloves, outer boots, etc. will be disposed of in plastic bags. Bags will be left on-site for future disposal by the Navy. Respirators will be cleaned after each use with respirator wipe pads and the respirators will be stored in plastic bags after cleaning. Since work boots will be protected by over-the-shoe covers, no further decontamination is required.

Waste PPE that is generated in asbestos activities will be placed in appropriate, labeled containers and disposed of in accordance with applicable regulations by the Navy.

### Decontamination Procedures

1. Remove outer shoe coverings
2. Remove outer gloves
3. Remove tyvek coveralls
4. Remove respirator, wipe clean and store
5. Remove inner gloves

A cooler of potable water will be dedicated for hand and face washing. Liquid soap and hand towelettes will be available. This water can also be used to rinse respirator facepieces.

Decontamination fluids will be collected on site, drummed and labeled for disposal by the Navy.

## **9.0 MEDICAL MONITORING/TRAINING REQUIREMENTS**

### **9.1 MEDICAL MONITORING**

All personnel performing the investigative activities as described in Section 3.0 of this HASP must be active participants in ENSR's Medical Monitoring Program or in a similar HALLIBURTON NUS program which complies with 29 CFR 1910.120(f). Each individual required to have a physical examination must have completed an annual surveillance examination and/or an initial baseline examination within the last year prior to performing any work on this Site in order to be covered by this HASP. No site specific monitoring is required.

### **9.2 TRAINING**

Additionally, all personnel performing investigative activities covered by this HASP must have completed the appropriate training requirements specified in 29 CFR 1910.120(e). Each individual who is required to be trained must have completed an annual 8-hour refresher training course and/or initial 40-hour training course within the last year prior to performing any work on this Site covered by this HASP. Also, onsite managers and supervisors directly responsible for supervising individuals engaged in hazardous waste operations must have completed the specified 8-hour managers training course. (Note that ENSR corporate policy requires that whenever three or more ENSR employees are performing work on the same site, at least one of these individuals must have completed the manager's training course.)

Although not required under 29 CFR 1910, it is recommended that one person qualified in First Aid and CPR be present during all site work.

HALLIBURTON NUS Field Team members, and subcontractors to the HALLIBURTON NUS Team, who are involved with the sampling activities of this investigation will be required to provide to the Team's PM signed Subcontractor Medical Approval and Compliance Forms, SOP MD-02, for each individual assigned to this project indicating that they have completed the medical monitoring and training requirements specified above. The PM will forward this information to the CHSM. This information must be provided prior to their performing any work onsite. The appropriate Subcontractor Forms are provided in Appendix E.

### **9.3 PRE-ENTRY BRIEFING**

Prior to the commencement of on-site investigative activities, a site safety meeting will be held to review the specific requirements of this HASP. HASP sign-off sheets will be collected at this meeting, if they have not yet been submitted to the HALLIBURTON NUS PM. Short safety refresher meetings will be conducted, as needed, throughout the duration of the project. Attendance of this meeting will be documented. An attendance sign-in form is presented in Appendix F.

The following information should be covered in the pre-entry briefing:

- General Overview of HASP
- Names of Personnel and Alternates Responsible for Health and Safety
- Chemical and Physical Hazards Associated with Site Activities
- Personal Protective Equipment Required for Site Activities
- Use of Air Monitoring Equipment
- Site Emergency Procedures
- Training and Medical Surveillance Requirements
- Signs and Symptoms of Overexposure
- Risk-Minimizing Work Practices
- Use of Safety Equipment
- Review of MSDS for Hazard Categorization Reagents

## 10.0 EMERGENCY RESPONSE

OSHA defines **emergency response** as any "response effort by employees from outside the immediate release area or by other designated responders (i.e., mutual-aid groups, local fire departments, etc.) to an occurrence which results, or is likely to result in an **uncontrolled release of a hazardous substance.**" According to the HALLIBURTON NUS Team policy, HALLIBURTON NUS personnel shall not participate in any emergency response where there are potential safety or health hazards (i.e., fire, explosion, or chemical exposure). HALLIBURTON NUS response actions will be limited to evacuation and medical/first aid as described within this section below. Accordingly, this section of the HASP has been written to meet the requirements of 29 CFR 1910.38 (a).

The basic elements of an emergency evacuation plan include employee training, alarm systems, escape routes, escape procedures, critical operations or equipment, rescue and medical duty assignments, designation of responsible parties, emergency reporting procedures and methods to account for all employees after evacuation.

**Employee Training:** General training regarding emergency evacuation procedures are included in the ENSR initial and refresher training as described above in Section 9.0 of this HASP. Also as described above in Section 9.3, employees must be instructed in the specific aspects of emergency evacuation applicable to the site as part of the site safety meeting prior to the commencement of all on-site activities. On-site refresher or update training is required anytime escape routes or procedures are modified or personnel assignments are changed.

**Alarm Systems/Emergency Signals:** An emergency communication system must be in effect at all sites. The most simple and effective emergency communication system in many situations will be **direct verbal communications**. Each site must be assessed at the time of initial site activity and periodically as the work progresses. Verbal communications must be supplemented anytime voices can not be clearly perceived above ambient noise levels (i.e., noise from heavy equipment; drilling rigs, backhoes, etc.) and anytime a clear-line-of-sight can not be easily maintained amongst all Field Team personnel because of distance, terrain or other obstructions.

Verbal communications will be adequate during the implementation of the proposed investigative activities.

**Escape Routes and Procedures:** In the event of an emergency Team members will evacuate the buildings and meet in the active area of Building 35. The SSO will conduct a head count to verify that all Field Team members working in Buildings 33 and 34 have been evacuated.

**Critical Operations or Equipment:** All equipment and operations are required to cease in the event of an emergency. The only exception will be related to health and safety. The PM or SSO must determine at the time of an emergency if health and safety will be jeopardized by immediate stoppage of any particular piece of equipment or personal activities. If such a determination is made, personnel involved in critical duties must be minimized and special instructions must be established.

**Rescue and Medical Duty Assignments:** In the event of an emergency, the SSO will notify the security guard (located in Building 35) of the emergency and the guard will the summons help (via radio) and dispatch a boat to the island for evacuation. If the incident is urgent or life-threatening, the security guard will call the Occupational Health Office at the NUSC at extension 3341 or 3442. The Office will then summons the Navy Hospital ambulance which will meet the boat at the docks and transport the employee to the Naval Hospital.

The SSO is responsible for activating emergency response actions. In the event an injury or illness requires more than first aid treatment, that individual will accompany the injured person to the medical facility and will remain with the person until release or admittance is determined. The escort will relay all appropriate medical information to the FTL and the CHSO. The CHSO will notify the CHSM.

If the injured employee can be moved from the accident area, he or she will be brought to the CRZ where their PPE will be removed. If the person is suffering from a back or neck injury the person will not be moved and the requirements for decontamination do not apply. The SSO must familiarize the responding emergency personnel about the nature of the site and the injury. If the responder feels that the PPE can be cut away from the injured persons body, this will be done on-site. If this not feasible, decontamination will be performed after the injured person has been stabilized.

**Designation of Responsible Parties:** The SSO is responsible for initiating emergency response. In the event the SSO can not fulfill this duty, the alternate SSO will take charge. All personnel onsite are responsible for knowing the escape route from the site.

**Accident Investigation:** Any incident (other than minor first aid treatment) resulting in injury, illness or property damage requires an accident investigation and report. The investigation will be initiated as soon as emergency conditions are under control. The purpose of the investigation is not to attribute blame but to determine the pertinent facts so that repeat or similar occurrences can be avoided.

The investigation should begin while details are fresh in the mind of anyone involved. The person administering first aid may be able to start the fact gathering process if the injured are able to speak. Pertinent facts must be determined. Questions beginning with who, what, when, where and how are usually most effective to discover ways to improve job performance in terms of efficiency, quality of work, as well as health and safety concerns.

An accident investigation form (for use by ENSR personnel only) is presented in Appendix G of this document.

## EMERGENCY REFERENCE

**FIRE:** Report to Security Guard

**POLICE:** Report to Security Guard

**AMBULANCE:** Extension 3341 (Occupational Health Office at NUSC)

**HOSPITAL:** 401-841-3771

Naval Hospital  
Newport, Rhode Island

### DIRECTIONS TO THE HOSPITAL:

Figure 2-1 shows the location of the Naval Hospital in relation to the Naval Underwater Systems Control (NUSC) where the NETC is housed.

**NATIONAL RESPONSE CENTER: 1-800-424-8802**

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### HALLIBURTON NUS TEAM REPRESENTATIVES:

ENSR/ACTON, MA 508-635-9500

-Kathleen Harvey (CHSO) x 3325

-Steven Croce (PM) x 3098

- TBA (SSO)

- TBA (Alternate SSO)

HALLIBURTON NUS 412-921-8912

-Matthew Soltis (CHSM)

## 11.0 SPILL CONTINGENCY PLAN

It is possible that the sample equipment decontamination solutions may spill during transport across the site or during use on-site. The containers will be stored in a pan or tray so that if the bottles should leak, the material will be contained.

**APPENDIX A**  
**HASP SIGN-OFF SHEET**

Health and Safety Plan  
For  
Waste Inventory and Characterization  
Buildings 33 and 34  
at  
Gould Island

Naval Education and Training Center  
Newport, Rhode Island

I the undersigned have received a copy of the above referenced document. I have read this document and understand its contents and requirements. I agree to abide by the requirements of this health and safety plan.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Representing

**APPENDIX B**  
**MATERIAL SAFETY DATA SHEETS**

Baxter Healthcare Corporation  
 Burdick & Jackson Division  
 1953 South Harvey Street  
 Muskegon, MI 49442 USA

information/emergency telephone no. 616.726.3171  
 chemtrec telephone no. 800.424.9300  
 canadian emergency telephone no. 613.996.6666

**MATERIAL SAFETY  
 DATA SHEET**

**I. Identification**

chemical name Methanol molecular weight 32.04  
 chemical family Alcohol formula CH<sub>4</sub>O  
 synonyms Carbinol, Methyl Alcohol, Wood Alcohol  
 DOT proper shipping name Methyl Alcohol or Methanol  
 DOT hazard class Flammable Liquid  
 DOT identification no. UN1230 CAS no. 67-56-1

**METHANOL**

**II. Physical and Chemical Data**

boiling point, 760mm Hg. 64.7°C freezing point -97.7°C evaporation rate (BuAc=1) ca 5  
 vapor pressure at 20°C 97 mm Hg vapor density (air=1) 1.11 solubility in water @ 20°C complete  
 % volatiles by volume ca 100 specific gravity (H<sub>2</sub>O=1) @ 20°C 0.792 stability Stable  
 hazardous polymerization Not expected to occur.  
 appearance and odor A clear, colorless liquid with a slight alcoholic odor.  
 conditions to avoid Heat, sparks, open flame, open containers, and poor ventilation.

materials to avoid Strong oxidizing agents and reactive metals which will displace hydrogen.

hazardous decomposition products Incomplete combustion can generate carbon monoxide and other toxic vapors such as formaldehyde.

**III. Fire and Explosion Hazard Data**

flash point, (test method) 12°C (Tag closed cup) auto ignition temperature 385°C  
 flammable limits in air % by volume: lower limit 6.7 upper limit 36.5  
 unusual fire and explosion hazards May burn with an invisible flame. Mixtures with water as low as 21% by volume are still flammable (flash point below 37.8°C). Under some circumstances can corrode certain metals, including aluminum and zinc, and generate hydrogen gas.  
 extinguishing media Carbon dioxide, dry chemical, alcohol foam, water mist or fog.  
 special fire fighting procedures Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and may rupture closed storage containers. Keep fire-exposed containers cool with water spray.

**IV. Hazardous Components**

Methanol % ca 100 TLV 200 ppm (skin) CAS no. 67-56-1

**Burdick & Jackson's Disclaimer:** The information and recommendations presented in this Material Safety Data Sheet are based on sources believed to be reliable on the date hereof. Burdick & Jackson makes no representation on its completeness or accuracy. It is the user's responsibility to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. No representations or warranties, either express or implied, of merchantability or fitness for a particular purpose or of any other nature are made with respect to the information contained in this Material Safety Data Sheet or to the product to which such information refers. Burdick & Jackson neither assumes nor authorizes any other person to assume any other or additional liability or responsibility resulting from the use of, or reliance upon, this information.



### Emergency First Aid

- Inhalation: Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.
- Eye Contact: Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.
- Skin Contact: Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.
- Ingestion: Call local Poison Control Center for assistance. Contact physician immediately. Never induce vomiting or give anything by mouth to a victim unconscious or having convulsions.

### Note to Physician

In case of ingestion or massive inhalation, observe victim as an inpatient because slow metabolism causes a latent period of 24 hours between exposure and acidosis and blindness.

## VI. Safety Measures and Equipment

- Ventilation: Adequate ventilation is required to protect personnel from exposure to chemical vapors exceeding the PEL and to minimize fire hazards. The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.
- Respiratory: Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).
- Eyes: Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.
- Skin: Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, neoprene, nitrile rubber, or rubber offer acceptable chemical resistance. Individuals who are acutely and specifically sensitive to methanol may require additional protective equipment.

**Storage:** Methanol should be protected from temperature extremes and direct sunlight. Proper storage of methanol must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, methanol should be stored in an acceptably protected and secure flammable liquid storage room.

**Other:** Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

## VII. Spill and Disposal Data

**Spill Control:** Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements. CERCLA Reportable Quantity — 5,000 lbs.

**Waste Disposal:** Dispose of methanol as an EPA hazardous waste. Contact state environmental agency for listing of licensed hazardous waste disposal facilities and applicable regulations. Hazardous waste numbers: U154(Ignitable); D001(Ignitable).

## VIII. SARA/Title III Data

<u>Hazard Classification</u>		<u>Chemical Listings</u>	
Immediate Health	Yes	Extremely Hazardous Substances	No
Delayed Health	Yes	CERCLA Hazardous Substances	Yes
Fire	Yes	Toxic Chemicals	Yes
Sudden Release	No		
Reactive	No		

Methanol is subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) and 40CFR Part 372. This product does not contain any other toxic chemical above 1% concentration or a carcinogen above 0.1% concentration.

Revision Date: July, 1989

### KEY

ca	Approximately	STEL	Short Term Exposure Level (15 minutes)
na	Not applicable	TLV	Threshold Limit Value
C	Ceiling	TWA	Time Weighted Average (8 hours)
		BuAc	Butyl Acetate

CERCLA Comprehensive Environmental Response, Compensation and Liability Act  
NSC National Safety Council ("Fundamentals of Industrial Hygiene," 3rd Ed., 1988)

# American Burdick & Jackson

## Material Safety Data Sheet



emergency telephone no. 312/973-3600 (American Scientific Products)  
 chemtrec telephone no. 800/424-9300  
 information telephone no. 616/726-3171 (American Burdick & Jackson)

### I. Identification

chemical name Hexane molecular weight 86.18  
 chemical family Aliphatic Hydrocarbon formula C<sub>6</sub>H<sub>14</sub>  
 synonyms n-Hexane  
 DOT proper shipping name Hexane  
 DOT hazard class Flammable Liquid  
 DOT identification no. UN1208 CAS no. 110-54-3

### II. Physical and Chemical Data

boiling point 760mm Hg 68.7°C freezing point -95.3°C evaporation rate (BuAc=1) ca 10  
 vapor pressure at 20°C 124 mm Hg vapor density (air = 1) 3.0 solubility in water @ 20°C 0.014%  
 \* volatiles by volume ca 100 specific gravity (H<sub>2</sub>O = 1) @ 20°C 0.659 stability Stable  
 hazardous polymerization Not expected to occur.  
 appearance and odor Clear, colorless liquid with a mild hydrocarbon odor.  
 conditions to avoid Heat, sparks, open flame, open containers, and poor ventilation.

materials to avoid Strong oxidizing agents.

hazardous decomposition products Incomplete combustion can generate carbon monoxide and other toxic vapors.

### III. Fire and Explosion Hazard Data

flash point (test method) -26°C (Tag closed cup) auto ignition temperature 225°C  
 flammable limits in air % by volume lower limit 1.2 upper limit 7.7  
 unusual fire and explosion hazards Very volatile and extremely flammable.

extinguishing media Carbon dioxide, dry chemical or foam.

special fire fighting procedures Water will not be effective in extinguishing a fire and may spread it, but a water spray can be used to cool exposed containers. Wear full protective clothing and self-contained breathing apparatus. Heat will build pressure and may rupture closed storage containers.

### IV. Hazardous Components

Hexane and isomers ca 100 TLV 50 ppm CAS no. 110-54-3

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**American Burdick & Jackson**

Subsidiary of American Hospital Supply Corporation  
 1953 South Harvey Street  
 Muskegon, MI 49442

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## MATERIAL SAFETY DATA SHEET

### HEXANE

### V. Health Hazards

#### Occupational Exposure Limits

OSHA 8-hour PEL - 500 ppm  
 Ceiling - not listed  
 Peak - not listed

ACGIH TLV-TWA - 50 ppm  
 TLV-STEL (15-min) - not listed

NIOSH TLV-TWA - 100 ppm  
 TLV-C - 510 ppm

#### Concentration Immediately Dangerous to Health

OSHA/NIOSH 5,000 ppm

#### Odor Threshold

NSC & OHS not listed  
 NIOSH not listed

#### Carcinogenic, Mutagenic, Teratogenic Data

Experimental carcinogen (NTP)  
 Animal teratogen (RTEC)

#### Primary Routes of Entry

Hexane may exert its effects through inhalation, skin absorption, and ingestion.

#### Industrial Exposure: Route of Exposure/Signs and Symptoms

Inhalation: Exposure can cause dizziness, numbness of extremities, and intoxication.

Eye Contact: Liquid and high vapor concentration can be irritating.

Skin Contact: Prolonged or repeated skin contact can cause irritation and dermatitis through defatting of skin.

Ingestion: Can cause gastrointestinal tract discomfort.

#### Effects of Overexposure

Hexane is a mild eye and mucous membrane irritant, primary skin irritant, central nervous system depressant and neurotoxin. Acute exposure causes irritation, narcosis, and gastrointestinal tract irritation. Chronic inhalation causes peripheral neuropathy. No systemic toxicity has been reported.

#### Medical Condition Aggravated by Exposure

Preclude from exposure those individuals susceptible to dermatitis.

### Emergency First Aid

- Inhalation:** Immediately remove to fresh air. If not breathing, administer mouth-to-mouth rescue breathing. If there is no pulse administer cardiopulmonary resuscitation (CPR). Contact physician immediately.
- Eye Contact:** Rinse with copious amounts of water for at least 15 minutes. Get emergency medical assistance.
- Skin Contact:** Flush thoroughly for at least 15 minutes. Wash affected skin with soap and water. Remove contaminated clothing and shoes. Wash clothing before re-use, and discard contaminated shoes. Get emergency medical assistance.
- Ingestion:** Call local Poison Control Center for assistance. Contact physician immediately. Aspiration Hazard - Do not induce vomiting.

### VI. Safety Measures and Equipment

- Ventilation:** Adequate ventilation is required to protect personnel from exposure to chemical vapors exceeding the PEL and to minimize fire hazards. The choice of ventilation equipment, either local or general, will depend on the conditions of use, quantity of material, and other operating parameters.
- Respiratory:** Use approved respirator equipment. Follow NIOSH and equipment manufacturer's recommendations to determine appropriate equipment (air-purifying, air-supplied, or self-contained breathing apparatus).
- Eyes:** Safety glasses are considered minimum protection. Goggles or face shield may be necessary depending on quantity of material and conditions of use.
- Skin:** Protective gloves and clothing are recommended. The choice of material must be based on chemical resistance and other user requirements. Generally, Buna-N offers acceptable chemical resistance. Individuals who are acutely and specifically sensitive to hexane may require additional protective equipment.

- Storage:** Hexane should be protected from temperature extremes and direct sunlight. Proper storage of hexane must be determined based on other materials stored and their hazards and potential chemical incompatibility. In general, hexane should be stored in an acceptably protected and secure flammable liquid storage room.
- Other:** Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Ground and bond metal containers to minimize static sparks.

### VII. Spill and Disposal Data

- Spill Control:** Protect from ignition. Wear protective clothing and use approved respirator equipment. Absorb spilled material in an absorbent recommended for solvent spills and remove to a safe location for disposal by approved methods. If released to the environment, comply with all regulatory notification requirements.
- Waste Disposal:** Dispose of hexane as an EPA hazardous waste. Hazardous waste number: D001(Ignitable).

Revision Date: 1/85

### KEY

ca	Approximately	STEL	Short Term Exposure Level
na	Not applicable	TLV	Threshold Limit Value
C	Ceiling	TWA	Time Weighted Average
PEL	Permissible Exposure Level	BuAc	Butyl Acetate

NSC National Safety Council ("Fundamentals of Industrial Hygiene", 1983)  
OHS Occupational Health Services ("Hazardline")



# J. T. Baker Chemical Co.

222 Red School Lane Phillipsburg, N.J. 08865  
24-Hour Emergency Telephone - (201) 859-2151

Chemtrec # (800) 424-9300  
National Response Center # (800) 424-8802

**MATERIAL  
SAFETY DATA  
SHEET**

N3660 -01  
Effective: 10/01/85

Nitric Acid

Page: 1  
Issued: 10/01/85

## SECTION I - PRODUCT IDENTIFICATION

Product Name: Nitric Acid  
Formula:  $\text{HNO}_3$   
Formula Wt: 63.01  
CAS No.: 07697-37-2  
NIOSH/TECS No.: Q05775000  
Common Synonyms: Hydrogen Nitrate  
Product Codes: 4801,9605,9602,9598,9606,9601,5371,9597,9600,5113,9616

## PRECAUTIONARY LABELLING

BAKER SAF-T-DATA™ System



### Laboratory Protective Equipment



### Precautionary Label Statements

**POISON! DANGER!**  
STRONG OXIDIZER - CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE  
LIQUID AND VAPOR CAUSE SEVERE BURNS - MAY BE FATAL IF SWALLOWED  
HARMFUL IF INHALED AND MAY CAUSE DELAYED LUNG INJURY  
SPILLAGE MAY CAUSE FIRE OR LIBERATE DANGEROUS GAS

Keep from contact with clothing and other combustible materials. Do not store near combustible materials. Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Keep in tightly closed container. Use with adequate ventilation. Wash thoroughly after handling. In case of fire, flood with water. Flush spill area with water spray.

## SECTION II - HAZARDOUS COMPONENTS

Component	%	CAS No.
Nitric Acid	65-75	7697-37-2

Continued on Page: 2



# J. T. Baker Chemical Co.

222 Red School Lane Phillipsburg, N.J. 08865  
24-Hour Emergency Telephone -- (201) 859-2151

Chemical # (800) 424-9300  
National Response Center # (800) 424-8802

**MATERIAL SAFETY DATA SHEET**

N3860 -01  
Effective: 10/01/85

Nitric Acid

Page: 2  
Issued: 10-01-85

-----  
**SECTION III - PHYSICAL DATA**  
-----

Boiling Point: 120°C ( 248°F) Vapor Pressure(mmHg): 2.9  
Melting Point: -42°C ( -44°F) Vapor Density(air=1): 2.5  
Specific Gravity: 1.50 Evaporation Rate: N/A  
(H<sub>2</sub>O=1) (Butyl Acetate=1)  
Solubility(H<sub>2</sub>O): Complete (in all proportions) % Volatiles by Volume: 100

Appearance & Odor: Colorless liquid, with choking odor.  
-----

**SECTION IV - FIRE AND EXPLOSION HAZARD DATA**  
-----

Flash Point: N/A NFPA 704M Rating: 3-0-0 OXY

Fire Extinguishing Media

Use water spray.

Special Fire-Fighting Procedures

Firefighters should wear proper protective equipment and self-contained breathing apparatus with full facepiece operated in positive pressure mode. Move containers from fire area if it can be done without risk. Use water to keep fire-exposed containers cool.

Unusual Fire & Explosion Hazards

Strong oxidizer. Contact with other material may cause fire.

Toxic Gases Produced

nitrogen oxides  
-----

**SECTION V - HEALTH HAZARD DATA**  
-----

Threshold Limit Value (TLV/TWA): 5 mg/m<sup>3</sup> (2 ppm)

Short-Term Exposure Limit (STEL): 10 mg/m<sup>3</sup> (4 ppm)

Effects of Overexposure

Liquid may cause severe burns to skin and eyes.  
Inhalation of vapors may cause severe irritation of the respiratory system.  
Inhalation of vapors may cause coughing, chest pains, difficulty breathing, or unconsciousness.  
Ingestion may be fatal.

Emergency and First Aid Procedures

If swallowed, do NOT induce vomiting. Give water, milk, or milk of magnesia.





# J. T. Baker Chemical Co.

222 Red School Lane Phillipsburg, N.J. 08865  
24-Hour Emergency Telephone -- (201) 859-2151

Chemtrac # (800) 424-9300  
National Response Center # (800) 424-8802

**MATERIAL  
SAFETY DATA  
SHEET**

NO. 60 -01

Nitric Acid

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Effective: 10/01/85

Issued: 10/01/85

-----  
**SECTION IX - STORAGE AND HANDLING PRECAUTIONS**  
-----

SAF-T-DATA™ Storage Color Code: Yellow

Special Precautions

Keep container tightly closed. Store separately and away from flammable and combustible materials.

-----  
**SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION**  
-----

DOMESTIC (D.O.T.)

Proper Shipping Name Nitric acid (over 40%)  
Hazard Class Oxidizer  
UN/NA UN2031  
Labels OXIDIZER, CORROSIVE  
Reportable Quantity 1000 LBS.

INTERNATIONAL (I.M.O.)

Proper Shipping Name Nitric acid  
Hazard Class 8  
UN/NA UN2031  
Labels CORROSIVE

-----  
N/A = Not Applicable or Not Available

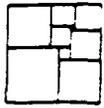
The information published in this Material Safety Data Sheet has been compiled from our experience and data presented in various technical publications. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions. We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.

**APPENDIX C**  
**STANDARD OPERATING PROCEDURES**

**LIST OF SOP's INCLUDED IN APPENDIX C**

MD-02 SUBCONTRACTOR HEALTH AND SAFETY

ME-01 HNU PI-101 ORGANIC VAPOR METER



**NUS**  
CORPORATION

ENVIRONMENTAL  
MANAGEMENT GROUP

# STANDARD OPERATING PROCEDURES

Number  
ME-01

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1 of 12

Effective Date  
05/04/90

Revision  
2

Applicability  
EMG

Prepared  
Health and Safety

Approved  
D. Senovich

Subject

HNU PI-101 ORGANIC VAPOR METER

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- 3.0 GLOSSARY
- 4.0 RESPONSIBILITIES
- 5.0 PROCEDURES
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  - 5.2 INSTRUMENT CONFIGURATION
  - 5.3 CALIBRATION
  - 5.4 SPECIALIZED USES
  - 5.5 INSTRUMENT ADVANTAGES
  - 5.6 CAUTIONS
- 6.0 REFERENCES
- 7.0 ATTACHMENTS

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## 1.0 PURPOSE

To establish procedures for the use, maintenance, and calibration of the HNU PI-101 Organic Vapor Meter.

## 2.0 SCOPE

Applies to each usage of the HNU PI-101 photoionization detector by NUS/EMG personnel.

## 3.0 GLOSSARY

None.

## 4.0 RESPONSIBILITIES

Office Health and Safety Supervisor (OHSS) - The OHSS shall insure that the user has been appropriately trained and certified in the usage of the HNU instrument. He/she shall also insure that the instrument is properly maintained and calibrated prior to its release for field service.

Instrument User - The user should be personally secure that he/she has been adequately trained and understands the operation and limitations of the instrument. He/she is further responsible to insure that the appropriate probe(s) have been selected for compounds to be found on site and that the instrument has been calibrated and is working properly.

## 5.0 PROCEDURES

### 5.1 PRINCIPLE OF OPERATION

The HNU System portable photoionizer detects the concentration of many organic gases as well as a few inorganic gases. The basis for detection is the ionization of gaseous species. The incoming gas molecules are subjected to ultraviolet (UV) radiation, which is energetic enough to ionize many gaseous compounds. The molecule is transformed into charged-ion pairs, creating a current between two electrodes. Each molecule has a characteristic ionization potential, which is the energy required to remove an electron from the molecule, yielding a positively-charged ion and the free electron. The instrument measures this energy level.

### 5.2 INSTRUMENT CONFIGURATION

Three probes, each containing a different UV light source, are available for use with the HNU. Probe energies are 9.5, 10.2, and 11.7eV. All three detect many aromatic and large-molecule hydrocarbons. The 10.2 and 11.7eV probes, in addition, detect some smaller organic molecules and some halogenated hydrocarbons. The 10.2eV probe is the most useful for environmental response work, since it is more durable than the 11.7eV probe and detects more compounds than the 9.5eV probe.

### 5.3 CALIBRATION

The primary HNU calibration gas is benzene (or isobutylene, a benzene equivalent). The span potentiometer knob is adjusted for benzene calibration. A knob setting of zero increases the sensitivity to benzene approximately ten-fold. The instrument's response can be adjusted to give more accurate readings for specific gases and eliminate the necessity for calibration charts. Daily calibration is to be performed in accordance with Attachment G.

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#### 5.4 SPECIALIZED USES

While the HNU is used primarily as a qualitative instrument, it can also be used to detect certain contaminants or at least to narrow the range of possibilities. Noting instrument response to a contaminant source with different probes can eliminate some contaminants from consideration. For instance, a compound's ionizing potential may be such that the 9.5eV probe produces no response, but the 10.2 and 11.7eV probes do elicit a response. Also, HNU does not detect methane or hydrogen cyanide.

#### 5.5 INSTRUMENT ADVANTAGES

The HNU is easy to use in comparison to many other types of monitoring instrumentation. Its range detection limit is also in the low parts per million range. Response time is rapid; the meter needle reaches 90 percent of the indicated concentration in 3 seconds for benzene. HNU can be zeroed in a contaminated atmosphere.

#### 5.6 CAUTIONS

The instrument can monitor only certain vapors and gases in air. Nonvolatile liquids, toxic solids, particulates, and many other toxic gases and vapors cannot be detected. Because the types of compounds that the HNU can detect is only a fraction of the chemicals possibly present at a field site, a zero reading does not necessarily signify the absence of air contaminants.

The instrument is nonspecific, and its response to different compounds is relative to the calibration setting. Instrument readings may be higher or lower than the true concentration. These discrepancies can be especially serious problems when monitoring for total contaminant concentrations, if several different compounds are being detected at once. In addition, the response of this instrument is not linear over the entire detection range. Care must, therefore, be taken when interpreting the data. All identifications should be reported as tentative until they can be confirmed by more precise analysis. Concentrations should be reported in terms of the calibration gas and span potentiometer of the gas-select-knob setting.

The instrument cannot be used as an indicator for combustible gases or oxygen deficiency.

#### 6.0 REFERENCES

HNU Systems, Inc. Instruction Manual for Model PI 101 Photoionization Analyzer, 1975.

E. & E. FIT Operation and Field Manual: HNU Systems PI 101 Photoionization Detector and Century Systems (Foxboro) Model OVA-128 Organic Vapor Analyzer.

Personal Communication with Fran Connel, HNU Systems, Inc., January 4, 1984.

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## 7.0 ATTACHMENTS

- Attachment A - Start-up and Shutdown Procedures
- Attachment B - Maintenance and Calibration Schedule
- Attachment C - Calibration Procedure
- Attachment D - Cleaning the UV Light Source Window
- Attachment E - Cleaning the Ionization Chamber
- Attachment F - Troubleshooting
- Attachment G - Daily Calibration

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## ATTACHMENT A

### START-UP AND SHUTDOWN PROCEDURES

#### Start-up

1. Attach the probe to the readout unit. Match the alignment key, then twist the connector clockwise until a distinct locking is felt.
2. Turn the FUNCTION switch to the battery check position. Check to ensure that the indicator reads within or beyond the green battery arc on the scale plate. If the indicator is below the green arc, or if the red LED comes on, the battery must be charged prior to using.
3. To zero the instrument, turn the FUNCTION switch to the STANDBY position and rotate the ZERO POTENTIOMETER until the meter reads zero. Wait 15-20 seconds to ensure that the zero adjustment is stable. If not, then readjust.
4. Check to see that the SPAN POTENTIOMETER is set at the appropriate setting for the probe being used. Follow procedures in Attachment G in the performance of daily calibrations.
5. Set the FUNCTION switch to the desired ppm range.
6. Listen for the fan operation to verify fan function.
7. Check instrument with an organic point source (such as a magic marker) prior to usage to verify instrument function.

#### Shut Down

1. Turn FUNCTION switch to OFF.
2. Place the instrument on the charger.

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**ATTACHMENT B**

**MAINTENANCE AND CALIBRATION SCHEDULE**

<u>Function</u>	<u>Frequency</u>
Routine Calibration	Prior to each use*
Factory Check-out and Calibration	Yearly or when malfunctioning
Wipe Down Read-Out Unit	After each use
Clean UV Light Source Window	Every month or as use and site conditions dictate
● Clean the Ionization Chamber	Monthly
● Recharge Battery	After each use
● In accordance with the specifications identified in Attachment G.	

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**ATTACHMENT C**  
**CALIBRATION PROCEDURE**

Calibration Procedure 1

1. Run through start-up procedures as per Attachment 1.
2. Fill a sampling bag with HNU calibration gas of known contents.
3. Allow sample bag contents to be drawn into the probe and check response in ppm.
4. If the reading deviates  $\pm 15$  percent from the concentration of the calibration gas, the instrument requires maintenance.
5. Each office must develop a mechanism for the documentation of calibration results. This documentation includes:
  - a. date inspected
  - b. person who calibrated the instrument
  - c. the instrument number (Serial number or Other ID number)
  - d. the result of the calibration (ppm, probe ev, span pot setting)
  - e. identification of the calibration gas (source, type, concentration)

Calibration Procedure 2 (for HNU Calibration Canisters Equipped with a Regulator)

1. Run through start up procedures as per Attachment 1.
2. Connect a sampling hose to the regulator outlet and the other end to the sampling probe of the HNU.
3. Crack the regulator valve.
4. Take reading after 5-10 seconds.
5. If the reading deviates  $\pm 15$  percent from the concentration of the calibration gas, the instrument requires maintenance.
6. Calibration documentation should be as in No. 5 above.

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## ATTACHMENT D

### CLEANING THE UV LIGHT SOURCE WINDOW

1. Turn the FUNCTION switch to the OFF position and disconnect the sensor/probe from the Read Out/Control unit.
2. Remove the exhaust screw located near the base of the probe. Grasp the end cap in one hand and the probe shell in the other. Separate the end cap and lamp housing from the shell.
3. Loosen the screws on the top of the end cap and separate the end cap and ion chamber from the lamp housing, taking care that the lamp does not fall out of this housing.
4. Tilt the lamp housing with one hand over the opening, so that the lamp slides out of the housing into your hand.
5. The lamp window may now be cleaned with any of the following compounds using lens paper:
  - a. HNU Cleaning Compound-All lamps except the 11.7 eV
  - b. Carbon tetrachloride-All lamps except the 11.7 eV
  - c. Methanol-All lamps
6. Following cleaning, reassemble by first sliding the lamp back into the lamp housing. Place the ion chamber on top of the housing, making sure the contacts are properly aligned.
7. Place the end cap on top of the ion chamber and replace the two screws. Tighten the screws only enough to seal the O-ring. Do Not Overtighten.
8. Line up the pins on the base of the lamp housing with pins inside the probe shell and slide the housing assembly into the shell. It will only fit one way.

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## ATTACHMENT E

### CLEANING THE IONIZATION CHAMBER

1. Turn the FUNCTION switch to the OFF position and disconnect the sensor/probe from the Read Out/Control unit.
2. Remove the exhaust screw located near the base of the probe. Grasp the end cap in one hand and the probe shell in the other. Separate the end cap and lamp housing from the shell.
3. Loosen the screws on the top of the end cap and separate the end cap and ion chamber from the lamp housing, taking care that the lamp does not fall out of this housing.
4. The ion chamber may now be cleaned according to the following sequence:
  - a. acetone rinse with agitation (10 min.), then dry (preferably with oven at 100°C).
  - b. methanol rinse with agitation (10 min.), then dry (preferably with oven at 100°C).
5. Place the ion chamber on top of the housing, making sure the contacts are properly aligned.
7. Place the end cap on top of the ion chamber and replace the two screws. Tighten the screws only enough to seal the O-ring. Do Not Overtighten.
8. Line up the pins on the base of the lamp housing with pins inside the probe shell and slide the housing assembly into the shell. It will only fit one way.

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**ATTACHMENT F**  
**TROUBLESHOOTING**

To be performed by qualified technician only.

1. No meter response in any switch position (including BATT CHK).
  - A. Broken meter movement.
    - (1) Tip instrument rapidly from side to side. Meter needle should move freely and return to zero.
  - B. Electrical connection to meter is broken.
    - (1) Check all wires leading to meter and clean the contacts of quick-disconnects.
  - C. Battery is completely dead.
    - (1) Disconnect battery and check voltage with a volt-ohm meter.
  - D. If none of the above solves the problem, consult the factory.
2. Meter responds in BATT CHK position, but reads zero or near zero for all others.
  - A. Power supply defective.
    - (1) Check power supply voltages per Figure 11 of the HNU owner's manual. If any voltage is out of specification, consult the factory.
  - B. Input transistor or amplifier has failed.
    - (1) Rotate zero control; meter should deflect up/down, as control is turned.
    - (2) Open probe. Both transistors should be fully seated in sockets.
  - C. Input signal connection broken in probe or readout.
    - (1) Check input connector on printed circuit board. The input connector should be firmly pressed down.
    - (2) Check components on back side of printed circuit board. All connections should be solid and no wires should touch any other object.
    - (3) Check all wires in readout for solid connections.

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**ATTACHMENT G**

**DAILY CALIBRATION OF HNU PI-101**

HNU PI-101 organic vapor meters are to be field calibrated at the beginning of each work day, prior to actual on site usage.

In order to accomplish this, HNUs assigned to jobs shall be accompanied with a calibration gas cylinder, an appropriate fitting, and a flexible connecting hose. The procedure for performing field calibration is as follows:

1. Connect the probe to the instrument and turn it on.
2. Attach the eight-inch extension to the probe.
3. Set the Span Potentiometer to the setting specified on the calibration cylinder.
4. Connect the cylinder fitting to the cylinder.
5. Connect the cylinder and the instrument together with the flexible tubing.
6. Open the cylinder valve and wait 15 seconds.
7. Instrument reading should coincide with the designed reading stated on the calibration cylinder label.
8. If item number 7 does not coincide, adjust the Span Potentiometer until the desired reading is achieved. Any such adjustments must be within the following limits:

Probe	Initial Span Pot. Setting	Maximum Acceptable Span Pot. Adjustment
9.5 eV	5.0	1.0
10.2 eV	9.8	8.5
11.7 eV	5.0	2.0

If these limits are exceeded, the sensitivity and accuracy of the instrument is hindered. At these points, the instruments are to be returned to the NUS Equipment Manager for inspection, necessary cleaning and maintenance, and recalibration.

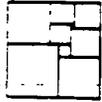
The manufacturer also recommends that the lamp inside of the probe be checked twice per week (16 hours of use) and cleaned at least weekly. This involves removing any noticeable obstructions or contamination from the lamp by wiping it off with a clean, soft cloth being careful not to scratch the circular window.

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**ATTACHMENT G  
DAILY CALIBRATION OF HNU PI-101  
PAGE TWO**

In using this instrument to protect NUS employees and subcontractors, it is imperative that it is accurately responding to airborne substances present at the work site. By implementing these procedures, this end will be better achieved.

Additionally, all calibration activities must be documented in field log books, instrument calibration log sheets, or equivalent. This information must include the date inspected, the person calibrating the instrument, the instrument serial or identification number, the probe lamp eV (9.5, 10.2, or 11.7), identification of calibration gas (gas source stated on the cylinder label), the initial and final Span Potentiometer settings, and the instrument resultant reading. This information must be submitted to the Site Safety officer at the completion of the job.



**NUS**  
CORPORATION

**ENVIRONMENTAL  
MANAGEMENT GROUP**

**STANDARD  
OPERATING  
PROCEDURES**

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Revision  
2

Applicability  
EMG

Prepared  
Health and Safety

Approved  
*D. Senovich*  
D. Senovich

Subject  
SUBCONTRACTOR HEALTH AND SAFETY

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## 1.0 PURPOSE

To establish procedures for subcontractor health and safety requirements.

## 2.0 APPLICABILITY

These procedures apply to all NUS subcontractor personnel required to work where the potential for exposure to hazardous substances exists (as defined in OSHA 29 CFR 1910.120).

## 3.0 GLOSSARY

OSHA 29 CFR 1910.120 - OSHA General Industry Standard on Hazardous Waste Operations and Emergency Response, Interim Final Rule, as released in the December 19, 1986, Federal Register

## 4.0 RESPONSIBILITIES

Compliance to this procedure is the responsibility of the site project manager and the site health and safety officer.

## 5.0 PROCEDURES

### 5.1 INTRODUCTION

5.1.1 Any contractor or subcontractor retained by NUS for work involving hazardous operations shall be informed of any potential fire, explosion, health, or other safety hazards of the site that have been recognized and identified by NUS, prior to work initiation.

5.1.2 Based on specification of the Health and Safety Staff, it shall be determined to what degree subcontractors must comply with OSHA requirements (on health and safety training, medical monitoring, and all other aspects of OSHA Standard 1910.120) prior to subcontractor selection.

5.1.3 Subcontractors responding to requests for bids must include, in their response(s), a statement addressing their degree of compliance with all applicable Federal, state, and local requirements. This must specifically address the requirements of OSHA 1910.120. No subcontractors shall be used which do not fully comply with health and safety requirements. Evaluation of these statements shall be incorporated into subcontractor selection criteria.

5.1.4 All subcontractors, retained to perform activities involving potential exposure to hazard substances, shall submit completed Subcontractor Medical Approval Forms (Attachment A) for every employee designated for such work.

5.1.5 The Project Manager responsible for selecting subcontractor organizations shall provide the following information to potential bidders for site work involving potential hazardous exposures:

- A. A copy of OSHA Standard 1910.120 and appendices.
- B. A description of the tasks to be performed as they relate to personnel exposures.
- C. A listing of known/suspected contaminants and concentrations (if known).
- D. A description of personal protective equipment anticipated to be used.
- E. A description of site hazards.

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5.1.5 The NUS Health and Safety Lead, or his designate, is responsible for performing site characterization and analyses for work sites to determine the types and degrees of hazard potentials presented by each specific site, in view of the activities to be performed. The results of these efforts shall be submitted to the Project Managers for their use in fulfilling the responsibilities.

**6.0 REFERENCES**

None.

**7.0 ATTACHMENTS**

Attachment A - Subcontractor Medical Approval Form (2 sheets).  
Attachment B - Subcontractor Compliance Form (1 sheet).

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**ATTACHMENT A  
SUBCONTRACTOR MEDICAL APPROVAL FORM**

For employees of \_\_\_\_\_  
Company Name

Participant Name: \_\_\_\_\_ Date of Exam: \_\_\_\_\_

**Part A**

The above-named individual has:

- 1 Undergone a physical examination in accordance with OSHA Standard 29 CFR 1910.120, paragraph (f) and found to be medically -
  - qualified to perform work at the \_\_\_\_\_ work site
  - not qualified to perform work at the \_\_\_\_\_ work site
- and,
2. Undergone a physical examination as per OSHA 29 CFR 1910.134 (b)(10) and found to be medically -
  - qualified to work in respiratory protection
  - not qualified to work in respiratory protection

My evaluation has been based on the following information, as provided to me by the employer.

- A copy of OSHA Standard 29 CFR 1910.120 and appendices.
- A description of the employee's duties as they relate to the employee's exposures.
- A list of known/suspected contaminants and their concentrations (if known).
- A description of any personal protective equipment used or to be used.
- Information from previous medical examinations of the employee, which is not readily available to the examining physician.

**Part B**

I, \_\_\_\_\_, have examined \_\_\_\_\_  
Physician's Name (print) Participant's Name (print)

and have determined the following information:

- 1 Results of the medical examination and tests (excluding findings or diagnoses unrelated to occupational exposure):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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**ATTACHMENT A  
SUBCONTRACTOR MEDICAL APPROVAL FORM  
PAGE TWO**

2. Any detected medical conditions which would place the employee at increased risk of material impairment of the employee's health:

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3. Recommended limitations upon the employee's assigned work:

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I have informed this participant of the results of this medical examination and any medical conditions which require further examination or treatment.

Based on the information provided to me, and in view of the activities and hazard potentials involved at the \_\_\_\_\_ work site, this participant

- ( ) may
- ( ) may not

perform his/her assignment task.

Physician's Signature \_\_\_\_\_

Address \_\_\_\_\_

Phone Number \_\_\_\_\_

NOTE: Copies of test results are maintained and available at:

---

Address

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**ATTACHMENT B**

**SUBCONTRACTOR COMPLIANCE FORM**

Name of Company/Organization: \_\_\_\_\_

Name of Employer: \_\_\_\_\_

I hereby certify that the above-named employer shall comply with all applicable Federal, state, and local Occupational Safety and Health (OSH) requirements and specifically the requirements specified in OSHA Standard 29 CFR 1910.120, before the initiation of field work at the \_\_\_\_\_ site, and shall continue said compliance through the completion of the contract with NUS Corporation.

\_\_\_\_\_  
(date)

\_\_\_\_\_  
(signature of company officer)

\_\_\_\_\_  
(address)

\_\_\_\_\_  
  
\_\_\_\_\_  
(phone number)

**APPENDIX D**

**OSHA POSTER**

# JOB SAFETY & HEALTH PROTECTION

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

## Employers

All employers must furnish to employees employment and a place of employment free from recognized hazards that are causing or are likely to cause death or serious harm to employees. Employers must comply with occupational safety and health standards issued under the Act.

## Employees

Employees must comply with all occupational safety and health standards, rules, regulations and orders issued under the Act that apply to their own actions and conduct on the job.

The Occupational Safety and Health Administration (OSHA) of the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards, and its Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliance with the Act.

## Inspection

The Act requires that a representative of the employer and a representative authorized by the employees be given an opportunity to accompany the OSHA inspector for the purpose of aiding the inspection.

Where there is no authorized employee representative, the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace.

## Complaint

Employees or their representatives have the right to file a complaint with the nearest OSHA office requesting an inspection if they believe unsafe or unhealthful conditions exist in their workplace. OSHA will withhold, on request, names of employees complaining.

The Act provides that employees may not be discharged or discriminated against in any way for filing safety and health complaints or for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office within 30 days of the alleged discriminatory action.

## Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer. Each citation will specify a time period within which the alleged violation must be corrected.

The OSHA citation must be prominently displayed at or near the place of alleged violation for three days, or until it is corrected, whichever is later, to warn employees of dangers that may exist there.

## Proposed Penalty

The Act provides for mandatory civil penalties against employers of up to \$7,000 for each serious violation and for optional penalties of up to \$7,000 for each nonserious violation. Penalties of up to \$7,000 per day may be proposed for failure to correct violations within the proposed time period and for each day the violation continues beyond the prescribed abatement date. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to \$70,000 for each such violation. A minimum penalty of \$5,000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to \$7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable by a fine of up to \$250,000 (or \$500,000 if the employer is a corporation), or by imprisonment for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment. Falsifying records, reports, or applications is punishable by a fine of \$10,000 or up to six months in jail or both.

## Voluntary Activity

While providing penalties for violations, the Act also encourages efforts by labor and management, before an OSHA inspection, to reduce workplace hazards voluntarily and to develop and improve safety and health programs in all workplaces and industries. OSHA's Voluntary Protection Programs recognize outstanding efforts of this nature.

OSHA has published Safety and Health Program Management Guidelines to assist employers in establishing or perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that can provide information and assistance in this effort, if requested. Also, your local OSHA office can provide considerable help and advice on solving safety and health problems or can refer you to other sources for help such as training.

## Consultation

Free assistance in identifying and correcting hazards and in improving safety and health management is available to employers, without citation or penalty, through OSHA-supported programs in each State. These programs are usually administered by the State Labor or Health department or a State university.

## Posting Instructions

Employers in States operating OSHA approved State Plans should obtain and post the State's equivalent poster.

*Under provisions of Title 29, Code of Federal Regulations, Part 1903.2(a)(1) employers must post this notice (or facsimile) in a conspicuous place where notices to employees are customarily posted.*

## More Information

Additional information and copies of the Act, specific OSHA safety and health standards, and other applicable regulations may be obtained from your employer or from the nearest OSHA Regional Office in the following locations:

Atlanta, GA	(404) 347-3573
Boston, MA	(617) 565-7164
Chicago, IL	(312) 353-2220
Dallas, TX	(214) 767-4731
Denver, CO	(303) 844-3061
Kansas City, MO	(816) 426-5861
New York, NY	(212) 337-2378
Philadelphia, PA	(215) 596-1201
San Francisco, CA	(415) 744-6670
Seattle, WA	(206) 442-5930

*Lynn Martin*

Lynn Martin, Secretary of Labor

**U.S. Department of Labor**

Occupational Safety and Health Administration

Washington, DC  
1991 (Reprinted)  
OSHA 2203



**APPENDIX E**  
**SUBCONTRACTOR FORMS**

EXAMPLE

OSHA Compliance Letter

The following statements must be typed on company letterhead and signed by an officer of the Company:

Company Name  
Address

Date

Kathleen Harvey  
ENSR Consulting and Engineering  
Halliburton NUS Team  
35 Nagog Park  
Acton, Ma. 01720

Subject: OSHA Compliance: NETC Newport, Rhode Island. Gould Island, Buildings 33 and 34

Dear Kathleen,

As an officer of (insert Company name), I hereby state that I am aware of the potential hazardous nature of the subject project. I also understand that it is our responsibility to comply with all applicable occupational safety and health regulations including those stipulated in Title 29 of the Code of Federal Regulations (CFR), Parts 1900 through Part 1926.

I also understand that 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response Standard, requires medical surveillance, for applicable employees and appropriate levels of training as required by paragraph (e) of the standard for employees engaged in certain hazardous waste operations. In this regard, I hereby state that I have reviewed these requirements and that (insert Company name) and all of its employees who will perform work at (insert site location) are in full compliance with the applicable requirements.

Sincerely,

(Name of Company Officer)

EXAMPLE

OSHA Training Certification

The following statements must be typed on company letterhead and signed by an officer of the company:

Name of Company  
Address

Date

Kathleen Harvey  
ENSR Consulting and Engineering  
Halliburton NUS Team  
35 Nagog Park  
Acton, Ma. 01720

Subject: Hazardous Waste Training NETC Newport Rhode Island, Gould Island, Buildings  
33 and 34

Dear Kathleen,

The employees listed below have had initial 40 hour hazardous waste operation training as required by 29 CFR 1910.120 (e)(3). In addition, those employees listed below who have received their initial training more than 12 months ago have also received 8 hours of refresher training in accordance with 29 CFR 1910.120 (e)(8).

**List full names of employees and their social security numbers and the dates of training**

Should you have any questions, please call me at (insert company phone number).

Sincerely,

(Name of Company Officer)

EXAMPLE

Medical Surveillance Letter

The following statements must be typed on company letterhead and signed by an officer of the company and accompanied by the attached Subcontractor Medical Approval Form or equivalent for each employee assigned to the NETC Newport Rhode Island, Gould Island, Buildings 33 and 34. Each employee must also complete the attached Medical Data Sheet.

Company Name  
Address

Date

Kathleen Harvey  
ENSR Consulting and Engineering  
Halliburton NUS Team  
35 Nagog Park  
Acton, Ma. 01720

Subject: Medical Surveillance NETC Newport Rhode Island, Gould Island, Buildings 33 and 34

Dear Kathleen,

As an officer of (insert company name), I hereby state that the persons listed below participate in a medical surveillance program meeting the requirements of paragraph (f) of 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response Standard". I further state that the persons listed below have had physical examinations under this program within the past 12 months and that they have been cleared, by a licensed physician, to perform hazardous waste site work and to wear positive and negative pressure respiratory protection. I also state that, to my knowledge, no person listed below has any medical restriction that would preclude him/her from working at the (insert site name).

**List full name of employees and social security numbers and date of last examination here.**

Should you have any questions, please contact me at (insert company phone number).

Sincerely,

(Name of Company Officer)

**APPENDIX F**

**PRE-ENTRY BRIEFING ATTENDANCE SHEET**



**APPENDIX G**  
**ACCIDENT INVESTIGATION REPORT**

**ATTACHMENT 8.1 - SUPERVISOR'S ACCIDENT INVESTIGATION REPORT**

Injured Employee \_\_\_\_\_ Job Title \_\_\_\_\_

Home Office \_\_\_\_\_ Division/Department \_\_\_\_\_

Date/Time of Accident \_\_\_\_\_

Location of Accident \_\_\_\_\_

Witnesses to the Accident \_\_\_\_\_

Injury Incurred? \_\_\_\_\_ Nature of Injury \_\_\_\_\_

Engaged in What Task When Injured? \_\_\_\_\_

Will Lost Time Occur? \_\_\_\_\_ How Long? \_\_\_\_\_ Date Lost Time Began \_\_\_\_\_

Were Other Persons Involved/Injured? \_\_\_\_\_

How Did the Accident Occur? \_\_\_\_\_

What Could Be Done to Prevent Recurrence of the Accident? \_\_\_\_\_

What Actions Have You Taken Thus Far to Prevent Recurrence? \_\_\_\_\_

Supervisor's Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Reviewer's Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

**NOTE: IF THE SPACE PROVIDED ON THIS FORM IS INSUFFICIENT, PROVIDE ADDITIONAL INFORMATION ON SEPARATE PAPER AND ATTACH. THE COMPLETED ACCIDENT INVESTIGATION REPORT MUST BE SUBMITTED TO THE REGIONAL HEALTH AND SAFETY MANAGER WITHIN FIVE DAYS OF THE OCCURRENCE OF THE ACCIDENT.**