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DEPARTMENT OF THE NAVY
NAVAL AIR STATION
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NASMERINST 5100.17
OOEEO

17 MAR 1986

NASMER INSTRUCTION 5100.17

From: Commanding Officer

Subj: OSH SAFETY PROCEDURES

Ref: (a) NASMERINST 5100.15

Encl: (1) OSH Safety Procedures

1. Purpose. To provide safety procedures implementing reference (a).

2. Background

a. This document presents ready reference for safe work procedures required for industrial operations aboard Naval Air Station, Meridian, Mississippi. While precautions applicable to several specific operations are described in detail, individual situations may arise which will require interpretation. In such instances, the Safety and Occupational Health Office, located on second deck, building 200, will render all necessary assistance and be final determining authority.

b. Personal protective equipment referenced in this document can be obtained from Central Safety Storage.

3. Responsibilities

a. The Safety and Occupational Health Manager will prepare, coordinate, reproduce, distribute, and enforce practices outlined in these procedures. These adopted procedures protect people, property, and the environment and are considered standard basic safety requirements for all departments and tenant activities aboard Naval Air Station, Meridian.

b. Additional procedures and provisions, when modified or refined, will be added to this document. The safety program will continue to grow and keep pace with development aboard NAS Meridian.


ANDREW J. ROCHELLES

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NASMERINST 5100.17

17 MAR 1986

OSH

SAFETY PROCEDURES

Enclosure (1)

CONTENTS
SAFETY PROCEDURES

		<u>Page</u>
NO. 1	- MANDATORY AND ADVISORY TERMINOLOGY	1
NO. 2	- OPERATING PROCEDURES REQUIREMENTS	2
NO. 3	- ESSENTIAL PERSONNEL	4
NO. 4	- SAFETY MONITORS	5
NO. 5	- BUDDY SYSTEM	8
NO. 6	- EMERGENCY VEHICLES	10
NO. 7	- LOCK AND TAG REQUIREMENTS	11
NO. 8	- FLAME PERMITS	15
NO. 9	- CONFINED SPACE ENTRY	19
NO. 10	- AUTOMOTIVE, CONSTRUCTION, AND WEIGHT HANDLING EQUIPMENT	23
NO. 11	- LOW VOLTAGE ELECTRICAL OPERATIONS	28
NO. 12	- HIGH VOLTAGE ELECTRICAL OPERATIONS (440 VOLTS AND UP)	32
NO. 13	- WAREHOUSE AND STORAGE	37
NO. 14	- WELDING/CUTTING OPERATIONS	42
NO. 15	- USE OF HAND TOOLS	47
NO. 16	- PERSONAL PROTECTIVE EQUIPMENT	51
NO. 17	- INDUSTRIAL TRUCKS (FORKLIFTS)	53
NO. 18	- LIQUID OXYGEN SYSTEM	57
NO. 19	- NITROGEN SAFETY REQUIREMENTS	61
NO. 20	- REQUIREMENTS FOR HANDLING ACIDS AND CAUSTICS	64

Safety Procedure No. 1

SUBJECT: Mandatory and Advisory Terminology for this Procedural Document.

PURPOSE: To provide a standard terminology for use in this safety procedures documents

SCOPE

To provide standard terminology for simple individual understanding of procedures

GENERAL

Mandatory precautions contained in this document are characterized by "Shall", "Will", "Must", "It is prohibited" and "It is required". Advisory precautions, which are not mandatory but recommended or advisory, are indicated by "Should", "Would", or "May".

RESPONSIBILITY

Each employee/service member shall read and determine mandatory procedures from advisory ones and apply them to their job duties.

INTERPRETATION

When mandatory terminology is used, the procedures must be followed to the letter. Where advisory terminology is used, the procedures should be followed as closely as possible.

NASMERINST 5100.17

17 MAR 1996

Safety Procedure No. 2

SUBJECT: Operating Procedure Requirements.

PURPOSE: Operating procedures insure an operation will be performed with the safest and most efficient methods possible.

I. SCOPE

All operations defined as "safety critical" and performed by Naval Air Station or tenant activity personnel, will be monitored by the Occupational Safety and Health Office. Procedures shall be routed through the Public Works Engineering Department and the NAS Occupational Safety and Health Office for approval.

II. GENERAL

A. Procedures will be written by the supervisor/forman of the organization performing the work.

B. Procedures will be written to provide maximum protection for personnel and eliminate procedural error.

C. Use precise wording to minimize interpretation.

D. Steps in which an equipment malfunction or human error could produce an injury, death, or property damage will be identified as:

1. WARNING - Not following procedure could result in injury or loss of life.

2. CAUTION - Not following procedure could result in damage to property.

3. NOTE - Step essential for safe operation or completion of task.

E. Contingency plans, as part of procedures that could result in a catastrophic event, will include:

1. Assurance of personnel safety.

2. Specific actions to bring situation under control.

3. Specific actions to bring system back to safe operating condition.

F. All NAS Meridian "safety critical" procedures shall be reviewed and approved by the Public Works Engineering Office and NAS Occupational Safety and Health Office, and conspicuously marked "safety critical" on the title page of the procedure.

G. Changes to NAS Meridian "safety critical" procedures shall be processed the same as new procedures.

H. DEVIATIONS AND WAIVERS (RED LINES)

1. All requests for waivers and deviations to approved standards or procedures will be submitted to the NAS Meridian Occupational Safety and Health Office. Requests will be made only when task completion is being unduly delayed by safety procedures or requirements.

2. Deviations and waivers will only be issued for the minimum time necessary to complete specific tasking.

3. Request will include:

- a. Justification for waiver.
- b. Specific safety standard requiring modification.
- c. Length of time.
- d. Unusual precautions needed to control hazard.

III. RESPONSIBILITY

Department heads/tenant activities will develop accurate procedural plans. Field verification will be necessary to assure information is correct.

IV. INTERPRETATION

All NAS Meridian departments and tenant activity will comply by writing and submitting required procedural documents for approval.

NASMERINST 5100.17
17 MAR 1985

Safety Procedure No. 3

SUBJECT: Essential Personnel.

PURPOSE: To define essential personnel for applications during hazardous or "safety critical" operations.

I. SCOPE

This procedure states the application of personnel limitation to reduce possible catastrophic incidents.

II. GENERAL

Essential personnel are workers who contribute directly to specific operations or support equipment and whose presence is mandatory for completion. Safety and quality assurance employees/service members shall be considered essential personnel.

III. RESPONSIBILITY

The immediate supervisor/foreman will support the policy of essential personnel.

IV. INTERPRETATION

When essential personnel are identified in a process plan, or are deemed necessary by the Occupational Safety and Health Office, the supervisor/foreman will ensure their implementation.

Safety Procedure No. 4

SUBJECT: SAFETY MONITORS

PURPOSE: To provide guidelines for implementation of ongoing safety monitor program, and promote employee/service member participation in safety activities, and recognize individual employee interest and capability in safety matters.

I. SCOPE

This procedure will be implemented by each NAS department and tenant activity.

II. GENERAL

A. PLAN

1. The NAS Meridian Safety and Health Program has the single purpose of performing required activities without accident, injury, or occupational illness to employees/service members. The key to success is concerned labor and management. While supervisors must be production oriented, they will insure their employees work safely.

2. Safeguarding the safety and health of workers must conform to the requirements of OPNAV Instruction 5300.23B and the Occupational Safety and Health Act (OSHA). OSHA imposes legal liability upon employers to conform to certain standards in dealing with dangerous equipment and processes.

B. RESPONSIBILITY

1. A safety representative from the Occupational Safety and Health Office will be responsible for implementing, directing, and maintaining the safety monitor program. Personnel assigned safety monitor duties will be audited to ensure qualifications.

2. Department heads and tenant activities will be responsible for assignment of qualified safety monitors. They will delegate authority and assign responsibility for safety monitors to perform their duties and exert managerial/supervisory action(s) to ensure responsible employees/service members are receptive to safety monitor recommendations.

C. SELECTION

1. Safety monitors should be technically qualified, possess excellent oral and written communication skills, and express a desire to participate in the program. Department heads and tenant activities will notify the Manager, Occupational Safety and Health, in writing of initial safety monitor assignments and any subsequent changes.

2. Safety monitor training will be provided by the Occupational Safety and Health Staff. Lectures/briefings, explaining safety monitors duties and responsibilities, will be included during initial training. Additional training will be provided as deemed necessary by the Occupational Safety and Health Office or as requested by the Department head/tenant activity.

D. DUTIES AND RESPONSIBILITIES

1. Safety Monitors will:

a. Promote all phases of the safety program within their department/shop. They will present special promotional material to and instill proper safety attitudes in employees/service members. Provide leadership in integrating safety into all job functions.

b. Establish and maintain a branch/shop self-inspection program. They shall conduct periodic, unannounced inspections of their shop and equipment to identify and eliminate potential hazards. Safety monitors will bring any hazardous conditions to the attention of their department head/tenant command for corrective action.

c. Periodically monitor hazardous and routine operations performed by personnel within their immediate area of responsibility. They will ensure operations are being performed per established NAS Meridian procedures and report any hazardous conditions or unsafe operating procedures to their department head/tenant commander and the NAS Occupational Safety and Health Office for resolution.

d. Ensure adequate safety equipment is available and in good condition. They will periodically check installed safety equipment (eye wash fountains, safety showers etc.) to ensure in proper working order. Additionally, safety monitors will ensure portable safety instruments, protective clothing, and other safety equipment is available and used during pertinent operations.

e. Assist the Occupational Safety and Health Representative in conducting safety inspections in their areas of responsibility.

f. Attend safety related meetings called by the Manager, Occupational Safety and Health, and coordinate with their respective department head/tenant commander.

E. SOURCES OF HELP

1. The following guidelines are available to personnel assigned duties as safety monitors.

17 MAR 1977

- a. All activities of the safety monitor will be coordinated through their respective department head/tenant commander.
- b. The safety library, located in the Occupational Safety and Health Office, is available for all safety monitors.
- c. The Safety staff will be available for assistance.

III. RESPONSIBILITIES

Each worker/supervisor will be familiar with the hazards of their occupation. Applicable safety procedures are generally accepted industrial work practices. They provide an additional set of eyes and ears for safety within the industrial work area.

IV. INTERPRETATION

All station departments and tenant activities will implement this safety monitor program to provide additional input into the safety program.

NASMERINST 5100.17
17 MAR 1986

Safety Procedure No. 5

SUBJECT: BUDDY SYSTEM

PURPOSE: To establish requirements for and to identify the conditions/operations which necessitate implementation and maintenance of a buddy system.

I. SCOPE

The buddy system will be used by all Naval Air Station Meridian departments and tenant activities whenever hazardous operations are being conducted such as working with hazardous materials/systems or working in an isolated, unmonitored area.

II. GENERAL

A. PLAN

A buddy system is required to ensure when an accident does occur, proper contingency/emergency actions and notifications are performed to limit personal injury or property damage. Operation of high hazard systems which will require using a buddy system include but not necessarily limited to the following:

1. Maintenance activities performed on flammable and/or pressure systems.
2. Welding/cutting/spark producing operations conducted in a fuel area, flammable gas area, or any space not designated as a fixed welding area by the NAS Meridian Fire Department.
3. High voltage operations.
4. Heavy hoisting/lifting operations.
5. Ordnance/pyrotechnics handling and testing operations.
6. Low pressure gas - high volume operations.
7. Energized electrical systems.

B. REMARKS

Other operations which cannot be classified as peculiar to a system will also require the "buddy system". These include: confined space entries, high work involving the use of personnel baskets and/or safety belts/harnesses, chemical handling, explosives handling, and radiological testing.

C. PRECAUTIONS

17 MAR 1985

1. All precautions pertinent to the attendant hazards, e.g., liquid oxygen, liquid nitrogen, or high voltages are presented in the applicable safety procedures.

2. The number of personnel necessary for buddy system requirements is contingent upon the operation to be accomplished; however, in no case shall there be fewer than 2 people performing any hazardous operation.

3. Final determination of personnel requirements will be made by the appropriate department head/tenant commander and representative of Occupational Safety and Health Office. Each type of hazardous operation will be considered a separate entity.

4. Where the buddy system is required, assigned personnel will accompany the individual(s) who are performing the hazardous operation and remain in close proximity to the operation/test. to provide assistance as required, i.e., personnel in an adjacent building DOES NOT satisfy buddy system requirement.

5. Requirements for safety equipment are listed in the specific safety procedure which identifies the dangers associated with each hazardous material/operation. Any additional safety equipment requirements will be identified by the safety representative during the operating procedure process plan review.

6. A written operating procedure/process plan, approved by a member of the safety staff, will exist for all hazardous operations and be reviewed by the responsible supervisor with all concerned personnel prior to starting the operation. Buddy system requirements will be thoroughly explained.

7. Operating procedure/process plan will incorporate applicable portions of this safety procedure in appropriate chronological order.

8. Deviation from operating procedure/process plan will require approval of the responsible supervisor, Public Works Engineer, and representative of the Occupational Safety and Health Office, prior to performing the deviation. The operating procedure/process plan will be "RED LINED" to reflect deviation being performed.

9. "Safety critical" shall be imprinted on the cover sheet of the operating procedure/process plan by a member of safety staff.

III. RESPONSIBILITIES

Each Manager/Foreman/Supervisor will be familiar with this procedure and required implementation.

IV. INTERPRETATION

The buddy system will be used whenever hazardous condition exists that cannot be engineered safe or inert. This is necessary to provide workers with the safest possible work environment .

Safety Procedure No. 6

SUBJECT: Emergency Vehicles

PURPOSE: To provide the minimum requirements for safe designation and recognition of emergency vehicles.

I. SCOPE

The procedure covers all emergency vehicles operated by NAS Meridian and tenant activities, which includes subcontractor employees.

II. GENERAL

Rotating Beacons will be installed on motor vehicles used during emergencies and/or for security functions as follows:

A. RED ROTATING BEACONS

Fire and Medical motor vehicles will be equipped with red rotating beacons. Beacons will be used only during emergency (or suspected emergency) conditions.

B. BLUE ROTATING BEACONS

Security vehicles will be equipped with blue rotating beacons. Beacons will be used only for law/security enforcement, emergency conditions, and escort functions.

C. AMBER ROTATING OR FLASHING BEACONS

Emergency maintenance or repair vehicles and those maintenance vehicles used to perform work along and on roadways will be equipped with amber rotating or flashing lights. The lights will be used only for emergency response and/or while performing work along roadways or traffic areas.

III. RESPONSIBILITY

Only authorized licensed employees/service members will operate an emergency vehicle.

Safety Procedure No. 7

SUBJECT: Lock and Tag Requirements.

PURPOSE: To ensure all NAS Meridian and tenant activities employees/service members are protected from inadvertent or other unauthorized manipulation, operation, or energization of electrical switches/disconnects, fluid valves, control devices, pressure or vacuum systems, or mechanical apparatus during maintenance, repair, testing, inspection, or installation activities. This procedure also provides measures to ensure system monitoring (e.g. pressure indicator) and safety devices (e.g. relief valves) are secured in an operational mode by safety wiring when the system is in normal operating configuration.

I. SCOPE

These requirements apply to all situations where personnel engage in cleaning, repairing, testing, adjusting, inspecting or installing electrical switches/disconnects, fluid valves control devices, pressure vacuum systems, and mechanical apparatus.

II. GENERAL

A. PLAN

Personnel who repair, test, adjust, inspect, or maintain a system or equipment are subject to injury by unknown starting, energization, or activation of that apparatus. Use of lockout devices and lock and tag procedures provides the most practical and positive guard against this type of injury.

B. DEFINITIONS

1. Lockout Device - Mechanism allowing use of padlocks to hold an operating device, such as a switch lever or valve handle, in a safe position. Some switches and valves have lockout devices built in; others require modification on use of special equipment, such as chains, before padlocks can be used.

2. Lock and Tag Procedure - Steps taken to assure equipment controls are locked in a safe position and tags are appropriately placed to provide an immediate alert not to manipulate or energize tagged equipment.

C. EQUIPMENT

Lock and Tag equipment is available from the following sources:

1. Lockout devices and danger tags - from the Occupational Safety and Health Office.

2. Padlocks and chains - drawn from NAS Supply Department.

17 MAR 1988

D. EXAMPLES

Examples of operations requiring use of lock and tag procedures are:

1. Cleaning, oiling or replacing movable machine parts.
2. Replacing, repairing, adjusting, inspecting generator, pumps, valves, regulators, distributing lines, and related equipment operating at systems temperature and/or pressure.
3. Clearing blocked or jammed mechanisms.
4. Working on high pressure steam lines or lines carrying hazardous substances.
5. Inspecting boilers or other pressure vessels.
6. Installing or repairing electrical equipment.

E. DANGER TAGS

1. The standard danger tag will be used for all lock and tag operations by NAS Meridian and tenant activities. (See attachment No. 1)
2. No employee/service member will operate, attempt to operate, or remove danger tag(s) or lock(s) without the approval of the responsible foreman/supervisor (or his designated representative). The person who removes the lock(s) and tag(s) assumes full responsibility for ensuring this action does not create a hazard to personnel or equipment.
3. When it becomes necessary for more than one individual or group, on separate tasks, to assist in securing the same equipment or system, an additional lock and tag will be required for the extra person/group.
4. Failure to enforce or follow these procedures will be grounds for disciplinary action. The nature of the disciplinary action may include admonishment, reprimand, suspension, or separation.
5. Whenever possible, lockout devices will be used to provide positive, safe working conditions.
6. In the event use of a lockout device is not possible, the Occupational Safety and Health Office will be notified. A safety representative will inspect and authorize use of a danger tag and safety wire in place of a lockout device.

III. RESPONSIBILITIES

A. The foreman/supervisor (or designated representative) responsible for securing and/or working on the system will:

1. Ensure all lockout equipment and tags are collected and secured.
2. Have the necessary devices, equipment, and danger tags readily available for use.
3. Understand the tasks to be accomplished.

B. Employees/service members are primarily responsible for their on the job safety. Each employee must be alert to the progress and condition of work being done around them. They must know and follow the lock and tag procedures.

C. The foreman/supervisor (or designated representative) making arrangements to secure and/or work on a system unit must:

1. Alert user of the machine, unit, or circuit and/or the supervisor of the area, in which the equipment is located, prior to initiating lock and tag procedures on equipment/systems affecting schedules.

D. Individuals assigned to lock and tag equipment will:

1. De-energize or turn off the point of operational control. (Warning: Do not pull disconnect switches while they are under load because of the possibility of arcing or explosion).

2. Turn off the main power/energy controls (switches, breaker, or valves).

3. Snap his/her lock on the control lever or lockout device (multiple lock adapter) after the switch has been opened or the valve closed. If more than one worker is performing a task requiring system shut down, each employee/service member will put a lock and tag on the lockout device.

4. Attach tag containing his/her name, type of work being done, and his/her foreman's/supervisor's name and phone number.

5. Try the disconnect switch or valve to ensure it cannot be moved to "on" position.

6. Remove padlock and tag when they complete the job and notify his/her foreman/supervisor.

E. The foreman/supervisor will hold the worker accountable for each padlock and key issued to them. Loss of a padlock must be reported immediately to the respective foreman/supervisor.

F. Components (relief valves, pressure indicator, regulators), essential to safe operation and monitoring of a system, will be secured in the required operational position by safety wire. This includes components supplying or supporting safety and monitoring devices, such as piping to a relief valve.

NASMERINST 5100.17

17 MAR 1966

IV. INTERPRETATION

Failure to comply with lock and tag and safety wire procedure by any individual is considered a serious violation of NAS Meridian policy and will result in disciplinary action.

17 MAR 1966

Safety Procedure No. 8

SUBJECT: Flame Permits

PURPOSE: To establish safety requirements for all welding/cutting/burning and other flame or spark producing operations. To prescribe procedures for obtaining flame permits to perform such operations.

I. SCOPE

This procedure applies to all welding, cutting, brazing, and other "hot work" performed at NAS Meridian except, those areas designated as fixed authorized welding areas.

II. GENERALA. PLANS

1. Operations involving flame/spark/heat, as in welding, cutting, and burning, present a direct injury causing hazard to personnel and equipment and/or materials damage.

2. An Additional danger to personnel, equipment, and materials is working with flame/spark/heat in normally hazardous areas, such as fueling areas and high pressure gas. Great concern must be given to the secondary effects upon personnel, equipment, and materials in these related areas where flame permit operations are taking place.

3. Fire extinguishers will be available during a welding, cutting, spark producing, or heat generating operation when water is not obtainable or a suitable extinguishing agent. Selection of the type of fire extinguisher(s) during the operation will be based on the following:

TYPE OF POTENTIAL FIREEXTINGUISHING AGENT

Class "A" - combustibles (wood, paper rubbish, grass etc.).

Water, foam, multi purpose dry chemical.

Class "B" - volatile flammables (oil, grease, paint, etc.).

CO₂, dry chemical, foam, Halon.

Class "C" - electrical

CO₂, dry chemical, halon.

Class "D" - combustible metals

dry powder. Several different dry powders may be used but their effectiveness depends on the material burned.

B. PRECAUTIONS

1. The foreman/supervisor in charge of a welding, cutting, spark producing, or heat generating operation must know the exact location of the nearest telephone and emergency numbers used in event of an crisis condition.

2. Combustibles will be removed from the immediate vicinity of open flames/sparks/heat work to negate or greatly reduce the possibility of fire resulting from sparks, hot slag, or flame. Materials that cannot be removed, will be adequately covered with nonflammable blankets.

3. Prior to starting an operation cables from electric welders and similar type equipment will be checked to insure serviceability and grounding cable(s) is/are adequately connected.

4. Nonflammable blankets will be used to negate or greatly reduce potential fire hazards during operations producing hot slag, sparks, etc. This is of particular importance during welding or cutting operations performed overhead.

5. Areas in which welding, cutting, spark producing or heat producing operations were performed will be checked a minimum of two times by the NAS Fire Department. After operations have been completed, immediately check the area and again 15 minutes later. This is to detect smoldering fires gone unnoticed during the operation.

6. Adjacent workers will be protected from welding "flashes", especially operations involving heli-arc. Flash panels will be required in congested personnel areas.

7. Welding or cutting on lines containing pressure is prohibited. Operational requirements may dictate blanket purge pressures be maintained. Slight inert purge(s) may be maintained during open system work for cleanliness but shall not exceed an audible "hiss" level.

8. Welding, cutting, spark producing, or heat generating operations are prohibited within 100 feet of a fuel storage area (without prior safety approval), liquid oxygen system, or transfer piping. An oxygen analyzer check will be required to ensure absence of an oxygen rich atmosphere in the work area prior to issuance of a "flame permit"

a. Standard welding/cutting safety requirements will be followed, if applicable i.e., nonflammable blankets, cable grounding, protection of adjacent workers from arc, etc.

b. Heat/spark/flame work WILL NOT be performed on storage vessels or lines containing fuel.

c. Heat/spark/flame operations will be permitted on fuel storage vessels or lines only after verification they are free of liquids and contained atmospheres are inert. Use of portable gas (vapor) detectors to verify lines or vessels are inert is prohibited. Sample analysis by a qualified gas free engineer will be required for verification.

d. Adequate fire-fighting equipment will be in serviceable condition and easily accessible in the work area for emergency use.

e. Prior to starting of heat/spark/flame work, the intended work area will be visually checked by a representative of the NAS Fire Department, who will be authorized to issue flame permits. The Fire Department representative will additionally prepare a written permit (form) and sign and issue to the foreman/supervisor in charge of the heat/spark/flame work to be performed.

f. Flammable combustible gas pressure systems will be inerted prior to heat/spark/flame operating and will require the same precautions listed in paragraphs a through e.

9. A fire watch will be designated for each heat/spark/flame operation. This individual will be responsible for initiating immediate fire fighting action in the event fire occurs during the operation. The foreman/supervisor in charge of the operation may designate an individual in his crew or may request a qualified fireman from the Fire Department.

10. During all heat/spark/flame operations, a charged hoseline will be positioned for easy access of the designated fire watch. In areas without a hoseline capability, fire extinguishers will be provided.

11. All employees engaged in the operation will be briefed on emergency procedures prior to commencement of work (telephone numbers, radios, etc.).

12. Flame permits are the written approval required for all welding/cutting/spark/heat producing operations performed aboard NAS Meridian, except those areas designated as fixed approved in place welding shops.

13. They will be prepared by Fire Department representative.

14. Fire department (issuing agent) will fill in flame permit with required information. Special attention required will be due to peculiarities of work performed or the area in which work is accomplished will be written in by fire department representative.

15. Signature on flame permit by fire department representative is approval for the operation to be conducted, provided all listed precautions are followed.

16. Standard flame permit form will be used by all fire department representatives, NASMER 11320/8 (Rev 1-85).

17. Disposition of copies is as follows:

a. Original will be retained one year by fire department for informational purposes. Fire department will maintain special file on all flame permits requiring fire watch by fire department personnel.

b. Second copy will be placed in visible location at scene of operation to be performed. After operation is completed, second copy will be destroyed by foreman/supervisor in charge of operation.

18. Adequate coordination between foreman/supervisor in charge of operation, operating area supervisor, and fire department representative will be accomplished to avoid conflict of operations from a potential safety hazard.

19. Flame permits issued will be valid for a 24 hour period, to support specific heat/spark/flame operation, as noted on form.

20. Flame permits issued may approve a fixed welding area to be temporarily established for maximum of 7 day period, provided safety requirements have been previously established and do not vary from those noted on form.

21. Flame permits will be valid only when approved by authorized individual and precautions listed on form are taken and complied.

22. Failure of the foreman/supervisor in charge of heat/spark/flame operation to comply with precautions listed on form will invalidate flame permit and are subject to revocation by fire department representative or safety representative.

23. The foreman/supervisor in charge of heat/spark/flame operation may impose more stringent precautions than those listed on form, but may not lessen precautions listed. Authorization to lessen precautions must be obtained from both fire department representative and safety representative.

III. RESPONSIBILITIES

Procedure requires supervisors/foreman to conform with standard policy of obtaining flame permits before performing "Hot Work" in areas other than authorized designated fixed welding areas. This procedure requires foreman or supervisors of "Hot Work" operations to maintain current permit and adhere to standards previously stated.

IV. INTERPRETATION

Whenever "Hot Work" performed in areas, other than designated welding areas, this procedure will be followed to as minimal requirements for operation.

Concurrence:

Fire Chief

Enclosure (1)

17 MAR 1986

Safety Procedure No. 9

SUBJECT: CONFINED SPACE ENTRY

PURPOSE: To identify hazards involved, precautions to be observed, operating procedures and safety equipment required for confined space entry operations.

I. SCOPE

This procedure purposely broad in scope, may not be applicable to all confined space entries. Each entry will be evaluated on an individual basis. The planning phase shall include the development of a specific process plan which will incorporate all applicable requirements.

II. DEFINITIONS

A. Confined Space - A space having limited openings for entry and exit, unfavorable natural ventilation and may contain or produce dangerous air contaminants, and those not intended for continuous employee occupancy. Confined spaces include but are limited to: storage tanks, process vessels, pits, vats, degreasers, boilers, sewers, tunnels, underground utility vaults, and pipelines.

B. Lower Explosive Limit (LEL) - The lower limit of flammability of a gas or vapor at ordinary ambient temperatures, expressed in percent of the gas or vapor in air by volume.

C. Oxygen Deficiency - An atmosphere which contains less than 20.0% oxygen.

D. Oxygen Enriched - An atmosphere which contains greater than 22.0% oxygen.

III. GENERAL

A. Access to work area during a confined space entry operation will be limited to essential personnel (See Safety Procedure No. 3). Personnel limitations will be established by the responsible supervisor.

B. All confined space workers and designated standby/rescue personnel will be currently certified for confined space entry.

C. Entry into oxygen deficient or oxygen enriched atmospheres is strictly prohibited. An acceptable oxygen level must be confirmed by a safety representative, prior to entry. Periodic checks, as required, will be outlined in the process plan.

D. Entry into atmospheres with internal temperatures less than 40° or greater than 120° require specific approval of the Safety and Occupational Health Manager.

E. Entry into atmospheres containing more than 20% of the LEL for any gas or vapor is prohibited. Combustible gas monitoring requirements will be established on each process plan.

F. Standby personnel, as required by the applicable process plan, will remain alert and in continual contact with confined space entrants. (Under no circumstances will a standby person enter a confined space in a rescue attempt, unless another standby member is present to offer assistance and summon help as needed.)

G. Rescue personnel, as required by the applicable process plan, must be adequately trained in rescue techniques and be available at all times during the entry.

H. A confined space entry permit, NASMER 5100/31 (Rev 2-86) will be completed by the responsible supervisor and attached to the process plan for approval. The approved permit will be posted in a conspicuous place, as near the entrance as possible, and will be valid for the duration of entry. Copy of each permit will be maintained in the Safety and Occupational Health Office.

I. Routine valve pit and manhole entries will be considered service or maintenance tasks and are exempted from the requirements of this procedure. HOWEVER, the atmosphere must be verified safe by a representative of the Safety and Occupational Health Office, prior to entry.

IV. PROCESS PLAN REQUIREMENTS

A. A detailed process plan, NASMER 5100/51 (3-86) must be submitted by the responsible supervisor to the Safety and Occupational Health Officer and to Public Works Engineering for approval. This plan must be received by each of the above mentioned offices NO LATER THAN 24 hours prior to scheduled entry.

B. All confined space entry process plans are considered "Safety Critical" and will be so stamped by a safety representative.

C. The process plan will incorporate all applicable portions of this procedure and additional measures as may be necessary to ensure the safety of involved personnel.

D. A deviation from the process plan will require approvals of the responsible supervisor, and a representative, from both the Public Works Engineering and the Safety and Occupational Health Office.

E. Each process plan submitted to the Safety and Occupational Health Office must have a completed permit (Attachment A) attached.

F. The process plan must be written by a qualified individual with a thorough technical knowledge of the confined space to be entered.

17 MAR 1988

G. Each process plan must include:

1. Detailed work description.
2. List of equipment/tools to be utilized.
3. Entry preparation steps taken to ensure a safe internal atmosphere.
4. List of hazardous processes to be conducted within the confined space. (i.e. hot work, use of chemicals, etc.).

V. SAFETY/RESCUE EQUIPMENT

A. Safety and Rescue Equipment required for a specific entry operation will be listed on the confined space entry permit by a safety representative.

B. The responsible supervisor will secure and return this equipment for entry and ensure it is in proper working condition.

VI. RESPONSIBILITIES

A. Occupational Safety and Health Office/Public Works Engineering.

1. Safety Representative.
2. Engineering Representative.
 - a. Review confined space entry process plans and permits, modifying as necessary to ensure applicable safety requirements have been met.
 - b. Ensure the confined space atmosphere is safe for entry, identifying corrective measures to be implemented to obtain/maintain safe conditions, as necessary.
 - c. Monitor confined space entry operations to ensure compliance with safety, ASME, and/or building codes.
 - d. Ensure all confined space entry participants are briefed in proper usage of required safety/rescue equipment.

3. SUPERVISORS

- a. Obtain and complete confined space entry permit and attach to process plan for approvals.
- b. Ensure detailed, accurate process plan is written and submitted to Occupational Safety and Health Office and Public Works Engineering no less than 24 hours prior to the scheduled entry.

NASMERINST 5100.17
17 MAR 1985

- c. Secure safety and rescue equipment listed on the permit.
- d. Ensure all personnel participating in the entry, including standby and rescue personnel, are currently certified for confined space entry.
- e. Assist the Occupational Safety and Health Representative in identifying potential hazards associated with the operation.
- f. Ensure personnel participating in the entry are thoroughly briefed in all aspects of the entry, including detailed descriptions of tasks to be performed and contingency plans.
- g. Obtain equipment and perform operations necessary to ensure a safe atmosphere within the confined space.

B. CONFINED SPACE ENTRY PARTICIPANTS

1. All confined space entry participants will ensure their work is conducted per this procedure.

17 MAR 1986

Safety Procedure No. 10

SUBJECT: AUTOMOTIVE, CONSTRUCTION AND WEIGHT HANDLING EQUIPMENT.

PURPOSE: This procedure is designed to provide the minimum safety requirements for the use, care, and maintenance of automotive, construction and weight handling equipment.

I. SCOPE

This procedure pertains to the use, care, and maintenance of all automotive, construction, and weight handling equipment aboard NAS Meridian and tenant commands utilizing NAS equipment.

II GENERAL

A. All traffic instructions and controls established by the NAS Security Officer, will be obeyed.

B. Operators of U.S. government motor vehicles will be licensed in accordance with the NavFac P-300, Management of Transportation Equipment, and NAS Meridian Instruction 11240.1G, Policies and Procedures Regarding Transportation Equipment and Operations.

C. The Public Works Officer will ensure all motor vehicles available for dispatch are kept in a safe and reliable condition.

D. All motorized equipment will be carefully inspected at the beginning of each shift by the operator of the equipment.

E. All motor vehicles being turned in to the motor pool or for preventive maintenance will be inspected for unreported damage by an appointed representative of the Public Works Department.

F. Equipment will never be refueled inside of a building.

G. Equipment will never be refueled while the engine is running or in the immediate vicinity of open flames or other sources of ignition.

H. Smoking is prohibited within 50 feet of refueling operations.

I. Cabs, platforms, running boards, steps, etc., will be kept free of debris, oil, grease, etc.

J. Cranking of all gasoline engines will be done by operators of the equipment or authorized maintenance personnel.

K. Before placing any equipment in motion, operators will ensure all other personnel are safely clear of such equipment.

17 MAR 1986

L. All forklift trucks and mobile cranes will be equipped with an appropriate type of fire extinguisher. Fire extinguishers will be checked daily by equipment operators for proper charge. Discharged extinguishers will be immediately replaced by a Public Works representative.

M. Under no circumstances will motorized equipment be operated by personnel under the influence of medications or intoxicants, which reduce alertness or otherwise physically incapacitate their performance.

N. All moving parts of motorized equipment will be fitted with effective guards, as necessary. Such guards will remain in place while the equipment is in operation.

O. Safe steps, ladders, catwalks, handholds, etc. will be provided for dismounting and access, as required.

P. Motorized equipment will not be operated in areas where an explosive or flammable hazard may exist, without approval from a representative of the Occupational Safety and Health Office.

Q. Motorized equipment will not be operated in a confined space or other area, where ventilation is not sufficient, to eliminate the hazards of exhaust gases.

R. Motorized equipment will not be left unattended while the engine is running.

S. An effective preventive maintenance program for vehicles/equipment will be implemented by the Public Works Officer to reduce the possibility of vehicle breakdowns.

T. Vehicle maintenance will be accomplished in accordance with Public Works direction, as promulgated by NAS Meridian Instructions and the NAVFAC P-300.

III. OPERATION

A. Operators will be carefully selected and required to have previous experience, good physical condition, excellent driving records, and mental qualifications to meet driving responsibilities.

B. Operators must be familiar with the capacities and limitations of equipment they operate. Each operator will be responsible for safe operation within prescribed limitations.

C. Operators will be responsible for selection of safe parking areas and security of their vehicles and contents.

17 MAR 1965

D. Operators will fully utilize safety equipment in the vehicle, seat belts, etc. Additionally, they will be responsible for ensuring all passengers in the vehicle are wearing seat belts, before placing the vehicle in motion.

E. The driver and no more than one passenger will occupy the front seat, when the gear shift lever is mounted on the floor.

F. All doors will be shut during the operation of motor vehicles. Personnel riding in back of trucks must be seated and no part of a person's body may extend outside the vehicle. IT IS STRICTLY PROHIBITED TO TRANSPORT PERSONNEL IN THE BACK OF A DUMP TRUCK.

G. Traffic accident instructions are contained in NASMERINST 5100.15, Chapter No. 21.

IV. VEHICLE SAFETY INSPECTIONS

A. The Public Works Officer is responsible for assuring all safety devices are operable before vehicles/equipment is dispatched. Defective safety items will be justification for "DEADLINE" until replacement or repair on vehicles/equipment is accomplished.

B. The operator of a government furnished vehicle is also responsible for assuring all safety devices are operable, before moving a motor vehicle/equipment from the pool. Those items classed as safety significant for proper vehicle operation are, but not necessarily limited to the following:

1. Brakes - Brakes and related systems will be in proper working order.
2. Headlamps - A minimum of two operative headlights will be required on all vehicles/equipment. Headlamps will be operative on both high and low beam and will be properly aligned.
3. Taillamps - A minimum of one operative tail lamp will be required on all motor vehicles/equipment. Taillamps will be clearly visible at all times.
4. Stop Lights - A minimum of one operative stop light will be required on all motor vehicles/equipment. Stop lights will be clearly visible at all times.
5. Steering Wheel and Alignment - Steering wheel and alignment will be properly maintained.
6. Tires - Tires will contain at least 1/16 inch tread depth, proper sidewall condition, and be free of disqualifying defects.

17 MAR 1965

7. Windshield Wipers - Windshield wipers will be operative and capable of clearing water from the windshield.

8. Reflectors - Vehicle reflectors, if required, will be readily visible and securely mounted.

9. Glass - Vehicle glass will not be in such condition as to interfere with a driver's vision.

10. Horns - Horns will be operative, capable of emitting an audible sound.

11. Turn Signals - Vehicle turn signals will be operative before a vehicle is moved.

V. SELF PROPELLED EQUIPMENT

A. When equipment interferes with highway traffic, appropriate signs, barricades, or flagmen will be used.

B. Equipment will not be left unattended with engines running.

C. Equipment left overnight will be locked, braked, and wheels blocked, as necessary to prevent accidental or unauthorized movement of equipment.

D. Personnel will never mount/dismount on or off moving equipment.

E. Riding on equipment is prohibited, unless a seat is provided for the passenger with seat belt attached.

F. Job conditions will determine safe operating speeds. Operators will never operate equipment at speeds which cannot be readily controlled.

G. Personnel will not be permitted to ride on tow or drawbars between equipment.

H. When transporting equipment by trailer, the following will apply:

1. Clearance heights along proposed routes of travel will be checked and surveillance maintained during travel to prevent striking low hanging or other objects.

2. Overhanging portions of trailer loads will be marked by warning flags or lights.

3. Escorts will be provided, as necessary for wide and/or high loads.

4. Equipment will be adequately secured to the trailer to prevent displacement of such equipment during transport.

17 MAR 1986

I. Draw/tow bar trailer pulls being made on highways and station roads will require trailers be equipped with permanently attached safety chains of adequate size.

J. Trailers towed at night must be equipped with adequate lights (tail, stop, and directional indicators).

VI. INTERPRETATION

Automotive means any motorized vehicle/equipment subject to established vehicle traffic and control regulations.

VII. RESPONSIBILITY

Development, implementation, and enforcement of traffic instructions and controls is the responsibility of the NAS Security Officer.

NASMERINST 5100.17

17 MAR 1966

Safety Procedure No. 11

SUBJECT: LOW VOLTAGE ELECTRICAL OPERATIONS.

PURPOSE: To outline hazards involved, safety equipment required, safety precautions to be observed by personnel, and operating procedure requirements.

I. Scope

This procedure will be followed by all NAS Meridian and tenant activities working with or around voltages less than 440 volts.

II. GENERAL

A. Hazards

1. Shock is the greatest hazard to be encountered in electrical operations. If a workman sustains severe shock, cardio-pulmonary resuscitation will be administered (as necessary) immediately and medical aid summoned. Although a shock may not be severe enough to stop breathing, it may cause bumping into or against something. When performing this work, the workman must exercise extreme caution to avoid contact with a "hot" line or bus bar.

2. Another hazard caused by electrical equipment and/or operations is an ignition source for fires. Arcing which causes overheating and short circuits, which cause spark over-loads or induction of RF voltages, can allow flammable materials to be ignited.

3. Arcing can cause overheating to the extent molten metal from the wire of cable may spray, which can result in burning the workman.

B. Precautions

1. All electricians will be qualified to administer cardio-pulmonary resuscitation (CPR).

2. All personnel working on low voltage operations will be qualified helpers or electricians. All new employees will be accompanied by a qualified electrician, until they receive adequate on-the-job training and experience. The helper (standby person) shall be able to:

a. Remove a person from an energized circuit or de-energize the circuit, as necessary.

b. Administer CPR and know the location of the nearest phone and all emergency numbers.

3. All electrical equipment will be periodically inspected and maintained by qualified personnel. Inspection intervals shall be determined by the type of equipment and the severity of conditions under which used. All necessary repairs will be made by qualified personnel.

4. During repair or modification to existing circuits, all electrical components in the affected area should be properly de-energized until work is complete. If de-energizing a circuit would cause undue hardships on the affected area, and a power outage cannot be arranged, then the responsible cognizant supervisor can allow work to be performed on "hot" components if B(10), B(11), B(12), and B(13) are followed. Suitable test will be made prior to energizing to ensure safe operations.

5. When opening circuit breakers or disconnects, the electrician will stand to one side operating the mechanism. Lock and tag in accordance with Safety Procedure No. 7.

6. Switches, fuses, and automatic circuit breakers will be plainly marked, labeled, and arranged.

7. An electrical switch - lockout procedure will ensure protection for individuals in contact with uncovered live busses, fuses, or contacts having sufficient voltage to cause injury.

8. Danger signs will be posted to prevent personnel from making accidental contact with uncovered live busses, fuses, or contacts having sufficient voltage to cause injury.

9. Electrical distribution equipment, including panel boards, safety switches, and control devices will be readily accessible for operation or inspections. Clear all obstacles and never resort to portable ladders, chairs, etc.

10. Safety glasses or face shields will be worn, when electricians are testing and/or conducting maintenance work with energized circuits.

11. Only non-conductive ladders will be used for work on electrical equipment.

12. Should it is necessary to work in close proximity to a buss bar or other energized device, which cannot be de-energized, the energized components will be covered with rubber blankets to reduce the potential damage caused by dropping of metal objects (tools) onto these components.

13. Before any worker uses a portable electrically powered tool, he will check to see if it is properly grounded. Proper grounded plugs and/or attachments will be provided and used to prevent an employee becoming the ground for stray current.

C. Safety Equipment

1. Leather gloves.
2. Safety belts harnesses as required.
3. Safety lanyards as required.
4. Hard hats
5. Rubber blankets or mats.
6. Safety glasses or face sheilds.
7. Non-conductive ladders.
8. Volt-ohm meter
9. Voltage tester.
10. Lockout devices.
11. Danger tags.
12. Chains, as required.
13. Padlocks, as required.

D. Operating Procedure Requirements

1. A written operating procedure, approved by the Public Works Engineering and the Occupational Safety and Health Officer, for low voltage electrical operations requiring work on energized circuits, will be in existence and reviewed by the supervisor prior to starting that operation.
2. The operating procedure will incorporate all applicable portions of this safety procedure in appropriate chronological order.
3. The operating procedure will include a hazards evaluation of the operation to be performed and a contingency plan pertinent to work operation to be conducted.
4. Deviation from the operating procedure will require approvals of the Public Works Engineering and a Safety and Occupational Health Officer representative as well as, the responsible supervisor, prior to performing the deviation. The operating procedure will be "REDLINED" to reflect deviation performed.
5. "Safety Critical" will be stamped on the cover sheet of the procedure by the Occupational Safety and Health Office representative.

17 MAR 1993

III. RESPONSIBILITY

Each worker/supervisor working with/around low voltage electricity will become familiar with this safety procedure. All electricians must be aware of the potential hazards and necessity of safe work practices, safety equipment, and the need to follow stated requirements of this procedure.

Reviewed

Approved/Disapproved

Public Works Engineering

Safety Procedure No. 12

SUBJECT: HIGH VOLTAGE ELECTRICAL OPERATIONS (440 VOLTS AND ABOVE)

Purpose: To outline hazards involved, safety equipment required, safety precautions to be observed by personnel, and operating procedure requirements.

I. Scope

This procedure will be followed by all NAS Meridian and tenant activities who work with or around high voltage electrical operations.

II. General

a. Hazards

(1) Shock is the greatest hazard to be encountered in electrical operations. If a workman sustains severe shock, cardio-pulmonary resuscitation will be administered (as necessary) and medical aid summoned. Although a shock may not be severe enough to stop breathing, it may cause a fall or cause bumping into or against something. When performing this work, the workman must exercise extreme caution to avoid contact with a "hot" line or Buss Bar.

(2) Another hazard caused by electrical equipment and/or operations is an ignition source for fires. Arcing causes overheating and short circuits, cause spark, overloads, or induction of RF voltage which allow flammable materials to be ignited.

(3) Arcing can cause overheating to the extent molten metal from the wire or cable may spray, which can result in burning the workman.

(4) Severe burns may also be suffered, causing shock, if a worker who is not grounded (such as in bucket truck operations) comes in contact with high voltage components.

(5) Exposure to high concentrations of askarels (inserting liquid in transformers) vapors can cause irritation of the eyes, nose, throat, and upper respiratory tract.

b. Precautions

(1) All electricians will be qualified to administer cardio-pulmonary resuscitation (CPR).

(2) Only qualified certified linemen/electricians will be authorized to install and maintain electrical facilities and power lines.

(3) All electrical equipment will be periodically inspected and maintained by qualified personnel. Inspection intervals shall be determined by the type of equipment and the severity of the conditions under which used. All necessary repairs will be made by qualified personnel.

(4) Operators and technicians will not attempt to adjust any part of electrical or electronics equipment when there is a possibility of receiving injuries from unprotected high voltage components. In special cases, where equipment must be adjusted in the presence of high-voltage potential, it will be done when authorized by applicable directives.

(5) Live parts of wire and equipment will be effectively guarded to protect all persons or objects from harmful contact. Transformer banks, and rooms or spaces containing high voltage equipment will be arranged with fences, screens, partitions, or walls. This is to prevent entrance of unauthorized persons or interference by them with equipment inside. Entrances, not under constant observation will be kept locked. Signs indicating danger and prohibiting entrance by unauthorized persons will be displayed at entrances.

(6) The department supervisor will be responsible for training personnel in code requirements and safe practices, including procedures for safe clearances. Construction and maintenance work, both on new and old operational transmissions and distribution lines circuits, will be done only by workmen who qualify for specific types of work and maintain strict compliance with safety requirements prescribed in the codes.

(7) An electrical switch-lockout procedure will ensure protection for individuals working on the equipment affected. (see Safety Procedure No. 7).

(8) At all times the individual in charge will ensure access to the work area is limited to authorized personnel during hazardous operations.

(9) Switches, fuses, and automatic circuit breakers will be plainly marked, labeled, and arranged in order.

(10) No lineman will attempt to do work on a pole before fastening his safety belt. When two linemen are to work on the same pole, the first will get in working position with his safety belt fastened, before the second lineman ascends the pole.

(11) All poles will be inspected before climbing to accomplish line work. If they appear rotten, weak, or loosely bedded, poles will be piked or otherwise made safe before climbing.

(12) When working on a pole, the lineman will complete all work on one wire before going to another. At no time will work be performed on two lines simultaneously.

(13) The "buddy system" (Safety Procedure No. 5) will be used at all times when working with voltages of 440 volts and above. The "buddy system" is defined as: one qualified electrician and one stand-by person. The stand-by person will be qualified to handle any emergency situation. Examples are:

(a) Removing a victim from an energized circuit or de-energize as the situation requires.

(b) Remove victims from poles and administer CPR to sustain life functions.

(c) Be aware of the location of the nearest telephone and know emergency numbers.

(14) When opening primary disconnects or cut-outs, the lineman will turn his head to eliminate the danger of being injured by the arc.

(15) All operations, involving hot or potentially hot circuits or lines, will be performed with the proper insulated tools.

(16) After de-energizing a circuit or power lines and checking for voltage, the system will be grounded at both sides of the work area.

(17) Personnel will avoid with any transformer askarels. Use of porous gloves, that can absorb and retain askarels, is to be avoided. Resistance gloves and aprons of the neoprene, polyethylene, or flourelastomer type will be used if contact is unavoidable. In cases of spillage on clothing, it will be removed as soon as practical, skin washed, and clothing laundered.

(18) Safety glasses, with side shields or face shield, will be worn when handling askarels. Eyes exposed to liquid askarel will be irrigated immediately with large quantities of running water for 15 minutes and examined by a physician from the Naval Hospital Branch Medical Clinic.

(19) Should accidental ingestion of an askarel occur, a physician of the Naval Hospital Branch Medical Clinic will be immediately consulted.

(20) If exposures to high concentrations of askarels or its arced products is necessary under emergency conditions, an approved gas mask of the organic canister type, or self-contained breathing apparatus, must be worn. Such exposure will be under the surveillance of other personnel capable of effecting rescue in case of accident.

c. Safety Equipment

(1) Rubber gloves

(2) Leather gloves

(3) Rubber sleeves

17 MAR 1986

- (4) Safety belts (as required)
- (5) Hard hats (approved for high voltage)
- (6) Rubber blankets or mats
- (7) Climber's spikes
- (8) Hot sticks
- (9) Non-conductive ladders
- (10) Grounding cables (to ensure safety in temporary disconnects)
- (11) Volt-ohm meter
- (12) Safety glowstick (for 13.8 KV checks)
- (13) Safety hand lines
- (14) Safety glasses and/or face shields
- (15) Gloves (neoprene, polyethylene, or fluorelastomer type)
- (16) Aprons (neoprene, polyethylene, or fluorelastomer type) for protection against askarels.

d. Operating Procedure Requirements

(1) A written operating procedure, approved by the Public Works Engineer and of the Safety and Occupational Health Officer representative, for work on live high voltage electrical circuits will be in existence. It will be reviewed by the responsible supervisor/technician, who will perform the work, prior to starting that operation.

(2) The operating procedure will incorporate all applicable portions of this safety procedure in appropriate chronological order.

(3) The operating procedure will include a hazardous evaluation of the operation to be performed and a contingency plan pertinent for operation to be conducted.

(4) Deviation from the operating procedure will require the approvals and a representative of the Safety and Occupational Health Officer. The operating procedure will be "redlined" to reflect deviation performed.

(5) "SAFETY CRITICAL" shall be stamped by the safety representative on the cover sheet of the procedure.

17 MAR 1936

III. Responsibilities

a. Each worker/supervisor working with/around high voltage electricity will become familiar with this safety procedure. All electricians will be aware of the potential hazards and the necessity of safe work practices, safety equipment, and need to follow the stated requirements of this safety procedure.

Reviewed
Approved/Disapproved

Public Works Engineering

Safety Procedure No. 13.

SUBJECT: WAREHOUSE AND STORAGE

Purpose: This procedure is designed to provide the required safety precautions for warehousing and storage activities.

I. Scope

This procedure covers all warehousing and storage activities conducted by NAS Meridian military and civilian personnel.

II. General

a. Ordinance Items will not be stored in the warehouse complex, or unloaded, or otherwise handled by warehouse personnel. They will be immediately routed to the requestor.

b. Fire is a potential hazard in any warehouse and storage activity. Supervision will ensure a vigorous and effective housekeeping program is implemented in all storage areas to reduce the possibility of fire.

c. Packaging - All items to be stored or warehoused will be properly packaged. All items of any potentially hazardous nature will be properly identified, so they can be handled and stored with necessary precautions and procedures.

d. Storing: All stores will be handled by qualified personnel using only approved equipment.

e. Hazardous Materials: A list of all hazardous materials, or potentially hazardous material, in storage will be provided to the Safety and Occupational Health Office. Storage areas will be appropriately marked, and materials stored in easily accessible locations.

f. Storage of Material. Material will be stored so it will not interfere with adequate distribution of natural or artificial light, proper operation of machine or other equipment, use of passageways or traffic lanes, efficient functioning of sprinkler systems, or use of other firefighting equipment.

g. Foundations. Material will be placed on firm foundations, not subject to settling. Weight will be controlled to not overload floors.

h. Wall/Partitions. Materials will not be placed against partitions or walls of buildings, unless the partition or wall is known to be of sufficient strength to withstand the pressure.

i. Stack Height. Material will not be stacked in a manner which makes it unstable.

j. Bags. When storing heavy bagged material, mouths of the bags will be placed inward. The first four end bags of each stack will be cross-tied.

k. Boxes, Crates, and Cartons. Unless specific instructions to the contrary are given loaded boxes and crates will be stacked on the sides with the largest area. Stacks will be effectively cross-tied by suitable means.

CAUTION

Loaded cartons will not be stacked to a height which may cause weight to collapse lower cartons. Cartons will be protected against moisture.

l. Pipe and Bar Stock. Pipe and bar stock normally will be placed on stable storage racks, located so that withdrawal of the material does not create a hazard. Pipe and bar stock will be chocked to prevent rolling.

NOTE

Where storage racks are not provided for pipe and bar stock, the stock will be stored in layers resting on wood strips, with stop blocks fixed on the ends or on metal bars with upturned ends.

m. Cylindrical Objects

(1) Where loaded barrels, drums, large pipes, rolls of paper, or other cylindrical objects are placed on their sides, the stacks shall be symmetrical and stable, with every unit in the bottom row carefully wedged.

(2) Where loaded barrels, drums, or kegs are stacked on their proper ends, two planks will be laid side by side on top of each row before another row is started. Stack height will be limited to proved stability.

n. Chemicals. Containers of chemicals are to be stacked as specified on the container. In the event of no instructions, the NAS Meridian Safety and Occupational Health Office should be consulted.

o. Flammable Products. Flammable liquids and toxic or poisonous liquids will be stored in an approved storage area.

III. Warehouse Storage Procedures

a. All aisles will be clearly marked and kept free and clean.

b. All materials (palletized or unpalletized) will be placed and secured in a safe manner. All pallet loads will be squared to achieve a four-point level top.

c. Crushable containers will have vertical supports places so the weight of the material stored will not be supported entirely by the container.

d. Clearance between sprinkler head and material will be as follows:

(1) Clearance of 18 inches will be maintained for stacks not exceeding 15 feet in height.

(2) Clearance of 36 inches will be maintained for stacks exceeding 15 feet in height.

e. Clearance Below Joist. Rafter, beams, and roof trusses are the same as in the preceding paragraph. A clearance of 18 inches will be maintained around light or heating fixtures. When supplies are stacked above the horizontal level of lower roof truss members or beams, horizontal clearance between supplies and structural members or other installed devices will be 18 inches.

f. Toxic chemicals will be stored in accordance with label instructions. Compatibility of material will be maintained and non-compatible material must be physically protected from mixing in event of leaking.

IV. Materials Handling

a. Gloves will be used to lift and handle objects which have sharp or extremely rough edges. Ensure footing is secure before lifting. Any object too heavy to be carried easily by one person will be carried by two or more persons.

b. Mechanical devices/equipment will be used when loads are too heavy or bulky to be safely carried by hand.

c. Whenever possible, material must be handled on pallets to facilitate stacking and handling. Unpalletized material will be stacked to facilitate safe handling.

d. Clear access to control panels and fire extinguishers will be maintained.

e. Boards/covers removed from crates/boxes will have nails immediately extracted or bent flat to prevent injuries.

f. Eye protection will be worn when cutting and removing metal bands from containers.

g. Used metal bands must be folded into a tight bundle for disposal.

h. Maximum load limits will be posted on all storage racks.

i. When utilizing storage racks, heavy items must be stored on the lower tiers.

WARNING

Rings on fingers can become attached to objects being handled. Do wear jewelry in situations that can result in injury.

V. General Housekeeping and Storing Requirements

a. Sufficient quantity of metal containers with self-closing lids will be provided for disposal of combustible wastes, rags, and other flammable material. The same type containers will be used for storing clean rags and waste for immediate use.

(1) Separate containers--plainly marked metal waste cans, fitted with self-closing lids, will be provided for separate disposal of oil and paint soaked rags, waste paper, shavings, and similar materials. At the close of each shift, containers will be emptied or moved to safe locations outside buildings for scheduled pick up.

b. Supplies of packing materials, kept in shops for immediate use, will be stored in approved containers or neatly stacked.

c. Protruding nails will be removed from all crates, cases, packing boxes, casks, and lumber.

d. When spills occur, they will be cleaned up immediately with approved cleaning materials. Only approved, non-combustible absorbents will be used to dry up spills of flammable materials.

e. Warehouse floors will be kept smooth, clean, and free of obstruction and slippery substances. Floors will not be cleaned with flammable liquids. When cleaning agents are used, adequate ventilation will be provided to remove vapors. Dust, which can explode under certain conditions, will be kept down during sweeping by spreading damp sand or an Underwriter's Laboratories approved sweeping compound over the floor.

f. Not only is spitting on the floor an objectionable practice, but it can also spread disease or become a slipping hazard. Spitting on floors will not be tolerated.

g. Extreme care will be taken to avoid excessive waxing or polishing. Floors that are too slippery are sources of accidents.

h. Operations performed outside of buildings will ensure:

(1) Roofs are kept free of refuse, such as sawdust, shavings, lint, and trash. It could create fire or tripping hazard.

17 MAR 1966

(2) Weeds or other vegetation are be permitted to grow excessively or accumulate in the vicinity of buildings, tanks, tank car unloading, or similar locations.

(3) Areas under loading docks will be kept free of waste materials, scrap paper, and other windborne debris.

VI. Responsibilities

a. This procedure applies to those warehouse and storage activities as interpreted to mean the consolidation and housing of supplies and/or materials to ensure inventory, stock controls, and environmental protection.

NASMERINST 5100.17

17 MAR 1966

Safety Procedure No. 14

SUBJ: WELDING/CUTTING OPERATIONS

Purpose: This procedure sets forth general safe practices to be observed while performing welding/cutting operations.

I. Scope

This procedure applies to all NAS Meridian and tenant activity personnel performing welding/cutting operations.

II. General

a. The five principal hazards to welders are:

(1) Electrical shock burns: The welder is safe only as long as he keeps his body well insulated from his work, electrode, and holder while performing arc welding. Protective clothing and well maintained good quality electrode holders and insulation from grounded surfaces are essential safeguards against electrical injuries.

(2) Fire: Flying sparks, falling slag, hot metal, arcs, and open flame are the major sources of fire in welding. Sparks have been known to travel 35 feet, slag can fall through cracks and openings out of sight, and heat transfer through objects can produce pyrophoric carbonization (charring) on combustible products that lower the products' ignition temperature. A torch flame is approximately 5800°F, and an arc has an approximate temperature of 11,000°F.

(3) Careless handling of gas cylinders, regulators, torches, and hoses. Material handling of cylinders, regulators, torches, and hoses can be an awkward process due to their bulk, weight, and physical characteristics. Not only do the basic requirements of material handling come into use, but it must be remembered they are precision pressure storage and control vessels.

Acetylene - a compound of hydrogen and carbon and:

(a) Four percent mixture of acetylene, air produces, and explosive atmosphere.

(b) If pressures exceed maximum safe working pressure of 15 P.S.I.G., hydrogen and carbon will explosively come apart.

(c) The acetylene tank has a porous filler saturated with liquid acetone which, if allowed to come in contact with the rubber hose, will dissolve it.

Enclosure (1)

WARNING

Do not transport or use acetelyne tanks in a horizontal position or place use demand on the tanks of more than 42 cu. ft. per hour. Transport and use acetelyne bottles in a vertical position (standing) and manifold several bottles together when heavy gas demands are required for heavy cutting.

(d) Leaks can occur if threads, "O" rings, or pressure indicators are damaged.

(e) Oxygen can cause almost anything to burn and also increase the rate of combustion. Several injuries have been recorded after operators used their torch to blow particles off their clothing or when sniffing oxygen to cure a hangover. Produced oxygen saturated clothing has been ignited by cigarettes or sparks.

(4) Radiant Energy: Although ultraviolet and infrared rays cannot be seen, they are very active and powerful and are usually present wherever there is high heat production. Molten metal and the welding flame and arc produce large quantities of these rays (particularly if an inert gas such as helium is present). These ultraviolet and infrared rays can produce a "sunburn" effect on the skin and make the eyes feel like they have sand in them.

(5) Gases, Fumes, and Dust: Adequate natural or mechanical ventilation must be provided to perform general welding/cutting operations. This is necessary because incomplete combustion produces numerous vapors depending upon materials involved. If adequate ventilation is not available, individual respiratory equipment must be used.

(6) Basic Safety Requirements:

(a) Flame permits are required for all burning (cutting) or welding operations accomplished in any area other than an approved welding shop. (See Safety Procedure No. 8)

(b) Welding will not be permitted near compressed gas containers and flammable or explosive material unless coordinated with the NAS Occupational Safety and Health representative.

(c) Acetelyne will not be used at pressures exceeding 15 pounds per square inch. The special T-wrench used to open cylinders will be left in place during welding operations to permit quick shut down in emergencies. Control valves will be unobstructed and immediately accessible to the welder throughout the operation. Both oxygen and acetelyne cylinders will be carefully handled. Cylinders must be secured in an upright position. Flash back arrestors and reverse flow check shall be provided on all (especially when several tanks are manifolded together).

NASMERINST 5100.17
17 MAR 1986

(d) Welding torch hoses will be protected from damage caused by contact with hot metal, open flames, or destructive agents. Hoses will be visually inspected for leaks. An open flame will not be used to test hoses for leaks (use water or a soap solution). Only standard ferrules or clamps will be used to secure hoses to cylinders and torches. Makeshift tape or wire connection will not be permitted. Hoses laid across floors, aisles, and doors will be protected by bridges or other means. Never allow oil or grease on or near regulators, hoses, or torches.

(e) At the end of the day, or when used for the last time during the day, control valves on the oxygen and acetylene cylinders will be closed.

(f) Motor-generator and other electrical welding equipment will be provided with effective equipment grounding circuit in accordance with the provisions of the national electric code.

(g) Whenever cadmium-coated or cadmium-bearing metals, trichloroethylene soaked items (solvent freon), lead, zinc, beryllium, and cyanides (used in hardening steel) are being welded, either natural or forced ventilation with a minimum rating of 250 cubic feet per minute will be present. If local ventilation cannot be supplied and welding is being done in small, confined spaces, the operator will wear an appropriate supplied air respirator and only operators currently certified in confined space entry will enter confined spaces.

(h) Welding operations involving materials of unknown composition(s) are prohibited. When there is doubt as to the composition of the metal(s) or electrodes, metallurgical analysis will be performed prior to proceeding with the welding operation. The NAS Meridian safety representative and/or an industrial hygienist will be consulted for necessary protective measures.

(i) Adequate shields will be provided for welding operations to prohibit welding flash burns to the eyes of other personnel.

(j) Welding/cutting operations must be performed in areas free from combustible material, or protection provided for all decks, overheads, walls, or objects that cannot be moved.

(k) A fire watch will always be present during welding/cutting operations with adequate fire suppression equipment. Do not shut off water supplies to fixed fire protection systems without prior approval of the NAS Occupational Safety and Health Office.

(l) Never permit an acetylene cylinder to be in a horizontal position and never leave pressure on component of the regulator or hose.

(m) When lighting torches, always turn on acetelyne first and ignite the flame. When extinguishing flame, shut off acetelyne first. Loud "pops" are not a sign of a professional welder.

(n) When arc welding, use a metal (copper) block when checking or cleaning an electrode and have the electrode on an adequate hook.

(o) Color shades of filters will be dark enough to protect the welder's eyes, yet light enough for the welder to see his work. The following chart has suggested lens shades:

MANUAL METAL ARC:

1/16, 3/32, 1/8, 5/32 inch electrodes.....	10
3/16, 7/32, 1/4 inch electrodes.....	12
5/16, 3/8 inch electrodes.....	14
Mig welding (nonferrous).....	11
Mig welding (ferrous).....	12
Atomic hydrogen welding.....	10-14
Tig welding.....	12
Open arc (Semi-auto hard face with 7/64 inch core wire).....	10-14
Plasma cutting.....	14
Carbon arc.....	14
Soldering.....	2
Torch brazing.....	3 or 4
Light cutting, up to 1 inch.....	3 or 4
Medium cutting, 1 to 6 inches.....	4 or 5
Heavy cutting, 6 inches and over.....	5 or 6
Gas welding (light), up to 1/8 inch.....	4 or 5
Gas welding (medium), 1/8 to 1/2 inch.....	5 or 6
Gas welding (heavy), 1/2 inch and over.....	6 or 8

(p) Teflon tape must be removed before welding operations commence.

(q) Good housekeeping and hygienic practices are considered necessary for welding/cutting/brazing operations. Eating or storage of lunches will not be allowed in welder's work area.

(r) Do not lift cylinders with electromagnets or drag them.

(s) Personal protective gear for welders can consist of helmets, respiratory equipment, flash goggles/face shield, leather jacket, apron, by the welding supervisors and/or the NAS Meridian Occupational Safety and Health representative /industrial hygienist.

III. Responsibilities

Each worker/foreman/supervisor, who works with or around welding/cutting operations, will adhere and implement this safety procedure.

IV. Interpretation

All NAS Meridian and tenant activities working with or around welding/cutting operations will be familiar with this safety procedure and adhere to the standards.

Safety Procedure No. 15

SUBJ: USE OF HAND TOOLS

Purpose: This procedure states general safety practices for using hands tools.

I. Scope

This procedure applies to all NAS Meridian and tenant activities.

II. General

a. Plan

(1) Each tool has a specific purpose and limited use. Know the right tool to use, and use it only as intended. Do not abuse them. Tools have a way of protesting misuse in violent and unexpected fashions. Inspect them regularly for damage or wear. Report the need for repair or replacement to your supervisor.

(2) There are five basic rules for tool selection and use.

(a) Select the right tool for job.

(b) Ensure it is in good condition.

(c) Use it in the proper way.

(d) Upon completion of use, store is safely.

(e) When working, carry hand tools in a tool bag, not in pockets or belt.

(3) Rules for specific hand tools are:

(a) Rules for hammer use

1 Ensure the hammer head fits snugly on the handle.

2 Replace cracked heads and loose or cracked handles.

3 Never use a nail as a wedge.

4 Never use hammer handles for pry bars or to tap objects.

5 Always use a flatfaced claw hammer to drive nails, not a machine ball peen hammer.

17 MAR 1966

(b) Rules for wrench use

- 1 Check wrenches regularly.
- 2 Never use a wrench that is bent, cracked, battered, or with loose or broken handle.
- 3 Never attempt to straighten bent wrench as this practice will weaken the tool.
- 4 Keep jaws sharp.
- 5 Never use a shim to make a wrong wrench fit.
- 6 Always pull a wrench, never push it.
- 7 Ensure that your footing is secure and allow plenty of clearance for your fingers.

(c) Rules for electrical hand tool use

- 1 Protect cord insulation by storing the cord loosely coiled in a clean, dry place.
- 2 Keep electric tools away from oil, water, dust, dirt, hot surfaces, and chemicals.
- 3 Never splice a damaged cord. Either shorten the cord or obtain a new one.
- 4 All electrical hand tools will be either double insulated, provided with a three-prong electrical plug, or the circuit will be monitored by a ground fault interrupter.
- 5 Never use electric hand tools in wet locations or near flammable gases or vapors.
- 6 Always wear eye protection.
- 7 Switches on electric powered hand tools are designed so the switch opens when hand pressure is released.
- 8 Electric hand tools stored in the tool room that do not meet these requirements will be modified.
- 9 There will not be a lock on the switch. If one is present remove immediately.
- 10 Only properly insulated or UL approved non-conductive tools will be utilized when performing electrical work. These restrictions applies to tools such as:

17 MAR 1988

- a Fuse pullers
- b Screwdriver
- c Pliers (all types)
- d Wire cutting devices
- e Wire strippers
- f Connectors/lug crimping tools

(d) Rules for plier use

- 1 Never use pliers on hardened surface.
- 2 Never use pliers on a nut. Always use the proper wrench.
- 3 Always wear eye protection when clipping wires.

(e) Rules for screwdriver use

- 1 Always keep screwdriver blades in good condition.
- 2 Never use screwdrivers as punches, chisels, levers, or nail pullers.
- 3 Always use screwdriver with insulated handles for electrical work.
- 4 Never carry screwdriver in pockets.

(f) Rules for chisel work

- 1 Always keep the cutting edge sharp.
- 2 Keep the chisel heads dressed.
- 3 Never use a chisel with a mushroomed head.
- 4 Always use a screen shield around the work to protect others.
- 5 Always wear eye protection when chipping.

(g) Rules for file use

- 1 Always keep files clean and sharp.

- 2 Never use a file without a handle.
- 3 Never use a file for a pry, chisel, or punch.
- 4 Never hammer on files. They are very brittle.

b. Elevated Work Areas

Heights associated with work on elevated structures make the smallest falling object lethal to personnel and are potential cause for serious property damage. Securing tools and test equipment when working in open, high areas provides a degree of safety against personal harm and equipment damage. The following rules for securing tools are a safety requirement:

(1) Tie hand tools when working on open elevated structures.

(2) When working over grating where the opening is of sufficient width to pass bolts, nuts, small hand tools etc., spread out a layer of polyethenlyne (plastic) or canvas to stop falling objects.

(3) Equipment or tools weighing 15 pounds or less may be tied to the user, if he is wearing a safety belt. In event the user is not wearing a safety belt or if items weigh more than 15 pounds, they should be tied to the structure or associated suitable hardware.

III. Responsibilities

Proper use of hand tools is the responsibility of the individual using the tool. The supervisor will ensure employee has the proper tools for the task and uses them correctly.

IV. Interpretation

Misuse of hand tools is a prolific source of injury. Each employee/service member is responsible for the proper selection, use, and care of hand tools.

17 MAR 1986

Safety Procedure No. 16

SUBJECT: PERSONAL PROTECTIVE EQUIPMENT

PURPOSE: To identify various types of protective equipment available and provide guidance for proper use.

I. SCOPE

This procedure applies to all NAS Meridian and tenant activities where work requires the use of personal protective equipment for safety and health.

II. GENERAL

Where engineering solutions cannot be found or are not considered practical, personal protective devices may be required to protect the worker from potential hazards. Once the need for personal protective equipment is established, the NAS Safety and Occupational Health Office will select the proper type. It is the responsibility of the supervisor to ensure the employee uses equipment correctly. Various types of personal protective equipment, not specifically addressed in other safety procedures are outlined below:

a. Eye protection (glasses, goggles, faceshields, etc.). When use of machinery, welding or burning equipment or other operations present potential eye injury, personnel will be provided and required to use proper eye protection. Such equipment will meet requirements specified in the American National Standards Institute (ANSI) Z87.1 - 1979, Practice for Occupational and Educational Eye and Face Protection.

b. Hearing protection (ear muffs, ear plugs). The use of proper ear protector can provide adequate protection in most work environments where engineering control measures cannot be used. If adequate protection cannot be provided by a single muff or ear plug protector, both will be worn together to provide additional protection. Where noise cannot be reduced to acceptable levels, hearing protective devices will be used as prescribed to reduce employees/service members exposure within limits set forth by the Safety and Occupational Health Administration.

c. Special protective clothing (gloves, coveralls, aprons, etc). Protective clothing is used to shield the body against injurious mechanical, physical, biological and chemical agents. Certain items are desirable for prevention from various types of material handling injuries. Other types are required for the handling of certain types of materials. Special protective clothing shall be used to provide for employees/service members safety and health.

III. RESPONSIBILITIES

A. The user will:

17 MAR 1988

1. Assist in recognition/reporting hazards.
 2. Use prescribed equipment correctly and maintain in proper condition.
- B. The supervisor will:
1. Ensure the employees/service members use prescribed equipment carefully and maintain it in proper condition.
- C. The Safety Specialist/Workplace Monitor will:
1. Remain familiar with standards and regulations pertaining to personal protective equipment.
 2. Assist in recognition of hazards.
 3. Prescribe appropriate personal protective equipment as required.

Safety Procedure No. 17

SUBJECT: INDUSTRIAL TRUCKS (FORKLIFTS)

PURPOSE: The powered industrial truck is designed to lift and carry heavy loads. It is a time saving and work saving service, but misuse and abuse could result in serious injury, property damage, and/or death.

I. SCOPE

This procedure covers the operation of a variety of equipment, including fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks powered by electric motors or internal combustion engines.

II. GENERAL

A. PLAN

1. Only approved industrial trucks will be used in hazardous locations.
2. The brakes of highway trucks will be set and wheel chocks placed under rear wheels to prevent rolling, while being boarded by powered industrial trucks.
3. Only trained and authorized operators will operate a powered industrial truck per NAVFAC P-300.
4. Truck operations:
 - a. Trucks will not be driven up to anyone standing in front of a bench or other fixed object.
 - b. No one will stand or pass under the elevated portion of any truck, whether loaded or empty.
 - c. No riders are permitted on powered industrial trucks.
 - d. Do not place arms or legs between the uprights of the mast or outside the running lines of the truck.
 - e. When a powered industrial truck is left unattended, the load engaging means will be fully lowered, controls will be neutralized, power will be shut off, and brakes set.
 - f. Maintain a safe distance from the edge of ramps or platforms while on any elevated dock or platform.

17 MAR 1966

g. Check flooring of trucks and trailers for breaks and weakness before driving onto them.

h. All forklift trucks will include an overhead guard as protection against falling objects.

i. Operators will be aware the multi-mastered forklifts (more than two telescoping sections) rated capacity decreases at certain heights. This can be determined by reading the manufacturer's rated capacity specification tag on the forklift.

5. Traveling

a. Maintain approximately three truck lengths from the truck ahead while traveling.

b. Right-of-way will be yielded to all emergency vehicles and pedestrians.

c. Do not pass another truck traveling in the same direction at intersections, blind spots or other dangerous locations.

d. Slow down and sound the horn at cross aisles and other locations where vision is obstructed.

e. If the load being carried obstructs forward view, travel with the load trailing.

f. Always look in the direction of travel and keep a clear view.

g. Loaded trucks will be operated with the load upgrade on ramps and other grades.

h. Unloaded trucks will be operated on all grades with the forks pointed toward lower elevation.

i. Stunt driving and horseplay is strictly prohibited.

j. The driver will slow down for wet and slippery floors.

k. Dockboard or bridge plates will be properly secured before driven over.

l. Do not run over loose objects on the roadway.

m. While negotiating turns, speed will be reduced to a safe level by means of turning the steering wheel in a smooth sweeping motion.

6. Loading

a. Only stable and safely arranged loads will be handled.

b. Do not exceed the capacity of the truck.

7. Operation

a. Any truck found to be unsafe and in need of repair or service will be taken out of service until restored to safe operating condition.

17 MAR

- b. Fuel tanks will not be filled while the engine is running.
- c. Oil and fuel spills will be carefully washed away or evaporated and the fuel tank cap replaced before starting the engine.
- d. Open flames will not be used to check electrolyte level in batteries or gasoline level in fuel tanks.

8. Forklift Markings

- a. All forklifts, lift gates, and or platforms will be painted in accordance with NAVFAC P-309, Color Code for Naval Shore Facilities.
- b. The proofload test due date will be stenciled (4 inch letters and numerals on each side of the forklift or liftgate).
- c. The rated capacity of each forklift, liftgate, or lift platform will be stenciled on the hoisting mechanism (4 inch numeral), where it will be visible to the operator.

9. Inspections/Testing/Maintenance

- a. Hydraulic hoisting mechanisms will be tested in accordance with approved manufacturer's instructions. Rated load tests will include verification of the capability of holding the load in an elevated position without creeping.
- b. Upper and lower limit switches and brakes on forklift trucks must be checked monthly. Operators must immediately report any defects in the equipment. Vehicles found to have defects creating hazards will be removed from service until repairs are accomplished and a safety inspection is made.
- c. All hydraulic mechanisms will be inspected by operators to ensure no deposits of abrasive material accumulate on actuator shafts or moveable hydraulic members.
- d. All hydraulic systems will be maintained so leakage does not occur when not in use. Leakage rate during use will not exceed 10 drops per minute.
- e. All rollers, pivots, guides and chains will be cleaned of accumulation of dirt, grease, and/or oil and new lubricant applied every six months or whenever accumulation becomes excessive.
- f. Each operator will inspect his/her vehicle/equipment at the beginning of each work shift. Those items checked will include: horn, steering, brakes, controls, hoisting, mechanism, tires, and radiator. Specific attention will be given to fuel and electrical systems and sources of ignition.

g. When a battery is replaced in an electric forklift, the manufacturer's recommended capacity battery will be used. This is necessary to ensure adequate engineering weight for the forklifts counterweight.

III. RESPONSIBILITIES

The operator of a powered industrial truck is responsible for safe operation of the vehicle. Failure to comply with applicable standard and regulations will result in disciplinary action.

IV. INTERPRETATION

This procedure will be followed when forklifts are being operated aboard NAS Meridian.

Safety Procedure No. 18

Subj: SAFETY REQUIREMENTS FOR MAINTENANCE, REPAIR, AND/OR MODIFICATIONS ON LIQUID/GASEOUS OXYGEN SYSTEMS

Purpose: To outline hazards involved, safety equipment required, safety precautions to be observed by personnel, and procedure/process plan requirements.

I. Scope

This procedure will be followed whenever liquid/gaseous oxygen is present in systems or area to which NAS Meridian or tenant activities personnel are exposed.

II. General

a. Hazards

(1) If liquid oxygen comes in contact with the skin, an injury resembling a burn will result.

(2) Inhalation of very cold oxygen gas may cause irritation to upper respiratory tract.

(3) Liquid oxygen does not burn but vigorously supports combustion.

(4) Gaseous oxygen can saturate normal clothing and make them extremely flammable.

(5) If liquid oxygen contacts any combustible or organic contaminate (such as oil, grease, cloth, wood, paper, carbon black, acetelyne, gasoline, kerosene, and powdered metals) a frozen or sloshy mixture (gel) will form. This mixture is highly explosive and subject to detonation by static electricity, mechanical shock, electrical spark, or flame.

(6) Hands will freeze to metal objects at extremely low temperatures and cause painful injury when pulled away.

b. Precautions

(1) Welding, cutting, or spark producing operations within 100 feet of storage units or transfer piping will require an oxygen analyzer check to ensure absence of an oxygen-rich atmosphere in the work area prior to issuance of a "Flame Permit."

(2) In the event welding, cutting, or spark producing operations must be performed on components of an oxygen system that contains or has contained liquid or gaseous oxygen, the following procedure will be followed:

17 MAR 1988

(a) Storage unit or transfer piping will be drained and purged. GN₂ purge will be introduced in the unit/system until an atmosphere reading of 20.8% or less is obtained on the oxygen analyzer.

(b) A five-minute waiting period will be observed and an additional oxygen analyzer reading will be taken to ensure no leakage of liquid/gaseous oxygen has occurred.

c. A minimum of one positive block (preferably two) and open relief valves, as available between the liquid/gaseous oxygen and the unit/system on which work is being accomplished, will be required. Valves may be used to block a system and will be danger tagged (see Safety Procedure No. 7) "DO NOT OPERATE" and locked/chained to prevent accidental valve actuation. If no valves are available, a blank flange may be utilized.

d. Nonflammable blankets will be used as a catchment and will provide protection to adjacent storage unit/transfer piping during the operation.

e. A "Flame permit" will be issued when the requirements have been fulfilled (see Flame Permit Safety Procedure No. 8).

f. Workers will not be permitted to smoke or strike matches in oxygen storage or handling areas or while wearing clothing saturated with oxygen. Clothing and hair will retain a high concentration of oxygen for over an hour or more.

g. Matches, cigarette/cigar lighters, and other flame producing instruments will not be allowed on a person in an oxygen storage or handling area.

(3) Removal, replace, or repair of system components in an oxygen storage unit/transfer piping will be accomplished as follows:

(a) Component(s) will be isolated and purged with an inert gas until an atmospheric reading of 20.8% or less is obtained on the oxygen analyzer.

(b) A five-minute waiting period will be observed and an additional oxygen analyzer reading will be taken to ensure no leakage of liquid/gaseous oxygen has occurred.

(c) A minimum of one positive block (preferably two) between the liquid/gaseous oxygen and the unit/system on which work is being accomplished will be required. Valves may be used to block a component/system and will be danger tagged "DO NOT OPERATE" and locked/chained to prevent accidental valve actuation. Relief valves as available will be tagged "OPEN." Blank flanges may be used as blocks.

17 MAR 1988

the area/system), Public Works Engineering representative, and a member of the Safety and Occupational Health Office, prior to performing the deviation. The procedure/process plan will be "redlined" to reflect the deviation desired, prior to being performed, and all affected personnel briefed on the change.

(e) The maintenance, repair, or modification procedure/process plan will be classified as "SAFETY CRITICAL" and be appropriately stamped to reflect this classification by a representative of the Safety and Occupational Health Office. "SAFETY CRITICAL" stamped on the document will indicate approval by the Safety and Occupational Health Office.

(f) The "Buddy System" (see Safety Procedure No. 5) will be used during all pressure systems operations.

III. Responsibilities

It is the responsibility of each worker/foreman/supervisor working with LOX to be familiar with this safety procedure. This is to ensure all employees/service members exposed to O² systems and area are aware of potential hazards, necessary work practices, safety equipment, and the need to follow requirements of this safety procedure.

IV. Interpretation

All NAS Meridian and tenant activities working with O² (liquid or gaseous) will be responsible for adhering to requirements of this safety procedure.

Safety Procedure No. 19

Subj: NITROGEN SAFETY REQUIREMENTS

Purpose: To outline the hazards involved, safety equipment required, safety precautions to be observed, and operating procedure/process plan requirements involving nitrogen (liquid/gaseous).

I. Scope

This procedure will be followed whenever liquid or gaseous nitrogen is present in systems or area to which NAS Meridian and/or tenant activity personnel will be exposed.

II. General

a. Hazards

(1) The principal health hazard of nitrogen is suffocation. Nitrogen can displace oxygen in the air and may present hazards in enclosed or semienclosed areas. Cold evaporating nitrogen is heavier than air at room temperature and will settle to the ground/floor and fill pits and depressions in the ground.

(2) Skin contact with liquid nitrogen will cause frostbite or an injury resembling a burn.

b. Precautions

(1) Operations involving liquid and gaseous nitrogen will be performed only by experienced and qualified personnel, familiar with the hazards associated with nitrogen and safety precautions to be observed.

(2) Personnel engaged in liquid nitrogen operations will wear hard hats, insulated gloves, face shields, and hard finished coveralls.

(3) Operations involving handling of liquid nitrogen will be performed by two or more persons working in groups - buddy system (see Safety Procedure No. 5).

(4) Care will be taken to prevent accumulation of moisture in lines, valves, and traps, to avoid freezing, plugging, and subsequent entrapment of liquid nitrogen in unvented sections of the system.

(5) Personnel will not enter a tank, sump, or closed space which has contained liquid nitrogen or very high concentrations of nitrogen until the space has been purged and a normal oxygen level has been restored. This requirement may be waived if a breathing apparatus is used. Storage, use, and disposal of liquid nitrogen will be conducted in well-ventilated

17 MAR 1977

areas. The NAS Meridian Safety and Occupational Health representative will analyze and advise what precautions must be taken before any NAS Meridian and/or tenant activity personnel enter an enclosed area.

(6) Facilities for quick drenching of eyes and body will be provided within 25 feet of the work area for emergency use. Facilities will be inspected periodically and tested before any operation involving liquid nitrogen begins.

(7) High pressure nitrogen systems will be deactivated before maintenance or repair work is attempted. Systems will only be vented through valves.

(8) When working with nitrogen lines, a minimum of two positive blocks will be used to isolate a component from a pressure source, as possible. Relief valves or bleed valves between component and pressure source will be used. Valves will be locked and tagged as, per Safety Procedure No. 7. Blank flanges will be used as necessary.

c. Process Plan Requirements/Safety Equipment

(1) A written operating procedure/process plan, approved by a representative of the Public Works Engineering and the Safety and Occupational Health Office, for handling nitrogen in confined spaces or large quantities, will be in existence and reviewed by the respective supervisor/foreman with all personnel, prior to starting an operation.

(2) The operating procedure/process plan will incorporate all applicable portions of this safety procedure and other safety measures the supervisor/foreman may consider necessary for the safety and health of personnel.

(3) The operations procedure/process plan will include a hazards evaluation of the operation to be performed and a contingency plan pertinent to the operation to be conducted.

(4) Deviation from the operating procedure/process plan will require approval of the respective supervisor/foreman, a representative from Public Works Engineering, and a representative from the NAS Meridian Safety and Occupational Health Office, prior to performing deviation. The operating procedure/process plan will be "redlined" to reflect deviation performed. Prior to the operation, all involved personnel will be briefed on the change.

(5) The operating procedure/process plan will be classified as "SAFETY CRITICAL" and appropriately stamped by a representative of the Safety and Occupational Health Office to reflect this classification.

(6) The following safety equipment will be used when operational conditions require it:

- 1 Face shields - mandatory when working with LN²
- 2 Insulated gloves - mandatory when working with LN²
- 3 Hard hats - mandatory when working with LN²
- 4 Flame resistant (hard finish) coveralls - mandatory when working with LN²
- 5 Oxygen (O²) Analyzer - mandatory in enclosed areas
- 6 Self-contained breathing apparatus - as required by NAS Meridian Safety and Occupational Health Office
- 7 Barricade tape - mandatory to secure work area

III. Responsibilities

It will be the responsibility of each worker coming in contact with nitrogen to become aware of the hazards and required precautions. Each supervisor/foreman supervising employees/service members exposed to nitrogen, will be aware of potential hazards and require his employees/service members to wear protective equipment and take proper precautions during the operation.

IV. Interpretation

All NAS Meridian and tenant activities working with nitrogen (liquid or gaseous) will be responsible for informing employees/service members of the inherent hazards and required adherence to this safety procedure.

NASMERINST 5100.17
17 MAR 1965

Safety Procedure No. 20

SUBJ: REQUIREMENTS FOR HANDLING ACIDS AND CAUSTICS

Purpose: To outline the hazards involved, safety precautions to be observed by personnel, safety equipment required, and the disposal, storage, and operating procedure requirements for acids and caustics.

I. Scope

This procedure provides hazards, precautions, and information required for safely performing tasks with acids and caustics.

II. General

a. Hazards

- (1) Skin contact with concentrated solutions of acids or caustics cause minor to severe burns and possible skin ulcers.
- (2) Eye contact with solutions of acids or caustics, unless extremely diluted, can cause loss of sight.
- (3) Swallowing concentrated acidic or caustic solutions cause irritation or burning of the digestive system.
- (4) Inhaling concentrated acidic or caustic vapor caused irritation or burning of the respiratory system.
- (5) Reactions involving acids, caustics, and metals result in the creation of toxic and explosive compounds. If in a confined space, such reaction may result in the breathable atmosphere replaced with suffocating gas.
- (6) A fire hazard exists whenever combustible toxic gases and explosive compounds are present in an open area.
- (7) An explosive hazard exists whenever combustible gases are produced in a confined space.
- (8) Metal are especially susceptible to corrosion caused by acids and caustics when spills occur.
- (9) Vapors from spills of acids and caustics may attack any metal surface in the area, particularly those surfaces which are moist, i.e., air conditioning portals.
- (10) Violent reactions may occur when concentrated acids and caustics are combined with incompatible material, including fire.

b. Precautions

Exposure of the eyes, skin, and respiratory system will be avoided by use of:

- (a) Goggles
 - (b) Face shields
 - (c) Acid resistant type rubber gloves and boots
 - (d) Chemical apron
 - (e) Splash suit with hood or satisfactory substitute for operations involving strong acids or caustics.
 - (f) Respirator with appropriate filter, for low concentrations of acidic fumes.
 - (g) Self-contained or airline breathing apparatus, for high concentrations of acidic or caustic fumes.
 - (h) Emergency showers/eye washes for permanently established acid and caustic operations.
 - (i) Blowers, minimum of 14 inches in diameter, for large scale special operations involving acids and strong caustics where there is insufficient ventilation.
 - (j) Sufficient amounts of water will be available for flushing contaminated skin and eyes in areas where there is no immediate access to emergency showers/eye washes.
- (2) Atmospheres containing acidic and strong caustic vapors will be avoided.
- (3) Smoking or eating in acidic and caustic atmospheres will be avoided.
- (4) Acids of caustics are never taken internally.
- (5) Clean hands thoroughly after handling acids and caustics. This will aid in preventing oral ingestion or skin irritation from both chemicals.
- (6) Clothing which has been contaminated by acids or caustics in a concentrated acidic/caustic vapor will be discarded as soon as possible and cleaned before reuse.

(7) Scheduled medical examinations are advisable if exposure to acidic or strong caustic atmospheres has been frequent. Skin contact with concentrated acidic or strong caustic solutions would also warrant medical attention.

(8) Personal protective equipment ~~must be~~ properly utilized when handling acids and strong caustics.

(9) Personnel must be briefed on safe handling of acids and strong caustics and emergency actions required in the event of spills.

(10) Access to areas of operation, where acids and strong caustics are involved, will be restricted to authorized personnel who are experienced in such operations and are directly involved in a specific operation.

(11) The latest edition of the NFPA Fire Protection Guide on hazardous for danger will be used as a reference document for chemical storage.

(12) The latest editions of "Laboratory Waste Disposal Manual," and "Dangerous Properties of Industrial Material," will be referred to for proper chemical disposal techniques. No disposal will be performed when weather conditions could blow vapors into areas occupied by personnel. Acids and caustics will only be buried in areas approved by the industrial hygienist.

(13) All acid and caustic waste will be transported in tightly sealed containers to specifically selected disposal areas.

(14) A written process plan approved by a representative of the Occupational Safety and Health Office will be in existence and consulted to provide step-by-step progression through the operation involving caustics and/or acids. All personnel will be familiar with the process plan document, which will include all applicable safety standards, an appraisal of all possible hazards that could occur during the operation, and contingency or emergency plans to be taken to protect personnel property. All deviations from the process plan documents will be "redlined" to reflect such change and processed through the Public Works Engineering and the Occupational Safety and Health Officer for approval prior to performing the deviation. All personnel involved in the operation will be briefed on the change.

III. Responsibilities

It will be the responsibility of all worker/service members who work around acid and caustics to be familiar with this procedure and the required safety instructions. All supervisors and foremen who supervise operations dealing with acids and caustics will be familiar with this safety procedure and require the operations to conform to all stated standards.

17 MAR 1984

IV. Interpretation

This procedure sets forth safe working practices for operations involving acids and/or caustic substances. All NAS Meridian and tenant activities will follow this procedure to protect employees/service members from injury and property from damage.