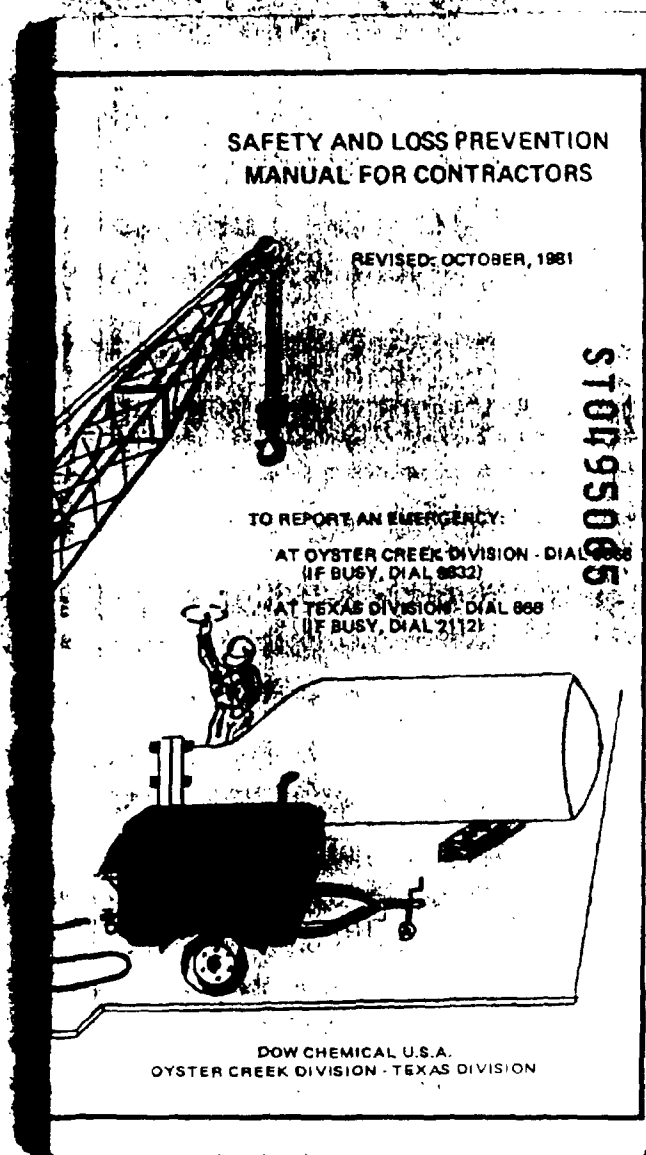




SAFETY & LOSS PREVENTION OBJECTIVE

of THE DOW CHEMICAL COMPANY

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Superior Safety & Loss Prevention performance is an objective of all operations of The Dow Chemical Company. If Dow is to obtain optimum protection of its people, property and profits, then a good Contractor Safety & Loss Prevention Program which complements the Company's program is necessary.

Our objective is to guide Contractors to establish and maintain an accident prevention program to:

Eliminate accidents to Contractor personnel and property, and,

Eliminate Contractor accidents which affect Dow personnel and property, and result in business interruptions.



**SAFETY AND LOSS PREVENTION
MANUAL FOR CONTRACTORS**

FORM NO. 53516D 10/81

REVISED OCTOBER, 1981

FOR USE BY ALL CONTRACTOR PERSONNEL

DOW CHEMICAL U.S.A.
OYSTER CREEK DIVISION
TEXAS DIVISION

ST0495067

(Supersedes Safety and Loss Prevention Manual
for Contractors dated March, 1975 and
August, 1978)

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*Cover Design By
N. F. (Norm) Schultz
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INTRODUCTION

This safety manual contains the minimum safety rules and procedures for performance of work by Contractors and their subcontractors as required by the Oyster Creek Division, Dow Chemical U.S.A., or Texas Division, Dow Chemical U.S.A., hereinafter referred to as Owner.

The Owner will be represented on construction as defined in the contract and hereinafter referred to as "Owner's Representative."

Contractor assumes and has the full responsibility and liability for the safety of its agents, servants and employees and for the compliance of its subcontractors and anything contained herein does not relieve the Contractor of such responsibility or liability.

Safety rules and procedures are an integral part of each contract and must be carried out fully, as any other specification for the job. Any exception to the rules set forth herein must have prior written authorization from the Owner's Representative.

Contractors unable or unwilling to see personnel performance in keeping with

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these rules will not be acceptable. The Contractor's safety record will be one criterion used to judge his qualifications for bidding.

In addition to the rules set forth herein, Contractors working in or near an existing operating facility must be cognizant of and conform to Owner's safety rules for that area and any federal, state or local laws governing:

Should any procedure set forth herein conflict with applicable federal, state or local laws, the latter will apply.

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PHYSICAL EXAMINATION FOR CONTRACTOR EMPLOYEES

Where applicable, Dow, in the interest of individual health and safety, will perform monitoring and medical surveillance on Contractor employees without charge. The purpose of such monitoring and surveillance is to establish a medical data base and to determine the highest practicable goals for maintaining a healthy work environment. Said medical surveillance will be conducted by medical personnel designated by Dow.

EMERGENCY PROCEDURE

1. The following procedure must be used to call an ambulance, report a fire, spill of hazardous materials or release of hazardous gases:

- a. Texas Division - Dial "666" (if busy or does not answer immediately dial 2112).
- b. Oyster Creek Division - Dial "9666" (if busy or does not answer immediately dial 9832).
- c. Give your name, the nature of the emergency and its exact location, including building number and door letter, if applicable.
- d. Stay on the line until sure that the message is understood and confirmed.

e. Station someone on the road to direct emergency equipment to the scene.

f. The emergency phone numbers are not to be used other than for emergency calls.

2. Personnel must know the location of any plant alarm horns. In case of a gas release, observe the wind direction as indicated by the alarm horn and wind vane indicator and proceed to go crosswind. STANDARD EMERGENCY SIGNALS ARE AS FOLLOWS:

a. GAS RELEASE _____
(Continuous)

This signal must be sounded only by the department where a hazardous release occurs. Shut down all of your equipment in operation. Stop smoking. All Safe Work Permits in that area are automatically cancelled. All except those charged with the responsibility of taking care of the emergency must leave the immediate area of the spill and go to the proper assembly point according to the Unit Emergency Plan until the "All Clear" is sounded. Personnel in other areas downwind must be alert for signals in their area or verbal instructions.

b. ALERT
(Series of short blasts)

Shut down all of your equipment in operation. Stop smoking. All Safe Work Permits

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in that area are automatically cancelled. Personnel in other areas downwind must be alert for signals in their area or verbal instructions.

c. EVACUATE — — — — —

(Series of 3 short blasts)

Evacuate according to the unit emergency plan of the plant in which you are working or, lacking such a plan, observe the wind direction as indicated by alarm horn and wind vane indicator and proceed to go crosswind or, if that direction is not possible, upwind.

d. ALL CLEAR — — — — —

(Series of 3 long blasts)

When this signal is given, personnel may re-enter the work area. Safe Work Permits must be reissued prior to starting work.

3. If operating a motor vehicle in an area where a gas release signal is given, avoid driving in gas clouds. Extinguish smoking materials immediately and evacuate cross wind from the affected area. Do not drive into an area down wind of a gas release. Follow all instructions given by Industrial Security. Barricades across or partially across plant roads must be obeyed by all vehicles at all times.

4. In the event a work area is evacuated for any emergency reason, contractor personnel

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will evacuate according to the Unit Emergency Plan of the block in which they are working. Each contractor employee is required to notify his company supervision of his whereabouts. Contractor supervision will make a head count and report to the Owner Representative of the job or block. Do not wait for the "All Clear" before accounting for your employees.

a. If not working under a unit plan (such as contractor field offices and shops), contractors will develop and communicate their own Unit Emergency Plan.

5. Emergency horns are tested each Monday at 12:00 noon with the "All Clear" signal given first and last in the test cycles.

GENERAL SAFETY RULES

A. RESPONSIBILITY FOR SAFETY

1. The contractor shall actively and adequately promote safe working performance on the part of his employees. He shall participate in activities to this end, such as contractor safety organizations (e.g., Contractors' Safety Council of Brazosport), incentive award programs, contractor owner programs, etc. It is expected that each contractor will conduct his own safety programs to best suit his particular needs.

2. Contractors must report immediately in writing to the Owner's Representative, by name, those employees DISCHARGED for safety rule infractions. The reason for the discharge must be given. Such employees will not be allowed to return to any Owner's work without proper authorization from the Owner.

3. American National Standard, Z-16.1, "Recording and Measuring Work Injury Experience", and the "OSHA Record of Occupational Injuries and Illnesses", shall be used as a guide to classify contractor injuries.

4. Prior to starting any field work on each job, the Owner's Representative will conduct a pre-job safety conference with an authorized representative of the Contractor, a Manufacturing Representative, available subcontractors' representatives and Owner's safety representative, when available. At this time, the nature of any chemical hazards or special safety rules for the area will be reviewed with the Process Representative and the Contractor will be provided with printed copies of the area rules where applicable. The "pre-job safety check sheet" form (see sample) will be prepared by the Owner's Representative and a copy furnished to the Contractor.

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5. a. Every contractor employee before working on Dow property must be indoctrinated as to the rules in this manual through an approved safety indoctrination program. Contractors shall inform all their employees of all safety rules and all safety procedures before working in an Owner's plant. The Brazosport Contractors' Safety Council has devised an economical and very effective means of orientation for contractor employees to help meet these requirements. It is required that all contractors utilize this program, or an approved equal, for new contractor employees who are starting work on Dow property.

b. In addition to the basic contractor safety indoctrination, each Dow block or unit, or Owner's Representative utilizing contractor personnel, shall also provide minimum Block or Unit safety orientation covering the hazards for that block prior to starting work.

6. Contractors shall inform all of their employees of the location and use of nearest safety shower, eye bath and emergency equipment such as gas masks and fire extinguishers.

7. Contractors shall use a regular system of work inspection to detect and correct hazardous conditions, safety rule violations and unsafe working practices. These safety inspections shall be reported to the Owner's representative in writing each week.

8. a. Orderliness is a basic requirement for all jobs and must be maintained at all times. Special attention must be given to maintaining clear walkways and roadways, removal of trash, removal of slipping and tripping hazards and proper stacking of materials. Contractors must make every effort to keep mud, slush or other slippery substances off plant roads. In cases where this cannot be avoided, contractors must clean the roadways immediately.

b. Contractors must furnish trash containers made of metal with metal covers kept in place.

9. Contractors shall maintain continuous safety planning to cover jobs where circumstances have changed and new hazards require new controls

B. FIRST AID -- INJURIES -- REPORTS

1. The Owner's Representative shall be notified immediately in the event of any death, occupational disease, disabling in

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jury or potentially significant injury to a Contractor employee (whether or not it is determined that a "disabling injury" will be involved) while at work on the Owner's job. He shall also be notified immediately of the occurrence of any potentially serious incident (no injury involved) or of any hazardous condition observed.

a. The Contractor must thoroughly investigate, determine and report all details of an accident and cooperate with the Owner and Contractors' Safety Council inspection teams.

b. A written report must be submitted on every injury requiring medical treatment of any kind, to the Owner's Representative on the job, no later than 10:00 a.m. of the day following the injury. Also, any near miss, potentially serious incident or hazardous condition that occurs, must be reported in the same manner, although no injury to personnel may be involved. Forms for these reports, "Notice of Contractor Accident and Property Loss," are available through the Owner's Representative. (See sample).

c. All fires must be reported, regardless of duration or extent.

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NOTICE OF CONTRACTOR ACCIDENT OR PROPERTY LOSS

This notice to be submitted by contractor to the Owner Representative as soon as possible, but not later than 10.00 a.m., the day after any injury requiring medical treatment of any kind or for any potentially serious incident or hazardous condition occurring, although no injury was involved.

CONTRACTOR _____ SUB CONTRACTOR _____

P. O. No. _____ DATE _____ TIME _____ A.M. P.M. LOCATION _____

NAME OF INJURED _____ AGE _____

CRAFT _____ CLOCK NUMBER _____

EXTENT OF INJURY _____

WHERE TREATED _____

IS THIS A DISABLING INJURY YES () NOT () INDEFINITE ()

WHAT HAPPENED _____

CAUSE _____

CORRECTIVE ACTION TAKEN _____

SAFETY INVESTIGATION MADE BY _____

_____(Foreman) _____ DATE _____ Owner Representative) _____ DATE _____

_____(General Foreman) _____ DATE _____ (Dow Construction Subt.) _____ DATE _____

_____(Prime Contractor Subt.) _____ DATE _____ DATE _____

NOTE: THIS FORM IS BEING REVISED--USE UNTIL NEW FORM IS AVAILABLE

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2. Employees must report injury to their immediate supervisor even though it may be considered slight.

3. The Contractor shall make sure that all injured personnel report to a recognized medical facility, unless an approved First Aid Station is made available in the field. The Contractor is responsible for furnishing treatment reports if medical facilities other than the following are used:

a. Oyster Creek Division First Aid is located in the Industrial Medical Facility Building.

b. Texas Division First Aid Station is located in the A-1309 Building.

c. Additional First Aid Facilities are:

i. Community Hospital Emergency Room

ii. Industrial Clinic, 21 Hospital Road.

4. In the event of accidents, ambulance runs, etc., contractors must exert all possible effort to keep onlookers from the scene. The only personnel required in such areas are those directly engaged in assisting in the emergency.

5. Employees must not attempt to remove foreign material from the eyes except by washing with water. If foreign material, either solid or liquid, gets in the eye, the eye must be washed immediately with potable running water, preferably at an eye-wash station, and the washing continued uninterrupted for at least fifteen minutes. It is vital that the injured employee and others who are able to help him make sure that thorough and complete washing of the eye is accomplished. THE AMBULANCE MUST BE CALLED.

6. If chemicals come in contact with the body, the affected parts must be washed with running water for at least fifteen minutes. To make sure that adequate washing is accomplished, shoes and clothing covering affected parts must be removed. The Owner's Representative must be consulted before reuse of clothing and shoes that may have been contaminated.

7. In addition to the requirement for eye irrigation procedure, the ambulance MUST be called for:

- a. An employee suffering from chest pain
- b. Gross exposures or for less extensive exposures to toxic or corrosive materials.

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c. Any employee in obvious/serious distress.

C. INDIVIDUAL ACTION

1. Alcohol, firearms, or unauthorized drugs are not permitted on Dow property.

2. Horseplay in any form is not allowed.

3. Do not run in the plant except in case of an emergency.

4. Do not take a shortcut by climbing or crawling under, over or between railroad cars.

5. Unsafe shortcuts such as walking pipelines or cable trays, sliding down pipe stanchions, crossing ditches or "cutting corners" to save a few steps must be avoided.

6. Unless specifically authorized to do so by the Owner's Representative, Contractor personnel must not make inoperative or operate safety devices such as relief valves, deluge valves, gate valves, electrical and mechanical interlocks, guards, electrical switches in an operating plant.

a. Any accidental interruption of lines or equipment in service or any irreg-

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ularities observed must be reported to the Owner's Representative and/or the Owner's operating personnel immediately.

7 Do not drop or throw tools, materials or equipment from one level to another unless precautions have been taken against possible injury to personnel or damage to equipment.

8. Contractor personnel shall not work over 16 hours continuously without prior approval of Owner's Representative.

9. An interpreter shall be on site and readily available for all non-English speaking Contractor employees.

10. Contractor personnel shall not use or borrow equipment, materials, vehicles or tools of another Company without that Company's prior approval.

11. If a work area is to be cleaned with air, a vented jet-type nozzle which reduces the pressure to 30 p.s.i. shall be used.

12. Compressed gases, including air, shall not be used for cleaning of clothes or the body.

13. Oxygen must not be used for pressure testing purposes

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14. Adequate ventilation must be provided when cleaning agents are used.

15. Flammable materials or chemical pollutants shall not be vented or dumped anywhere, including a sanitary sewer or waste water system, without approval of the Owner's Representative and the Environmental Services Group.

a. If accidental venting or dumping occurs, call:

i. Oyster Creek Division - "9666"
and Environmental Services "9625"

ii. Texas Division - "666" and Environmental Services "2691".

D. PROTECTIVE EQUIPMENT AND CLOTHING

1. The Contractor shall be responsible for knowing and enforcing special Owner area or job rules requiring special personnel protection.

a. Contractors shall ensure that their employees are equipped with approved personal protective equipment and shall enforce its use.

b. Approved shall mean that the equipment is manufactured in accordance

with the appropriate American National Standards Institute (ANSI), or the National Institute for Occupational Safety and Health (NIOSH) standard.

2. Approved safety glasses with approved side-shields are a minimum requirement on all contractor jobs at all times and shall be properly fitted to the wearer. No glasses are required in offices, lunch rooms, cafeterias, or in vehicles with enclosed cabs.

a. Plain or prescription safety glasses with side shields are considered approved only if they fulfill the Federal requirements specified in American National Standards Institute (ANSI) Z-87.1-1979. Approved safety glasses will have the manufacturer's monogram in the upper center or outside corner of the lens.

3. The wearing of contact lenses is prohibited where eye protection is required, except upon written recommendation of a physician and approval of Owner's Representative. Where contact lenses are approved in eye protection areas, chemical goggles shall also be worn.

4. Safety glasses with dark tinted lens or phototropic lens, or chemical goggles with dark tinted lens are not to be worn at night or in dark locations during the day.

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5. Approved chemical goggles are required for working in or entering certain chemical areas which are posted with signs, or while doing chipping or power tool cleaning work on pressurized lines or equipment which contains hazardous chemicals.

a. All employees working in the vicinity of chemicals must know where the nearest safety shower and eye bathing facilities are located.

b. When chemical type goggles are in use, the headband must be around the back of the head, not around the safety hat.

6. You must wear a face shield over side-shield glasses or chemical goggles when chipping, using grinders, buffers, friction cut-off saws and impact chisels.

7. Approved plastic safety hats are required for all Contractor work. The use of metal safety hats is prohibited.

a. Approved plastic safety hats must fulfill Federal requirements Z89.1-1969 Class A limited voltage protection or better. Skull caps, scalp guards, bump helmets, etc., will not meet this requirement. Safety hats shall not be al-

tered for any purpose such as drilled or punched for ventilation holes, or edges trimmed off hats.

8. Approved safety hats and side shield safety glasses must be worn while wearing a welding hood. Requirement for wearing the safety hat may be waived by the Owner's Representative in specific instances where the wearing of the safety hat creates a greater hazard than without.

9. An approved respirator must be kept with you and ready for use at all times, in plants where required. Personnel required to use respirators must be trained in their use.

10. Employees required by their job assignments, both routine and emergency response, to wear nose-mouth respirators, full-face gas mask, fresh-air mask, SCBAs or other such protective equipment shall be clean shaven in the areas between the mask seal surfaces and the facial skin.

11. When sandblasting or applying volatile or toxic material inside tanks, rooms or other inadequately ventilated areas, air hoods or equivalent equipment, supplied with filtered air, shall be worn.

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a. The enclosed area must be sufficiently ventilated to prevent the build-up of an explosive mixture.

12. Each employee is expected to wear personal clothing that is safe and proper for his job. Employees other than office employees shall wear a minimum of a shirt with sleeves and long trousers while on the job. Conventional leather, or equivalent, shoes in good repair are minimum footwear in plant areas. Canvas shoes, sneakers, sandals, house shoes, etc., do not provide adequate protection. NO BARE FEET OR THONGS ARE ALLOWED IN THE DIVISION. Safety shoes are recommended and may be purchased at Plant Stores.

13. Safety belts or harnesses, with lifelines attached, are to be worn by employees when performing work in elevated positions where the use of scaffolds or ladders is impractical and there is a danger of falling more than four (4) feet from one level to another.

14. Personnel must wear Coast Guard approved life jackets, or otherwise be protected by handrails or lifelines, when working near water wherein a drowning hazard exists.

15. Contractor employees shall not wear rings while in plant areas.

16. Fixed blade knives used as tools of the trade must be carried in sheaths while not in use.

17. Loose clothing, dangling sleeves, watch or neck chains, ear rings, long hair, neckties, etc., shall not be worn unprotected while working around machinery with exposed moving parts.

E. VEHICLES AND TRAFFIC

1. Personnel working on Dow property must comply with all Texas traffic rules regarding traffic and vehicles at all times. Additionally, all other safety rules and signs must be obeyed.

2. Motor vehicle accidents, including those involving personal cars on Dow property, must be reported to Dow Industrial Security and the Owner's Representative immediately.

3. When approaching a plant bus while it is stopped on a plant road or shoulder to load or unload passengers, vehicles must come to a complete stop.

a. Do not pass until:

i. the bus has resumed motion,

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- ii. you are signalled by the driver to proceed, or,
- iii. the lights are no longer flashing.

4. Every driver must possess a valid driver's license.

5. Every vehicle must bear a current State inspection sticker.

a. All equipment must be in safe mechanical working condition at all times. In addition to complying with state requirements as to brakes, lights, signals, horns, mufflers, etc., vehicles must be periodically inspected by a representative of the Contractor, and the inspection documented.

b. Necessary repairs and adjustments must be made prior to their use on Owner's property.

6. The maximum speed limit is 30 miles per hour on open roads in the plant and 10 miles per hour within block limits, unless otherwise designated by signs.

7. Smoking is not permitted in vehicles while driving through "NO SMOKING" areas. Cigarettes or other sources of ignition shall not be thrown from vehicles anywhere on Dow property.

8. Vehicles must yield to pedestrians crossing streets in marked pedestrian lanes.

9. Pedestrian paths and walkways must be used whenever provided. In their absence, personnel using streets and roadways must walk facing approaching traffic.

10. A motor vehicle engine must not be left running if the vehicle is unattended unless, (a) a supplementary positive braking system is used, and (b) it is necessary in the normal operational requirement of the unit. Two such positive systems are (1) "Mico" brakes used in conjunction with a mechanical brake or (2) air brakes. Forklifts shall always be turned off when unattended. Unattended means that the driver has left the normal control position of the vehicle.

11. Do not refuel gasoline engine driven equipment while the engine is running, or near any predictable source of ignition, such as welding operations.

12. Fuel tanks on equipment powered by diesel engines shall not be filled with the engine running if in the process it is possible to spill fuel on a hot engine or manifold.

13. When jumping batteries, be sure you know and follow the proper sequence of connecting positive to positive and negative to ground. Never connect final ground to the battery terminal, attach to engine

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block or frame of the vehicle being started,
as far away from the battery as possible.
ALWAYS WEAR CHEMICAL GOGGLES.

14. Seat belts shall be worn by all front
seat occupants of passenger vehicles and
by all occupants in the cabs of pickups
and trucks while on Dow property

15. No more than three people may ride
in the cab of a standard size pickup,
no more than two in a compact type
pickup.

a. Occupants of the bed of pickups and
trucks shall be seated within the bed or
on built-in seats. Do not lean against the
tailgate.

16. The use of flatbeds, stakebeds, etc., as
transportation for personnel will not be
permitted unless adequate safety provisions
are made and the vehicle is adapted for
that purpose. In any case, the number of
personnel must not cause overcrowding.

17. Riding of "Cherry Pickers," yard cranes
or winch trucks, is permitted only when
adequate safety provisions, such as seats,
platforms, rails, etc., are provided for
passengers

18. Equipment such as welding machines, air compressors, etc., shall not be transported in the plant with the engine running unless they are in use, such as herbicide or insecticide sprayers.

19. If a vehicle or its load is more than 10 feet in width or higher than 16 feet, Industrial Security must provide an escort when in transit on main Dow roads (roads within block limits not included).

20. Hauled material that overhangs the sides of trucks, trailers, or cranes more than one foot must be red flagged at the extent of the overhang. Material extending more than three feet from the front or back shall be red flagged.

a. Loads must not be hauled from a single suspension cable that allows free swinging.

b. Dragging or skidding material and objects along plant roadways is prohibited.

21. Prior to ordering vacuum trucks, Contractor shall coordinate with Owner's Representative and Environmental Operations.

22. Prior to moving extremely heavy loads, Contractor must determine from the Owner's Representative which roads and bridges are to be used and when.

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a. All bridge load limit signs must be adhered to. All rigging cranes above the 150 ton capacity must have special clearance from the Maintenance Functional Shops prior to their movement outside of block perimeters. Contact the Maintenance Functional Road and Bridge group or the Rigging group at Plants A or B in the Texas Division -- Industrial Security and Engineering Department at Oyster Creek Division.

b. Bridge Load Limit signs have been color coded for routing crane traffic according to the following:

Red Maximum of a 15 Ton Rig
Yellow Maximum of a 50 Ton Rig
Brown Maximum of a Light-weight
80 Ton Rig

Green All Rigs up to and including
the 150 Ton capacity.

c. All rigs above the 150 Ton classification must be calculated prior to crossing any bridge.

d. All 300 Ton rigs must be stripped down prior to crossing any bridge.

23. The following rules must be observed when moving fixed boom cranes on Dow roads.

- a. A flagman must be provided.
- b. At intersections, when the equipment is to proceed straight across a main thoroughfare or turn either way, the operator must stop; the flagman must get off the equipment, clear all traffic, then flag the equipment through the intersection or around the corner.
- c. Before entering any thoroughfare, street, road, etc., from a work area within a block, the flagman must clear the traffic and flag the equipment onto the road.

24. The following rules must be observed when moving retractable boom rigs on Dow roads:

- a. The boom must be fully retracted.
- b. When traveling with the jib affixed to the end of the boom, the jib should be marked with a high visibility paint.
- c. Before entering or leaving any thoroughfare, street, alley, or roadway, the operator shall assure himself that the way is clear and proceed with caution.

3. Sheeting for temporary buildings shall be of non-combustible materials, such as transite or metal for siding and roofs, and each building must be identified with the contractor's name and building number.

4. Contractors portable or temporary buildings and portable toilets must be tied down regardless of the length of time the building will remain on site and must be tied down immediately upon placing the building.

5. Portable building requirements

a. Buildings which have rafter and wall studs secured by hurricane anchor plates may be tied down at the floor stringers or over the roof.

b. Galvanized metal straps installed by the building or trailer manufacturer are acceptable if they meet the following:

i. Straps must be galvanized 1-1/4" x 0.31" or better, with a tensile strength of 4900 lbs.

ii. Straps must run completely around the structure but underneath the siding and roofing

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25. The following rules pertain to all cranes, cherry pickers, and other load-carrying vehicles.

a. The tip of all rig booms and jibs must be marked with a high visibility material.

b. Loads extending more than 3 feet in front of or behind a vehicle must have a red flag attached.

c. Traveling speeds must be safe and prudent, depending on loads, traffic, road conditions, etc.

d. A flagman must be provided and swinging of loads must be controlled with a tag line when moving in a congested area or where load swinging would present a hazard to personnel or property.

F. TEMPORARY & PORTABLE BUILDINGS

1. Temporary buildings and material storage areas shall be set up as neatly as possible to present an orderly appearance.

2. Temporary buildings or stored materials must not be located under power lines or pipeways. Overnight parking of equipment or vehicles under power lines or pipeways is not permitted.

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iii. Special anchors must be used which provide a flat surface to wrap the strap around. Anchors must be as near vertical to the strap as possible.

iv. Straps must be installed straight with no twisting and anchors must be in line with straps.

v. Straps must be positioned not over 12' apart, plus additional straps for each 12' of length or fraction thereof. All buildings must have at least four straps located within 2 feet of the corners.

6. All other buildings must be tied down by 3/8" minimum galvanized cable or salvage rigging cable over the roof.

7. Two cable clamps are required on each cable tie-down.

8. Anchors must be 4" A.B. Chance no-wrench screw anchors, catalog number 4345-1 or equal. Anchors must be placed in the ground a minimum of four feet. Proper clearance by Owner's Representative is required before ground penetration is made. (See K.1.c.)

a. When set up on concrete slabs, 5/8" anchors with eye bolts may be used in lieu of screw anchors.

9. A minimum of four anchors for the first 12 feet of building length and two anchors for each additional 12' of length will be used. Portable toilets will require a minimum of two anchors, and may be tied down over the roof or thru the base.

10. Over a period of time the cable or straps may become loosened by wind or other forces. Contractors must periodically check tie-downs for corrosion, damage, tightness of cable, etc., to ensure a firm tie-down and replace if necessary.

11. Metal buildings served with electricity shall have the service entrance switch and the skin of the building grounded in such a manner that neither is dependent upon the other. Electrical bonding jumper wires at corners and roof are required only if the building construction does not provide for complete grounding continuity.

a. Service drop of at least #8 wire, 2 colors, 1 white, is required.

b. An outside electrical service disconnect is securely attached to each building and an electrical circuit ground wire, #6 minimum, is to be securely clamped to ground rod for continuity.

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c. A building skin ground, # 6 minimum is required. Check for electrolytic corrosion if dissimilar materials are bonded.

d. Ground rods shall be 3/4" galvanized steel, and shall be driven to a depth of 9 1/2 feet. Proper clearance from Owner's Representative is required before ground penetration is made. (See K.1.c.)

12. Electrical outlets and grounds are to be tested in accordance with OSHA 1926.401.

13. Broken glass, window frames, doors, etc., shall be promptly repaired.

14. A contractor furnished fire extinguisher rated not less than 5 lbs., shall be within 100 feet for each 3,000 square feet of building area or major fraction thereof.

G. FIRE PROTECTION

1. Accumulation of trash, oil rags, combustible material, or fire hazards of any nature will not be permitted.

2. All "NO SMOKING" restrictions in specified areas must be strictly observed. Smoking is not permitted in vehicles in designated "NO SMOKING" areas.

3. The area around welding and cutting operations must be kept free of combustible material of all kinds (wood, paper, cardboard, flammable liquids, etc.)

a. There must be a fire extinguisher, water hose, or other fire control equipment easily accessible for each welding, cutting, burning or other such operation.

i. It is the Contractor's responsibility to obtain any required fire extinguisher for welding and cutting operations through the Owner's Representative.

ii. It is also the Contractor's responsibility to arrange, through the Owner's Representative, for the recharging and resealing of extinguishers immediately after each use.

b. It is the Contractor's responsibility to ensure that his employees are adequately trained in the proper use of provided fire extinguishers.

c. When such work is being done in a grassy area where an adequate water supply is not available, mops and buckets of water shall be kept on hand for the control of possible grass fires.

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4. Special care must be taken during overhead cutting and welding operations to safeguard personnel and prevent falling sparks from starting a fire. Warning signs must be posted at each level below the area of any overhead welding, burning or cutting operation. Warning signs are available through the Owner's Representative.

5. When welding or cutting torches are left unattended, shut off the oxygen and fuel supply at the cylinders and bleed pressure off the hoses.

- a. Welding and cutting torch hoses must not be left connected to cylinders when stored at the end of work day.

6. Appropriate welding goggles shall be used for all gas welding or cutting and welding hoods shall be used for all electric welding or cutting. Side shield safety glasses must be worn under a welding hood.

7. A Safe Work Permit must be obtained prior to cutting or welding along or above a railroad right-of-way. A blue flag must be placed on the track if sparks or slag could constitute a fire hazard to passing railroad cars.

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hours. During working hours, contractors must be able and ready to clear access roads and fire lanes at any time.

c. Tie-ins with hose or piping shall not be made on any sprinkler system or monitor nozzle.

d. The hose on fire hose racks is for emergency use only and shall not be used as service hose.

e. Temporary hose connections may be made to fire hydrants only if other water supply is not available, the tie-ins have been approved by the Owner's Fire Department through the Owner's Representative, and such connections are removed at the end of each work period (except in cases where a special waiver is granted by the Fire Department).

10. All heating units for offices, shops, work areas, change rooms, etc., must be in good working order and periodically inspected. Gas units must be provided with "flame-out" protective devices and electrical units must be grounded. Gas units shall not be connected by means of rubber hose. All heating units must be turned off at the end of each work day.

a. Electrical heating units must be equipped with a switch that will turn the unit off if it is turned over.

11. Flammable or explosive type material such as fuel, oil, cleaner, etc., must be properly contained, clearly identified, separately stored and kept clear of work areas. Appropriate warning signs must be provided in storage areas.

12. All containers used for transporting or transferring gasoline or fuel must be labeled by Underwriters' Laboratories or Factory Mutual Laboratories.

13. Fuel storage tanks, filter hoses and the dispensing vehicle or container must be properly grounded, and be equipped with Contractor-furnished fire extinguisher. Storage tanks must be identified with the Contractor's name.

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a. Except for hand pumps, a quick closing shut-off valve is required on the dispensing end of fuel hoses.

b. Smoking, welding or any spark or flame producing operation in the immediate area must be stopped during refueling operations

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c. The Contractor shall provide and maintain "NO SMOKING" signs in fuel storage areas.

14. Welding rod cabinets presenting a fire or safety hazard will not be permitted. Cabinets of fireproof materials equipped with strip heaters are recommended. If light bulbs are used, they must be securely guarded with adequate spacing in relation to the cabinet and to stored material. Metal cabinets must be effectively grounded.

a. The use of welding rod cabinets for food warming is prohibited.

15. Flammable materials must not be applied near an open flame or in inadequately ventilated areas. If such material is to be applied in a vessel, or other confined area, only explosion-proof connections, lights or other equipment shall be used. The Contractor must designate such areas as "NO SMOKING" areas.

16. Heating equipment for freeze protection of concrete must be approved by the Owner's Representative prior to use.

17. Gas and oxygen cylinders must be handled with care, properly supported in an upright position away from any source

of heat or flame, and securely tied off.
All cylinders not in use must have their
caps in place.

a. Oxygen cylinders stored in buildings shall be separated from fuel gas cylinders or combustible materials (such as oil or grease) a minimum distance of 20 feet, or by a noncombustible barrier at least 5 feet high having a fire resistance rating of at least one-half hour.

b. Oxygen cylinders stored outdoors must be separated from fuel gas cylinders a minimum distance of 10 feet or by a fire-resistant barrier.

c. When a special wrench is required, it shall be left in position on the stem of the valve while the cylinder is in use so that the fuel gas flow can be shut off quickly in case of an emergency.

L Do not open acetylene cylinder valves over 1½ turns.

d. When gas and oxygen cylinders are lifted by hoisting equipment, a basket, cradle or similar handling device must be used. Cylinders must not be lifted by the valve protection caps.

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e. When oxygen or gas cylinders are transported over plant roads, they must be carried in an upright position with valve protection caps in place and securely tied down, except when carried by a vehicle specifically designed for this service and which has been approved by Owner's Representative. (OSHA General Industry 1910.252.)

H. MACHINERY, CRANES, TOOLS AND EQUIPMENT

1. The safe design capacity of any tool or piece of equipment must not be exceeded. Tools or equipment must not be modified in any manner that reduces the original safety capacity.

2. All Contractor-owned, leased or rented equipment must be in a safe mechanical working condition to render safe service at all times.

a. Defective tools and equipment must be removed from service immediately and repaired or disposed of.

3. Equipment with exposed gears, belts, couplings, fans, etc., must be provided with proper guards.

a. Machinery, tools and equipment must not be operated without all guards and safety devices in place and functioning properly.

4. All mobile hoisting operators must be trained and qualified to operate the equipment they are assigned to operate.

5. All aerial lift operators must be trained and qualified to operate the equipment they are assigned to operate. All personnel must take an approved trainer course prior to operating an aerial lift. On completion of training course the operator will be issued a "Certificate of Training."

6. All cranes, including hydraulic cranes (cherry pickers, pole cats, bucket trucks, personnel lifting aerial equipment, etc.), must be inspected by the Contractor and accepted by the Owner on a regular frequency of four months. Inspections must be submitted in writing to the Owner, using the Owner's "Hoisting Equipment Inspection Report", "Hydraulic Crane Inspection Report", or "Personnel Aerial Lifting Inspection Report", whichever is applicable (samples follow). Equipment must be shut down before repairs or adjustments are made. Each inspection report will be audited by the Owner, and if accepted, a numbered and dated decal

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HOISTING EQUIPMENT INSPECTION REPORT
(Use Hydraulic Crane Inspection Form for Hydraulic Cranes)

OWNER _____ DATE _____
EQUIPMENT NO. _____
MANUFACTURER/MODEL _____
MAXIMUM CAPACITY _____
SERIAL NO. _____
DATE OF MANUFACTURE _____
COUNTERWEIGHT FOR NORMAL USE _____
BOOM LENGTH FOR NORMAL USE _____
COUNTERWEIGHT FOR CAPACITY LIFT _____
BOOM LENGTH FOR CAPACITY LIFT _____
CAPACITY CHART POSTED IN CAB () YES () NO

	CONDITION
1. Identification and high visibility markings	_____
2. Hooks (pins, sleeves)	_____
3. Boom sheaves and blocks (straps)	_____
4. Traveling block (pins, gears, fittings)	_____
5. Cable drums (fraying and blocks)	_____
6. Hook lock (catch on brakes)	_____
7. Clutches (hands, pump, control panel)	_____
8. Wheel line (condition of cable, age)	_____
9. End line (condition of cable, age)	_____
10. Boom line (condition of cable, sockets, age)	_____
11. Boom line (condition of cable, sockets, age)	_____
12. Main hoist line (actual members, pins)	_____
13. Jaws (actual members, pins)	_____
14. Gears (in frame) (pins, sleeves, shafts)	_____
15. Spacing bars	_____
16. Hydraulic line (system)	_____
17. Lubrication system	_____
18. Painting	_____
19. Drive chains (straps)	_____
20. Tires (for travel, damage)	_____
21. Communication	_____
22. Equipment with (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____
23. Control (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____
24. Emergency stop	_____
25. Boom (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____
26. Power (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____
27. Power (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____
28. Boom (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____
29. Hoisting (a) (b) (c) (d) (e) (f) (g) (h) (i) (j) (k) (l) (m) (n) (o) (p) (q) (r) (s) (t) (u) (v) (w) (x) (y) (z)	_____

OVERALL EVALUATION OF CONDITION

() Good, Safe () Fair, Safe () Unsafe

Inspector (Owner) _____
Assistant (Owner) _____
Tag No. _____ Date _____

HYDRAULIC CRANE INSPECTION REPORT

DATE _____
 OWNER _____ EQUIPMENT NO. _____
 MANUFACTURER MODEL _____
 SERIAL NUMBER _____
 DATE OF MANUFACTURE _____
 MAXIMUM CAPACITY _____
 BOOM LENGTH AT MAXIMUM LIFT CAPACITY _____
 CAPACITY CHART POSTED IN CAB ☐ YES ☐ NO

1. Identification and high visibility markings
2. Hooks (pins, bearings)
3. Hook Blocks (pins, grease fittings)
4. Boom Top Sheaves
5. Cable Drum (facing and latch etc)
6. Hoist Line (condition of cable, age)
7. Main Boom structural members (pins)
8. Boom extensions (structural members, pins)
9. Cable Guides
10. Boom Hoist Safety Devices (check valve)
11. Hydraulic System (hoists, pumps, controls, reservoir)
12. Hydraulic Outriggers
13. Power Unit Instrumentation
14. Tires (air pressure, damage)
15. Steering Mechanism
16. Cab, Platforms, Handrails, Steps, Glass etc (access)
17. Lighting System
18. Painting
19. Fire Extinguisher
20. Housekeeping

CONDITION

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OVERALL EVALUATION OF CONDITION

☐ Good Sale ☐ Fair Sale ☐ Unsafe

Comments _____

Inspector (Owner) _____
 Audited By (Dow) _____
 Tag No. _____ Date _____

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PORTABLE MOUNTED CRIPPING BUILDING INSPECTION REPORT

Date: _____
 Owner: _____ Equipment No.: _____
 Manufacturer/Model: _____

	CONDITION
1. DRIVE SYSTEM - planetary drive hubs, drive chains and tension, tension adjusters -	_____
2. STEERING SYSTEM - rod ends, spindle assembly, steering cylinders -	_____
3. TIRES - wear, inflation, lug nuts -	_____
4. DAMPERS - fluid level, holding, release, leaks -	_____
5. TURNABLE - gear, bearing, mounting bolts -	_____
6. ENGINE COMPARTMENT - oil levels -	_____
7. EXHAUST SYSTEM -	_____
8. BOOM SECTION - base, rail and fly sections, anchor pins, drive chain, lift cylinder, telescopic cylinder	_____
9. PLATFORM ASSEMBLY - tubes, struts, bush, door and latch, cross shaft, leveling -	_____
10. CONTROL PLACARDS -	_____
11. WARNING AND CAUTION PLACARDS -	_____
12. FIRE EXTINGUISHER -	_____
13. MOUNT CONTROLS - limited, ignition, emergency power, up/down, left/right, in/out, platform stop -	_____
14. PLATFORM CONTROLS - control placards, lift/boom lever, release switch, leveling switch, engine speed switch, drive spread switch, drive stop lever, ignition switch, emergency brake, horn and button, weather seals -	_____
15. OVERRIDE CONTROLS REVERSAL - placards, operation -	_____
16. EMERGENCY RETRACTION AND LOWERING - limit switch, placards and operation -	_____
17. AUTOMATIC BOOM STOP -	_____
18. HYDRAULIC SYSTEM EVALUATION -	_____
19. COUNTER BALANCE -	_____
20. HOUSEKEEPING -	_____

OVERALL EVALUATION OF CONDITION..... () SAFE () UNSAFE.

Inspector (Name): _____ The No. _____

Assisted by (Name): _____ Date _____

BIC/AL/11/11

will be affixed in the cab of the crane or the body of the aerial lift. Except as noted in Paragraph H.6.a., no crane or aerial lift without the proper decal affixed is to be used on the Owner's property. Decals will expire on the last day of the month designated by a large number on the face of the decal. (Sample follows).

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- a. The Owner's Representative shall visually check each crane or aerial lift prior to initial use on a job to assure himself that it is satisfactory for use on the job at hand. The Owner's Representative may give temporary permission to use the equipment for a maximum of 3 days pending the completion of an inspection and audit, provided, however, that a critical lift (Paragraph H.6.c.) is not involved and

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that the inspection/audit procedure is initiated immediately.

b. Aerial lifts, including "bucket trucks" and "pole cats", must be tested from the ground before lifting personnel. During use, a standby man must be ready to take over controls in case of an emergency.

c. The Contractor has the complete responsibility for a safe operation when using hoisting equipment to make lifts. The Contractor shall verify weights of loads to be lifted. No load shall be lifted which exceeds the Manufacturer's rated capacity of the crane. When one of the following conditions prevail, the Contractor must, using the Owner's "Critical Lift Sheet" (sample follows), submit a written outline of the safety planning for the lift to the Owner's Representative, prior to starting the lift.

i. The load exceeds 80 percent of rated load chart for crane.

ii. The load exceeds 50 percent of rated load chart for crane, and possible failure would endanger existing facilities.

CHECK LIST FOR CRITICAL LIFTS

DATE _____

1. ACC. No. / W.D. No. _____

2. JOB DESCRIPTION _____

3. LOCATION _____

4. DOW REPRESENTATIVE _____

5. PLANNING DATA:

A. 1. CONTRACTOR _____

2. SUPERINTENDENT _____

3. SUPERVISOR RESPONSIBLE FOR LIFT _____

B. DESCRIPTION OF ITEM TO BE RAISED _____

C. MAJOR HOISTING EQUIPMENT TO BE USED (MUST INCLUDE INSPECTION TAG NO. AND DATE. TAGS ARE VALID FOR FOUR MONTHS.)

1. _____

2. _____

3. _____

4. _____

D. EQUIPMENT AND LIFT RELATIONSHIP

1. OPERATING RADIUS _____

2. BOOM LENGTH _____

3. ALLOWABLE LOAD (FROM LOAD CHART) _____

4. RATIO OF LIFT TO ALLOWABLE LOAD _____

5. CLEARANCE BETWEEN BOOM AND LIFT _____

6. CLEARANCE TO SURROUNDING FACILITIES _____

E. SCHEDULE OF OPERATIONS (INCLUDE TIME FOR RIGGING AND EQUIPMENT INSPECTION)

6. BASIS FOR CRITICAL LIFT:

A. LOAD EXCEEDS 80% OF LOAD CHART FOR CRANE OR DERRICK _____

B. LOAD EXCEEDS 50% OF LOAD CHART AND FAILURE WOULD ENDANGER EXISTING FACILITIES _____

C. TWO BOOMS ARE REQUIRED _____

D. POLES OR DERRICKS HAVE BEEN ERECTED FOR THIS SPECIFIC LIFT _____

7. HOW WEIGHT OF CRITICAL LIFT WAS OBTAINED

A. CERTIFIED SCALE WEIGHT _____

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B. CALCULATED INDEPENDENTLY BY MORE THAN ONE SOURCE.

1. SOURCE _____ WEIGHT _____
2. SOURCE _____ WEIGHT _____

C. IF LIFT IS AN EXISTING ITEM (BEING REMOVED OR DEMOLISHED), THE WEIGHT IS TO BE RECALCULATED, TAKING INTO ACCOUNT ALL MODIFICATIONS INCLUDING INTERNAL AS WELL AS AN ALLOWANCE FOR SCALE, SEDIMENT, SLUDGE, INSULATION, LIQUID, ETC.

1. SOURCE _____ WEIGHT _____
2. SOURCE _____ WEIGHT _____

D. CONDITION OF HOISTING EQUIPMENT AND RIGGING:

- A. HAS EQUIPMENT BEEN REINSPECTED FOR THIS LIFT?
- B. HAS ALL EQUIPMENT AND RIGGING BEEN INSPECTED AND FOUND IN ACCEPTABLE CONDITION FOR THIS LIFT?

E. GUY ANCHORS AND GUYS:

- A. ADEQUACY OF FOUNDATION FOR FOOT BLOCKS _____
- B. ADEQUACY, NUMBER, AND LOCATION OF GUYS AND ANCHORS _____
- C. FOOT BLOCKS ARE TO BE ANCHORED _____
- D. CONDITION OF ALL CABLE, INCLUDING SPLICES, CLAMPS, THIMBLES, AND OTHER HARDWARE _____

F. STABILITY OF GROUND AREA:

- A. CHECK SOIL BEARING ALLOWABLE LOAD _____
- B. WILL MATS BE REQUIRED? _____
- C. ANY UNDERGROUND INSTALLATIONS NEEDING SPECIAL TREATMENT _____

G. OPERATORS:

WHAT IS OPERATOR'S EXPERIENCE ON THIS EQUIPMENT AND THIS TYPE OF LIFT? _____

H. REMARKS:

Nothing in this submission and/or acceptance of the CHECK LIST is to be considered as relieving the Contractors of any responsibility for a safe operation.

Contractor _____

By _____

Title: _____

I. RESUME OF ACTUAL SCHEDULE:

DATE OF LIFT _____
 INSPECTIONS COMPLETED _____
 LIFT STARTED _____
 PERMANENT SUPPORTS COMPLETED _____
 TOTAL TIME _____

iii. Two cranes are required to make the lift.

iv. Poles or derricks have been erected for this specific lift.

d. If burning of lugs or other such flame producing operations may be required during crane hoisting operations, arrangements for proper Safe Work Permits must be made before the lifting or burning operation begins.

7. The following rules must be observed when operating a crane, cherry picker, winch truck or similar piece of equipment:

a. A flagman must be provided whenever equipment in operation partially blocks a plant road or whenever the operation of the equipment could present a hazard to personnel or property.

i. Personnel shall be kept out from under any load being lifted.

ii. Personnel shall not be positioned between the load and any object that could create a pinch point.

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iii. To avoid tipping, all outriggers must be fully extended and a good footing assured prior to lifting any loads.

b. Lifting of personnel by a crane is prohibited unless done by means of a bosun's chair and safety harness or by means of a crane basket and safety belt or harness. Safety lanyard must be attached to the load line above the ball when using a bosun's chair. When using a basket, safety lanyard must be attached to the basket and the basket independently choked to the load line above the ball with 1/2 inch minimum diameter cable.

c. When performing non-electrical work with power equipment (such as mobile hoisting, drilling, dirt moving or material handling equipment), you must not permit any portion of the equipment you are operating to come within 10 feet of high voltage lines 50 kV or less. The distance for lines in excess of 50 kV is 10 feet plus 0.4 inch for each added 1 kV.

d. Warning signs with the wording:
"WARNING - UNLAWFUL TO OP-

ERATE THIS EQUIPMENT WITH-
IN 10 FEET OF HIGH VOLTAGE
LINES 50 kV OR LESS," shall
be attached inside the cab of all
mobile hoisting, drilling, dirt mov-
ing, or material handling machines.
*Similarly worded signs, legible at
12 feet, shall be attached to the
outside of these machines.*

8. All pressure vessels of construction
equipment must be hydrostatically
tested annually. Items in this category
are those exceeding 6 inches (inside
diameter) and with internal or external
operating pressure exceeding 15 psi,
or those protected by a relief valve
with a setting greater than 18 psig, or
by a rupture disc whose bursting pres-
sure is greater than 25 psig.

a. These tests must be performed
during the month of January each
year by the owner or renter of
the equipment. Equipment with un-
tested pressure vessels and arriving
in the plant for the first time after
the January test period must be
visually inspected and accepted by
the Owner's Representative and
must meet the above test require-
ments within 10 days. Such equip-
ment must be retested the follow-
ing January.

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b. Relief valves must be removed and the vessels hydrostatically tested to one and one-half times the maximum allowable working pressure of the unit. A thorough visual external inspection must be made.

c. As a part of these test procedures, relief valves must be properly sized and set for the vessel involved and checked for proper operation, apart from the vessel test.

d. Metal identification tags must be attached to relief valves bearing pressure setting, date of test, name of company conducting test and name of person conducting the test.

e. Contractors will furnish the Owner's Representative a test certificate for each piece of equipment. Each certificate must be signed by the test conductor and a representative of the company owning the equipment.

f. The Owner's Representative will forward each certificate to the E&CS Construction Department Central Office, B-10602, where an equipment number will be assigned and the certificate will be kept on

file. The Contractor will be informed of the assigned number by the Owner's Representative.

g. Contractors shall paint or stencil the assigned equipment number in plain view on the equipment. The numerals shall be painted or affixed on a colored background. They shall be approximately 3 inches high and of a color contrasting with the background color. The background color for the calendar year of 1981 shall be 'orange', and the color for the calendar year 1982 shall be 'black'. The background color will be changed for each calendar year thereafter, and Contractors will be notified in December as to the color for the following year.

9. Electrical tools and equipment operating at more than 32 volts must be properly grounded except the following:

a. Double insulated tools approved by UL.

b. Certain test equipment such as oscilloscopes, vacuum tube voltmeters and signal generators. Consult with Owner's Representative for exceptions.

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c. Certain areas where D.C. equipment is used. Proper operational procedures in these areas must be ascertained from the Owner's Representative.

10. All 120 volt, single phase, 15 and 20 ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure, shall be protected by either:

a. A Ground Fault Circuit Interrupter (GFCI), or,

b. An assured equipment ground conductor program, with written description of the program. (OSHA 1926.400(h) (3).

11. All manually held pneumatic, electric-powered, or hydro-blast tools shall be equipped with a "deadman" type control which cannot be locked in the "on" position. Existing trigger locks must be removed from all such tools.

12. Only 32-volt (12 volt for construction) or less electrical service is to be used when working inside metallic vessels. Drop lights shall have protection guard over globe. Transformers must be kept outside vessels.

13. In order to minimize the possibility of intermediate arcing during arc welding, the grounding lead must be connected as close as practical to the work piece and no splice within 10 feet of the stinger end.

a. When arc welding is to be done in an area restricted by a Safe Work Permit, the grounding lead **MUST** be connected to the work piece within the limits specified in the permit.

b. All leads and lead connections shall be in good condition and free of any exposed conductors.

14. Tool rests on grinders shall be set not more than one-eighth inch from, and level with, the center line of the wheel. Buffers are not to be operated with tool rests.

15. Grinding wheels shall be checked for cracks and proper bond and speed specifications before mounting. Mounting flanges, if used, shall be checked for flatness and proper size.

16. Gloves must not be worn while using pedestal or bench-mounted grinders, drills, saws or any tools where gloves are apt to become entangled.

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17. Personnel must not crank any machinery using their feet.

18. Hose connectors and adaptors must be of a standard manufacture and used only for the type of service intended.

a. In order to insure positive locking at all times, hose connectors must be in good condition and not abused. Sandblast hose connections shall be the safety lock type which prevents accidental disengagement.

b. Spring-loaded snap-on "Cleco" quick hose connections must be reserved for use on air and cold (under 140° F.) water hoses only. A part of the "Cleco" connector must not be left connected to a process line or equipment.

c. "Boss-type" union connectors must be used on steam and hot (140° F. and above) water hoses.

d. Air pressure on pneumatic tools must be valved off and bled down before adjusting, changing tools or disconnecting the hose. Crimping of air hoses is prohibited.

e. Care must be exercised not to allow air hoses to come in contact with steam lines or hot equipment.

19. Powder - actuated fastening guns shall be used only in accordance with the following procedure.

a. Whenever it is planned to use such equipment on a job, the Contractor's Representative shall submit to the Owner's Representative:

i. Written notice of intent to use such equipment;

ii. A written Safe Work Procedure covering use of the equipment; and

iii. The qualifications of the men who will use the equipment. (Users must comply with ANSI Standard Number A-10.3-1970.)

b. The Owner's Representative shall, if satisfied with the submitted procedure and the qualifications, give the Contractor's Representative written permission to proceed.

i. Use of the equipment shall not be allowed until such written permission is in hand.

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I. LADDERS, PLATFORMS, ROOFS,
& SCAFFOLDS.

1. Applicable to All Ladders

a. All ladders shall be heavy duty,
industrial strength.

b. Written permission must be
granted by Owner's Representative
for metal ladder usage. Tank lad-
ders inside vessels are excluded.

c. The user is responsible for vis-
ually inspecting a ladder for split-
ting or breaking, cracked or broken
steps or rungs, hardware and fit-
tings for wear, corrosion, binding,
or undue play, before use.

d. Any ladder found defective shall
be tagged, removed from service,
and repaired or destroyed.

e. Wooden ladders are not to be
coated with anything other than
clear preservative. All metal parts
must be hot-dipped galvanized.

f. Ladders are not to be used as
pencil or scaffold boards.

g. Work straight ahead from a
ladder. To prevent overreaching,

keep body position such that belt buckle is inside the side rail.

h. Use both hands for climbing. A rope and bucket shall be used for raising and lowering tools and materials.

i. Only one person is permitted to climb a ladder at a time. A person climbing any ladder must weigh less than 275 pounds.

2. Stepladders

a. Stepladders over 10 feet must be tied off at the top or be held by another worker.

b. Maximum height for Painter's stepladders is 12 feet.

c. Personnel must not stand on the cap or top step of a stepladder.

d. Stepladders are not to be used as a straight ladder.

3. Straight & Extension Ladders

a. Top sections of extension ladders shall not be used by themselves except for restricted entry

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into vessels, furnaces, and for scaffold access when properly tied off.

b. All straight and extension ladders must be tied off within three rungs of the top or held by another person when in use. Cotton or hemp rope is prohibited on extension ladders and for tying off all ladders.

c. Extension ladders shall have one of the lower rungs of the upper section fastened to the adjacent rung of the lower section when in use.

d. All straight and extension ladders must be equipped with non-skid feet.

e. Straight and extension ladders shall be placed at such an angle that the base is one fourth of the working length of the ladder out from the top support. Eg., 20' up 5' out, or one rung out for each 4 up.

f. Maximum height: Straight ladder 24 feet. Extension ladder 40 feet.

4. Platforms and Roofs

a. Makeshift platforms, such as stacked material, chairs, boxes, or drums shall not be used.

b. Climbing on top of tank cars, hopper cars, or tank trucks without a platform and handrails is prohibited without a life line or other device to prevent falls.

c. Tanks or roofs which are more than 16' to ground, with a slope greater than 3 inches in 12 inches, shall be provided with a handrail, midrail, and toeboard, or, employees shall be protected by a safety belt attached to a lifeline.

5. Applicable to All Scaffolds

a. All scaffolds must be plumb and level at all times.

b. All work levels of a scaffold, if practical, must be fully planked. If of necessity a work platform is not completely planked or handrail not adjusted, personnel working on that platform must be tied off with a safety belt.

c. All scaffolds over 10' in height must be equipped with toeboards at

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least 4" (1" x 4" nominal) in height on all sides. Clearance between toeboards and decking shall not be more than $\frac{1}{4}$ ". When circumstances are such that toeboards cannot be installed, a sign must be installed on the ladder side stating: "DANGER OVERHEAD—NO TOEBOARDS ON SCAFFOLD," and the area taped off.

d. When use of # 9 soft annealed wire is necessary, a minimum of two separate strands must be used to tie scaffold handrails, braces, etc. The ties must be crossed to form a lock to prevent slipping in any direction, and folded back to prevent a puncture hazard.

e. The use of double headed (form nails) is not permitted on scaffolds.

f. Scaffolds must not be used as material hoist towers or for mounting derricks without first determining the loads and stress involved.

g. No scaffold shall be erected closer than 8'9" from the center line of the railroad tracks without permission from the Railcar Handling Department. If the scaffold straddles the railroad track, the first deck must provide a clearance of 22'6" from the top of the rails.

h. No scaffold shall be erected, moved, dismantled, or altered except by trained personnel.

i. Maximum loading: Three men and a dead load not to exceed 200 pounds or a total distributed load not to exceed 800 pounds. Exception: See Suspended Scaffolds.

j. All scaffolds shall be free of tools, trash, etc., before starting removal.

k. All scaffolds left uncompleted shall have a sign attached to the ladder side stating: SCAFFOLD INCOMPLETE. DO NOT USE.

l. All scaffolds shall be equipped with hand rails and midrails except on owner's written request. The midrail may be omitted when it would interfere with access to the work platform or upon owner's request.

m. Scaffolds must be erected with wood (lumber) of scaffold grade only.

n. The person who is going to use a scaffold is responsible for checking the scaffold to assure himself that it is safe to use.

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6. Tubular Welded Frame Scaffolds (Patented Metal Scaffold – Universal or Equal)

a. Scaffolds must be erected with proper fixtures made for each type of scaffold. Scaffolds and associated equipment must not be modified in any manner that reduces the manufacturer's designated performance.

b. Scaffolds 18 feet or over shall have horizontal and diagonal bracing at the bottom and intermediate levels of 20 feet.

c. Planking overhang shall be a maximum of 4 inches on stack-up scaffold; 1" x 4" wood cleats shall be fastened across the top of planking at each outside end of frames with #9 soft annealed wire or 6 penny nails driven full length in each decking board.

d. Sufficient, 2" x 10" x 18" minimum (preferably 3/4" plywood, 2' x 2') mudsills or footing must be provided on all scaffolds erected on grating, filled, or otherwise soft ground. Do not use scaffold boards.

e. Scaffold boards shall be used exclusively for work platforms, and shall be identified by painting each end.

f. All scaffolds shall be locked in or tied off at every 18' of elevation. Anchor running scaffolds to wall approximately every 28' of length.

g. A ladder or safe access shall be affixed or built into the scaffold and so located that, when in use, it will not have a tendency to tip the scaffold. A landing platform must be provided at intervals not to exceed 35 feet.

h. When one side of a scaffold is left open (without guardrails) to facilitate work being performed (such as against a building, wall, or tank wall) there should be no gaps greater than 11" between the work platform and the adjacent structure.

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7. Tube and Coupler Scaffolds

a. Posts shall be accurately spaced, erected on a suitable base, and maintained plumb.

b. Runners shall be erected along the length of the scaffold, located on both sides at even height. Runners shall be coupled to each post. The bottom runners shall be located as close to the bottom as practical. Runners shall be placed not more than 6'6" on centers.

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c. Bearers shall be installed transversely between posts and shall be securely coupled to the posts bearing on the runner coupler. When coupled directly to the runners, the coupler must be kept as close to the post as possible, and runners backed by extra coupler below runner.

d. Bearers shall be at least 4", but not more than 12" longer than the post spacing or runner spacing.

e. Cross bracing shall be installed across the width of the scaffold where possible. Horizontally at the bottom and approximately every 20'.

8. Wood Pole Scaffolds

a. Maximum span between ledgers shall be 7 feet.

b. A bearing block will be installed beneath the ledger at each post.

c. Where planking is lapped, each plank shall lap its end support by at least 12".

d. Bracing shall be 1" x 4" or larger.

e. Wooden handrails and midrails shall be 2" x 4".

f. Decking shall be nailed with 12d nails or larger.

g. Maximum span of the ledger is 10', using 2" x 10" on edge.

9. Rolling Tower Scaffolds

a. Towers of a height greater than three times the maximum base dimension (5' x 7') must be guyed or tied off while being erected, used, or dismantled.

b. The minimum size for casters shall be 6". Scaffolds higher than 25' must be stabilized either with out-riggers or hand lines while being moved.

c. Caster brakes on rolling tower scaffolds must be locked while scaffold is not being moved. Tower must be free of personnel, material, and equipment before being moved. Move only with sufficient help.

10. Suspended Scaffolds

a. Chain of 1/4" (minimum) steel shall be used to support suspended scaffolds.

b. Safe load limits for chain: 1750 pounds, proof tested to 2350 pounds.

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c. "Bearer" shall be a 4" x 4" or larger and should be hand selected, No. 1 Grade, 1750 or equal.

d. The maximum distance between chains on the "bearer" (4" x 4") shall be 6 feet.

e. All suspended scaffolds shall be anchored to prevent swinging. Chains shall be securely fastened by chains being tied together and fastened by twisting No. 9 wire through the links or mousing wire through hook when hook is fastened on chain.

f. The platform span between bearers shall not exceed 7' when using 2" scaffold planks. For spans greater than 7', platforms shall be designed based on design requirements for the special span.

g. Maximum loading — Two men and a dead load not to exceed 200 pounds, or a total distributed load not to exceed 600 pounds.

J. DANGER, WARNING AND CAUTION TAGS

1. Red Danger Tags

a. To insure that operating status of equipment is not changed while it is

being used or worked on, Red Danger Tags must be attached to the controls.

b. No control such as a valve, switch, clutch, etc., is to be operated by anyone while a Red Danger Tag is attached.

c. Red Danger Tags must not be altered or used for more than one job.

d. If a control must be operated intermittently such as for testing equipment, the Red Danger Tag must be properly removed before each operation. The Red Danger Tag may be reused on the same job if the scope of the job has not changed.

e. Violation

i. Operation of a control with a Red Danger Tag attached shall result in time off without pay up to and including rejection from any work on Owner's property.

ii. All other Red Danger Tag violations will result in disciplinary action up to and including rejection from any work on Owner's property.

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f. Attachment of Red Danger Tags to equipment controls does not mean that equipment has been cleared to work on. When work is to be done on tagged-out equipment, personnel responsible for the operation of the equipment are responsible for clearing the equipment and making it safe for others to work on.

g. Whenever the operation or use of any equipment may endanger anyone, a request shall be made to the personnel assigned to operate the equipment (Dow operating personnel) to tag the equipment. Operating personnel will attach tags first after clearing the equipment. The authority to clear and tag equipment may be delegated by Dow operating personnel supervision.

h. After the Dow operating tag is attached, any contractor employee or group of employees whose safety could be endangered while working on this equipment will attach their own Red Tag (s) to the equipment for their protection upon receiving permission to do so from Dow operating personnel.

i. As the individual jobs have been completed, each worker or group of workers must remove their tags immediately.

j. Dow operating personnel must place their tags first and remove their tags last. Exceptions to this, which would allow use of Contractor Red Tags 'only', shall have prior permission from the Owner Representative. This, in most cases, would be in locations where Dow operating personnel are not involved.

k. Red Danger Tags shall be removed only by the person designated on the tag, except in the following specific instances:

i. The supervisor of any person who fails to remove a Red Danger Tag when a job has been completed may remove the tag after he has determined, at the site, to his complete satisfaction that the equipment can be operated in a safe manner.

ii. Authorization across line organizations is not permissible except for cases where Rule J.1.i. ("As the individual jobs have been completed, each worker or group of workers must remove their tags immediately.") has been violated and no supervision in the violating organization is in the plant. In such cases, the Operating Depart-

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ment supervisors must contact supervision in the violating organization to obtain authority to remove the tag.

iii. The Operating Department supervisor must first determine that the equipment can be operated in a safe manner and that all non-operating workers have left the immediate area.

iv. The space on the Red Danger Tag entitled, "Removal will be ordered by _____", shall be completed as follows:

'The name of the individual who hangs the Tag and/or a specific titled designee such as Maintenance Foreman, Shift Foreman, etc.'

i. At the discretion of the supervisor, locks may be used on valves and switches in addition to, but not in place of, Red Danger Tags.

m. Removal of Red Danger Tags.

i. After determining to their complete satisfaction that the equipment is cleared and safe to work on, and,

ii. Receiving permission to do so from Owner's operating personnel.

iii. Upon removal, Red Danger Tags shall be signed, dated and turned in to the Owner's Representative.

2. Green Warning Tags.

a. When it is necessary to convey instructions or information prior to operation of equipment controls, Green Warning Tags are to be attached to the controls.

b. Green Warning Tags should be removed when conditions set forth on the tag have been met.

3. White Caution Tags *

a. White Caution Tags are affixed to mechanical or electrical equipment by the Owner's Representative to prevent inservice operation of such equipment by anyone until items on the tag have been completed.

b. The tag provides spaces for meggering, rotation, final alignment and lubrication of equipment. When appropriate action has been taken, then personnel performing the work signs and dates the tag.

* Not used in Oyster Creek Division.

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c. When tagged equipment is released to the Owner, a representative of operations and the Owner's Representative sign the tag which is kept by the Owner's Representative until job completion.

K. SAFE WORK PERMITS

1. Safe Work Permits issued by the Owner to Contractor personnel are required for certain hazardous locations and conditions. These permits are designed to provide a means of checking at the job site the safety of such jobs as, but not limited to, entering closed vessels; working on electrical gear; performing hot tap work, welding, cutting on, breaking into or repairing pipelines or vessels in operation or under pressure or that have contained hazardous materials. These permits also cover work involving the use of flame or spark-producing equipment in hazardous areas, near an open ditch, or for work on machinery.

a. An Area Permit is designed to provide communications between the Owner and the Contractor. An Area Permit is not a Safe Work Permit. When it is issued, it is to agree that the work the Contractor has outlined will not pose a hazard to the Owner and the Owner will not create

a hazard for the Contractor. Several Area Permits may be required before the Owner can issue a Safe Work Permit to those doing the job.

b. When machine excavation work (gradalls, draglines, augers, pile drivers, ditch digging machines, etc.) is to be done, the Contractor must obtain a "Safety Clearance for Excavation" from the Owner's Representative responsible for the job. This clearance designates the Safe Work Permits which will be required prior to any digging. Excavation areas will be clearly defined.

i. The actual location of underground lines or equipment must be verified by manual digging, probing or other reliable means acceptable to the Owner's Representative. No machine excavation shall be permitted where the closest point of the excavation is less than 2 feet to any existing buried installation containing hazardous material.

ii. A separate Safe Work Permit must be obtained immediately preceding the use of a sewer plug. The permit must indicate precautions taken to prevent pressure buildup behind the plug.

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c. Proper clearance must be obtained from Owner's Representative prior to ground penetration for ground rods or anchors for portable buildings.

2. Contractor supervision must be in close contact with the progress of work and must be in constant communication with the Owner's Representative for up-to-date status of operations. Further, Contractor supervision must be certain that all personnel involved are informed as to specific procedures and changes in the situation.

3. Safe Work Permits are to be initially requested through the Owner's Representative and issued by the Owner's operating area or facility supervision involved on any job where the Safe Work Permit is applicable. More than one Safe Work Permit may be required on certain jobs which will be ascertained upon obtaining each Safe Work Permit.

a. Safe Work Permits will be issued only after a physical check of the job site by the person issuing the permit.

4. Personnel must give a careful and complete description of the work to be done to the person issuing the Safe Work Permit.

a. Where a job presents a serious man hazard, it is mandatory that a written Safe Job Procedure accompany the request for the Safe Work Permit. If, on jobs of a repetitive nature, it is necessary to have a written procedure, one that is already written will do in lieu of writing one if the Contractor says he can follow the procedure and do the job safely. New procedures are to be signed by the Manufacturing Representative, the Owner's Representative, and the Contractor's Representative. If previously approved procedure is to be used, it must be initialed and dated by the above named representatives.

5. Directions and restrictions noted on Safe Work Permits must be carefully followed.

6. A Safe Work Permit must be revoked and reissued for a job if there is evidence that conditions have changed subsequent to the issuance of the Original Safe Work Permit.

7. Permits issued for jobs that last longer than one day will normally be issued for that job each day. By mutual consent of the parties involved, permits for these jobs may be issued for longer or shorter periods of time.

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8. Existing vessels to be entered must be made safe for personnel.

a. The requirements set forth in the following subparagraphs must be accomplished by the Owner before entry of any personnel is permitted.

i. Vessels to be entered must be isolated by blinding or disconnecting from process and service systems. Double block and bleed may be permitted if the foregoing methods are impractical.

ii. Hazardous materials contained in the vessels and related piping must be removed or reduced to a safe level by washing, steaming or purging.

iii. Tests must be made with an approved oxygen indicator for excess or deficient oxygen content.

b. A Safe Work Permit must be obtained.

c. Rescue breathing apparatus, tested just prior to entry, must be on hand nearby on the outside of the vessel.

d. Whenever personnel are working inside a closed vessel (one entered

through a manhole), an attendant must be stationed outside one entrance to warn of external danger or summon help, if needed.

9. A Safe Work Permit shall be obtained before working on pipelines or other equipment which contain or have contained hazardous material.

10. The proper protective clothing and equipment (chemical suits, face shields, full-face gas masks, chemical goggles, rubber gloves, etc.), as specified in the Safe Work Permit must be worn. Full-face gas masks with proper canisters or air supply shall be worn when breaking and making the initial entry into lines or vessels that contain or have contained chemicals or irritants which are a hazard to breathing.

11. Prior to any welding or burning, either inside or outside, on an existing vessel, the vessel must be positively checked inside for flammable or explosive gases or liquids, and a Safe Work Permit must be obtained before heat is applied.

12. The Contractor may request Safe Work Permits for his own protection. Safety checks by the Owner for dangerous gases or chemicals shall be requested through the Owner's Representative when there is any uncertainty.

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13. All Safe Work Permits in the area affected are automatically cancelled when an emergency signal is sounded and must be reissued after the "All Clear" signal.

14. Safe Work Permits are normally not issued for periods of more than one day. At the end of the day, or when the job has been completed, or if the permit has been cancelled, the Contractor must return the Safe Work Permit to the Owner's Representative who issued the permit and report the status of the work.

L. ELECTRICAL WORK

1. General Rules - The following listed electrical safety rules are the minimum requirements for performing electrical work.

a. Contractor personnel, when performing electrical work within an existing operating facility, shall conform to additional safety rules which are applicable to the specific area in which the work is to be performed.

b. All temporary as well as permanent electrical installations shall conform to the current state and federal regulations.

c. Work on and/or adjacent to exposed electrically energized equipment

shall be done only with the permission of the Owner's Representative and in accordance with specific written safety procedures. Refer to Section L.4 and L.6.

d. Work on de-energized electrical equipment (electrical facilities which have been previously placed in service) will require compliance with written clearing procedures and required permits. Refer to Section L.3.

e. Placement of underground electrical facilities will require an excavation permit as outlined in Section K.1.b.

f. Placement of ground rods and earth anchors will require proper clearance by the Owner's Representative.

f. Any permanent electrical grounding connections or facilities which are disturbed or damaged by the Contractor's operations must be reported immediately to the Owner Representative.

g. Requirements for prevention of electrical shock hazards involving the use of portable generators or welders and portable electrically operated,

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cord and plug connected, equipment and tools, are outlined in section H.9 and 10.

h. Electrical insulating protective equipment, such as rubber gloves, blankets, hoses, boots, etc., shall be tested and labeled or recorded at six month intervals and maintained in a safe condition.

2. Procedures for working on 115 and 230 volt AC or DC equipment.

a. Contractor shall request Owner's Representative to de-energize and Red Tag the circuit or equipment to perform the proposed work. The circuit or equipment shall then be tested for no voltage with a voltage indicating device. Each disconnected device involved shall then be Red Tagged and the equipment checked for possible auxiliary circuits which could apply a feedback voltage. Clear auxiliary circuits as approved by Owner's Representative.

b. If the equipment cannot be de-energized and can safely be worked hot, the Contractor shall prepare and submit to the Owner Representative, a written hot work procedure (Refer to Section L.6), listing the precaution-

ary safety measures to be used to prevent electrical shock or flash. Safety measures considered shall include, but are not limited to, equipment, instruments, tools, barricades, protective clothing, and qualifications of the personnel involved in the work. Only experienced electrical craftsmen shall perform the work.

3. Clearing Procedures for Work on Electrical Equipment.

a. This section governs the clearing procedures to be used for all work on de-energized electrical equipment (440 Volt AC or above and 250 Volt DC or above) shown on Construction Electrical One-line drawings or Owner's Safety Electrical One-line Diagram, and associated electrically driven equipment.

b. It is the policy of the Owner to use written clearing procedures to insure the de-energized status prior to performing work on de-energized equipment and circuits shown on the appropriate one-line drawings. The Contractor shall submit a written clearing procedure to the Owner's Representative.

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c. For mechanical work on electrically driven equipment, the written procedures shall provide a method to verify that the associated motor cannot be started. Where no start-stop station exists, a visible air gap must be provided in the motor circuit.

d. The written procedures on all electrical equipment and circuits requiring electrical work shall include:

i. A positive means of isolation by providing a visible air gap or a procedure for grounding the circuit conductors.

ii. Auxiliary circuit identification and a method for clearing auxiliary circuits unless it is impractical to clear the auxiliary circuits, then it shall be identified as energized.

iii. A positive method to verify the de-energized status of the equipment or circuit by use of a voltage indicating device which shall be tested just prior to use. Simpson type multimeters are not acceptable for this purpose.

iv. Placement of Red Danger Tags. Refer to Section J.1.

e. An Electrical Safe Work Permit (ESWP-Texas Division); Safe Work Permit (SWP-Oyster Creek Division); shall be required for any work that may involve exposure to the de-energized conductors or circuits or equipment with operating voltages of 2300 volts or above. (ESWP) (SWP) forms required will be furnished by the Owner's Representative. (Section L.3.d for procedure).

f. Procedure for using an Electrical Safe Work Permit (ESWP-Texas Division) Safe Work Permit (SWP-Oyster Creek Division). The (ESWP) (SWP) shall be issued only after the equipment is de-energized, cleared and Red Tagged.

g. ESWP/SWP Owner Responsibilities:

i. The supervisor requesting the work shall be the Owner's Representative. If there are additional Owner supervisors in whose areas the isolating devices are located, the Owner's Representative shall list them on the ESWP/SWP and issue the ESWP/SWP to the Holder.

ii. The Owner's Representative and each involved supervisor, if any, shall review all appropriate one-

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line drawings, list and initial all isolating devices on the ESWP/SWP, perform joint field check with Holder to insure the de-energized status of circuit or equipment, isolate equipment by applicable clearing procedures and attach Red Tags.

iii. The Owner's Representative and each involved Owner supervisor, if any, shall indicate on the ESWP/SWP if grounds are required by his department.

iv. When required, such as Owner owned substations, the Owner's Representative shall obtain necessary switching requests from the Power Dispatcher. This will require attaching and removing Red Danger Tags at the direction of the Power Dispatcher.

v. The Owner's Representative shall accept an ESWP/SWP release from the Holder and shall notify all other involved Owner supervisors that the ESWP/SWP is released. Release may be accepted by telephone.

vi. The Owner shall retain the ESWP/SWP for at least 30 days after release.

h. ESWP/SWP Holder Responsibilities:

i. Shall be a Contractor representative who is acceptable to the Owner's Representative as responsible for performing the work and accepting the ESWP/SWP from the Owner.

ii. Obtain a clearance from the Dow Power Dispatcher on jobs involving equipment under Dispatching control.

iii. Review all appropriate one-line drawings, obtain list of isolating devices and involved Owner supervisor's initials, perform joint field checks with Owner's Representative, and attach Red Tags.

iv. Perform voltage checks with Bodendieck or equivalent tester or phase sticks to prove the circuit is de-energized and attach any required grounds.

v. Upon completion of job, remove ground and Red Tags, and release ESWP/SWP to Owner.

vi. Release clearance to the Dow Power Dispatcher if a clearance was obtained for the job.

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i. An ESWP/SWP may be released only by the Holder designated on the permit or:

i. After transfer by the Transfer Holder or,

ii. By a representative designated by the Contractor.

j. A person who is authorized to "Release an ESWP/SWP" must not do so until he has determined to his satisfaction that the equipment is safe to operate.

4. Work on or Around Exposed Energized Equipment.

a. This section governs the procedures to be used when working on or adjacent to exposed energized electrical equipment shown on Construction Electrical One-line drawings or Owner's Safety Electrical One-line Diagram (440 Volts AC/250 Volts DC or above).

b. It is the policy of the Owner that NO work on and/or adjacent to exposed electrically energized equipment will be done without a written electrical hot work procedure. The Contractor shall submit such a written

procedure to the Owner's Representative. (Refer to Section L.6).

i. Adjacent to - includes work over or within possible contact on uninsulated conductors or work where a flash could occur.

c. The following must be done before approval is granted:

i. Investigate why the equipment or circuitry cannot be de-energized.

ii. Investigate the job in depth at the job site.

iii. Determine that the job can be safely performed.

iv. Have a written Electrical Safe Job Procedure for the job. Refer to Section L.6.

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5. Operating Electrical Equipment.

a. This section governs the procedures and requirements for the operation of electrical equipment at the 440 Volt AC/250 Volt DC level and above as shown on Construction Electrical One-line drawings or Owner's Safety Electrical One-line Diagrams.

b. It is the policy of the Owner that electrical flashes and electrical shocks will be avoided and that people will be adequately protected when operating electrical equipment.

c. Electrical equipment is defined as electrical switchgear, motor control centers, circuit breakers, contactors, starters, and any other similar switching devices.

d. Electrical operations shall include:

i. Opening and closing switching devices directly.

ii. Operating a start-stop control device within 10 feet of its associated switchgear.

e. When personal protective flash equipment is required, it shall consist of a hood complete with neck drape, knee length jacket, and gloves, as follows:

i. Hood - Electrician-Switchman, with 10 oz. Nomex Drape and Multi-Ply Window, Encon # SD-115 or equivalent.

ii. Jacket - Electrician-Switchman, Nomex. Large, Encon # SD-114, 48" long or equivalent.

iii. Gloves - Best # 4499 BWS or T-11 Terrycord Welders Gloves or Electricians Rubber Gloves with protectors - 20 KV, 10 KV, or 750 Volt as applicable, or equivalent.

f. Procedure for Electrical Operations.

i. Verify with Owner's Representative the correct identification of equipment and its switchgear.

ii. Actuate the field switch (start/stop station) to the "off" position and check to see that the equipment is not operating. Check for current on circuits where an ammeter is installed. If an automatic start circuit exists, see that it is deactivated.

iii. Have other persons in the switchroom or immediate area stand back at least 10 feet while switches are being opened or closed.

iv. Use protective flash equipment if the operation is performed within 10 feet of the switch being opened or closed.

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g. When operating switches:

- i. Make sure the door is closed and secure or that the enclosure is properly made up.
- ii. Stand as far as possible to one side, away from the path of the switch door.
- iii. Face away from the switch to be operated.
- iv. Operate the switch handle rapidly to minimize the effects of any electrical flash.

h. Attach Red Danger Tags as necessary.

i. Operations Not Requiring Flash Protection:

- i. Any 250 Volt DC rectifier control circuits protected by 75 amp or below circuit breaker.
- ii. A 440 Volt disconnect or circuit breaker with arc quenching devices rated at 60 amps or less served from a feeder that is protected by a 440 Volt short circuit interrupting device.

iii. Operating the disconnect switch on welding receptacle where the procedure specifies the use of welding gloves, jacket, and side shield safety glasses.

iv. Operation of pole mounted cut-outs from a bucket truck under written Electrical Safe Job Procedures.

6. Job Procedures.

a. This section covers the requirements for preparation and use of written Electrical Safe Job Procedures. The purpose of the written Electrical Safe Job Procedure is to establish the safest and most efficient method of performing a specific electrical job in order to prevent injury or loss by recognizing, eliminating, or reducing the hazards involved.

b. Preparation - A written Electrical Safe Job Procedure shall include a scope of work statement followed by a breakdown of job steps arranged in logical sequence. Pertinent information associated with each step shall be listed and include the following essentials:

i. Special tools, materials and safety equipment needed.

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ii. Possible known hazards.

iii. Precautions to prevent incident, injury, or an undesirable condition. A "Critical Path Procedure" may be in order for an unusually complicated job.

c. Use of Procedure - Each job procedure shall be made available to and be reviewed with employees who will perform the work. This is necessary to familiarize them with the scope of the job and each step of the procedure. Any known hazards and precautions shall be discussed in detail.

i. When a written Electrical Safe Job Procedure has been designated and approved as a repetitive procedure to be used on subsequent similar jobs, the familiarization review with employees shall be repeated when the subsequent jobs are infrequent or when changes occur in personnel or job conditions.

ii. Repetitive Electrical Safe Job Procedures shall be reviewed and up-dated periodically and may be used only for the duration of a specific permit.

**M. BARRICADES, OBSTRUCTIONS,
EXCAVATIONS AND BLUE FLAGS/
LIGHTS**

1. Barricades

a. *Signs, barricades, or other means shall be used to protect the area beneath any overhead work where there is a potential hazard from falling objects.*

b. Contractors must provide adequate barricades, covers, handrails, signals, flagmen, or other appropriate warning devices to protect personnel near any hazardous operation or excavation.

i. Floor openings, open trenches, excavations, etc., shall be covered when handrails or barricades do not provide adequate protection to personnel.

c. All barricades must be honored at all times.

d. When the necessity for barricades no longer exists, they shall be removed immediately.

2. Obstructions

a. Grade lines, ropes, chains, and other tripping hazards must be suf-

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ficiently marked to be clearly visible day or night.

b. Contractors must notify the Owner's Representative of necessary obstructions on road shoulders on the day such obstructions occur.

c. Contractors must obtain approval from the Owner's Representative at least one day prior to cutting roads or otherwise obstructing traffic on plant roads or railroads.

d. No obstruction of any kind, whether permanent or temporary, is permitted within 8'9" horizontally from the center line of any railroad track and within 22'6" vertically from the top of the rail.

3. Excavations

a. Where a safety hazard would be created for the personnel involved, and/or others, excavations such as ditches, trenches or bell holes shall be sloped sufficiently to prevent cave-ins or slides. If sloping is impractical, shoring must be used in cases wherever the vertical dimensions exceed four feet. (Reference: OSHA Construction Standard, 1926.652).

b. Personnel removing shoring after completion of work must not be in the bottom of the excavation. Shoring must be removed in such a manner to prevent cave-in on personnel.

4. Blue Flags/Lights (Railroad)

a. In locations where strictly temporary work or loading or unloading operations are to be undertaken, blue flags and portable derails, available through Owner's Representative, must be used to prevent overrunning of the work by a train. Blue lights, also available through Owner's Representative, must be attached to blue flags at night. Placement of blue flags and portable derails must have prior clearance with the Owner's Representative, who will in turn obtain clearance from the Railroad Department.

i. Blue flags/blue lights must be placed on the tracks so they will be in unobstructed view of the train crew and they must be placed a minimum of two car lengths (100 feet) in front of the area they are intended to protect. Exceptions to the minimum distance may be made by the Owner's Representative where existing installations do not allow sufficient space.

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b. Specific authorization from the Owner's Representative as well as the proper placing of blue flags, blue lights and portable derails is required prior to boring under or excavating adjacent to railroad tracks when passage of a train could create a hazard for personnel or equipment.

c. Blue flags and portable derails must be removed immediately when the hazard for which they were installed no longer exists.

d. Do not remove a derail, blue flag, or blue light owned or used by another group without written permission.

e. A blue flag (and light) and derail carry the same protective intent as a Red Danger Tag.

N. RADIATION & RADIOGRAPHY

1. Radiation

a. All state and/or federal laws governing the use, storage or handling of a radiation source must be complied with.

b. Equipment containing a source of radiation must not be handled, uncrated or installed without prior clearance with the Owner's Representative.

c. Vehicles transporting radiation sources, restricted areas, or any other radiographic operations, shall be marked clearly indicating radiation with the appropriate signs.

d. Only authorized personnel may enter an area marked by "RADIATION AREA" signs.

e. "RADIATION AREA" signs must be removed when a radiation hazard no longer exists in the affected area, and the Owner's Representative notified.

2. Radiography

a. All radiographers shall go through a special orientation program conducted by Dow's Metals and Mechanical Technology Group, prior to any work.

i. This orientation will be documented on a certification card and must be renewed annually.

ii. Radiographers may be permitted to work without this orientation only on an emergency basis and with the specific permission of the Owner's Representative or his designee.

b. Radiography Safe Work Permits shall be issued along with appropriate

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Safe Work Permit by Owner's Representative before any radiographic work is started.

c. A minimum of two qualified people are required for the performance of any radiographic work.

d. A minimum of two survey meters shall be required for each radiographic crew.

e. A minimum of two dosimeters and one film badge shall be required for each radiographer.

f. Control of a radiation area shall be maintained with the use of signs, radiation tape (yellow and purple), or other effective means, so that no individual could receive in any one hour a dose in excess of 2mR. Verify the above by calculation and by the use of an operable calibrated radiation survey meter.

RADIOGRAPHY SAFE WORK PRACTICES

NAME _____ **DATE** _____

1. **IDENTIFICATION**
a. Project Number (include date)
b. Film Number (include date)
2. **SAFETY KEYS**
Rotating and following within 90 days
3. **AREA BEYOND**
Boundary limits estimated at 200 feet perimeter
4. **EFFICIENT BOX, SIGNS, LITERS, ETC. AVAILABLE TO CARRY THE AREA**
5. **RADIOGRAPH AREA MONITOR AND QUALIFIED TO WORK ON THE LOCATION**
Name _____
Certification Card No. _____
Distance reading before _____
6. **HELPER (A) APPROVED TO WORK ON A JOB LOCATION**
Name _____
Certification Card No. _____
Distance reading before _____
7. **HELPER (B) APPROVED TO WORK ON A JOB LOCATION**
Name _____
Certification Card No. _____
Distance reading before _____
8. **IMMEDIATE PERSONNEL MONITOR (RADIATION MONITOR, ETC.)**
9. **CONTROLLED AREA HAS BEEN SECURED BEFORE RADIOGRAPHY STARTS**
10. **SAFETY KEYS**
a. One near camera
b. One at Radiography protection barrier
11. **SIGNATURE OF PERSON ISSUING THIS SAFE WORK PRACTICE**
NAME _____ DATE _____ RECEIVED BY _____
12. **JOHNSON**
a. Source (include number in center)
b. Area, height, etc. (include)
c. Approved personnel (list if included area close)
d. Safety work permit
e. Actual radiograph radius on level - measured with meter on
f. Actual exposure
g. Radiograph (include area) (include)
h. Name _____

NOTE: This form (105) (1000) is to be returned with the processing radiographic film.

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O. DEMOLITION

1. Due to the inherent hazards in demolition work, special care must be devoted to safe procedures, scope understanding and communications concerning the safe clearance of work.

2. Responsibility for field supervision of demolition work must be delegated only to those whose experience qualifies them to make the necessary judgments and decisions that are required to assure the safest possible completion of the job.

3. The Contractor shall make certain that all lines, services and equipment have been cleaned or purged and properly cleared for safe removal. All lines (including water and steam) are to be considered "hot" until positive safe clearance has been obtained.

4. Special care shall be exercised to locate and mark old underground or otherwise hidden lines, cables and sewers using the best available information and Owner's assistance.

5. The pre-job safety meeting with the Contractor, as covered in Section A.4., of this manual, shall devote special attention to pre-planning the safety aspects of demolition jobs.

a. Steps of dismantling and loads to be handled shall be reviewed with the Owner's Representative prior to starting work.

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b. Temporary provisions shall be made where safety showers, eye-wash baths and fire extinguishers are being moved in the work area.

c. Special attention shall be given to the marking of hazards and the barricading of hazardous areas for the protection of all personnel, including those not directly involved in the demolition work.

P. HYDROBLASTING

1. Due to the inherent hazards in hydroblasting work, special care must be devoted to safe procedures, scope understanding and communications.

2. All members of the hydroblasting crew will be certified by their Company as being operators or operator trainees.

3. A pre-job checklist shall be completed by the hydroblasting crew and reviewed by the Owner Representative prior to starting the job. (Sample follows).

4. Pressures should be kept to a minimum to do the job. Suggest not more than 2000 psig for process columns and 6000 psig for other jobs. Jobs requiring pressures in excess of 6000 psig will be evaluated by the Owner Representative who will sign the Safe Work Permit. At no time will any portion of the hydroblast system exceed 10,000 psig.

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5. Length of "shotgun" lance barrel will be reviewed by the Owner Representative. For "shotgunning" in open areas, the barrel (from "deadman switch to nozzle") shall be a minimum of four (4) feet, and in confined areas, it shall be of sufficient length to provide operator protection, yet not be a hazard in that area.

6. The presence of a hydroblast operation shall be communicated to all persons working in the immediate area. The hydroblast work area shall be taped off at ten (10) foot distance. If anyone other than the hydroblast workers come inside the taped off area, the operation shall be shut down immediately.

7. The hose shall have a maximum working pressure equal to or greater than the pressure to be worked at, and shall have a minimum burst pressure of three (3) times the pressure at which it will be operated.

8. The back side of tube bundles and other such equipment shall be protected with a splash board to protect the area from flying debris.

a. On cleaning vertical equipment, hydroblaster shall use devices to deflect waterblast away from personnel and prevent total removal of lance from the equipment, or,

b. Work on a scaffold at least three (3) feet above surface of equipment being cleaned and wear metatarsal protectors.

9. The lance orifice openings shall be designed to minimize backward thrust based upon operating pressures to be used and flow rate.

10. An observer (a crewman other than the lance operator) shall be present during all hydroblast operations.

a. He shall continuously observe the actions of the lance man and surrounding conditions.

b. In the event of an injury, gas release, fire, etc., he shall be responsible for notifying the lance man, shutting down the pump, and taking the proper action for the situation.

11. The following equipment shall be the minimum protective equipment for personnel:

a. Slicker suit, steel toed rubber boots, mouthbit respirator where required, side shield safety glasses, face shield, rubber gloves, and hard hat.

b. For hearing protection purposes, personnel shall remain at least twenty (20) feet from the pump. Personnel working within twenty (20) feet of the pump for more than thirty (30) minutes shall use hearing protection.

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c. Anytime work is being performed in a vessel or column, hearing protection shall be considered as the noise level tends to be greater as a result of the "echo chamber" effect. Both the Owner Representative and the hydroblast representative shall use good judgement in determining which jobs shall require hearing protection.

12. In all situations except the one noted below, the operator or individual closest to the nozzle tip shall be in control of the ON-OFF switch (deadman).

a. The exception shall be a "moleing" type operation where the equipment would make this more of a hazard. The hydroblast crew supervisor shall use his best judgement to determine location of switch and caution operating personnel that good two-way communication shall be maintained at all times.

b. Additionally on "moleing" operations, there shall be a straight piece of tubing installed between the nozzle and the coupling — length shall be such that the overall length from the tip of the nozzle to the end of the hose portion shall be the diameter of the tube or pipe being worked on plus 0.25 inches.

13. During flexible lance hydroblast operations, an eighteen (18) inch straight lance (stinger) shall be attached to the working end and the nozzle attached to it. In smaller pipes or tubes where this is not possible, due to connector size, every consideration shall be given to conspicuously marking the flexible lance eighteen (18) inches from the end.

14. A Safe Work Permit shall be required for all hydroblast jobs. The following minimum items shall be covered:

a. Block emergency plan, isolated status of equipment, chemical hazards, protective equipment required, pre-job checklist, barricades, and close out requirements.

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HYDROBLASTING PRE-JOB CHECKLIST

The hydroblasting crew supervisor or crew leader shall complete a pre-job checklist and sign it prior to commencing the job. If all items on the checklist have not been completed, the "YES" column or marked N/A (Not Applicable), the job will not be commenced. This checklist will be maintained by the hydroblast crew at the job site.

	YES	NO	N/A
1. Has the location of nearest safety shower and eyewash station been pointed out to all members of party?			
2. Is the hydroblast area taped off?			
3. Are warning signs in place?			
4. Is work area clear of tripping and falling equipment hazards?			
5. Should the pump need fail, will its path be clear?			
6. Is the area safe from hazardous chemicals, adhes, vapors, fluids, or solvents?			
7. Does each member of the work party understand the chemical and mechanical hazards particular to this job and have been fully trained in the use of the equipment, including the use of the face shield, ear protection, side shield glasses, respirator, and hard hat (under hood)?			
8. Has protection against flying particles been taken?			
9. Have precautions been taken to protect electrical equipment from water?			
10. Has pressure been removed from the steel side of equipment to be cleaned? If not, have hazards been evaluated?			
11. Have precautions been taken to prevent excessive backflow of water?			
12. Is equipment properly grounded?			
13. Is complete scaffolding with an inside work surface provided? At this time, hydroblast system will be pressurized.			
14. Have all fittings and hoses been visually checked for leaks?			
15. Is system working properly?			
16. Is control valve working properly? (Downstream Section)			
17. Has Safe Work Permit been issued?			

Signature of hydroblasting crew supervisor or crew leader

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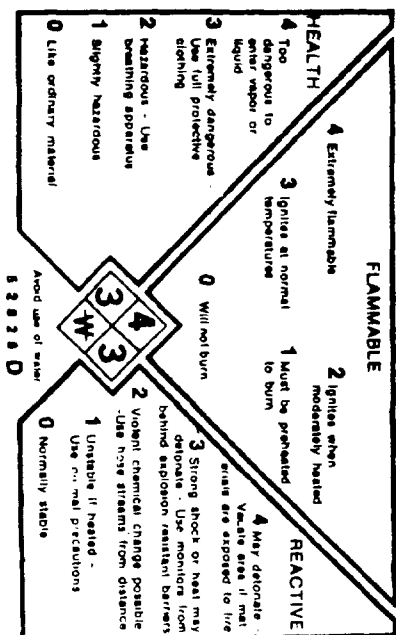
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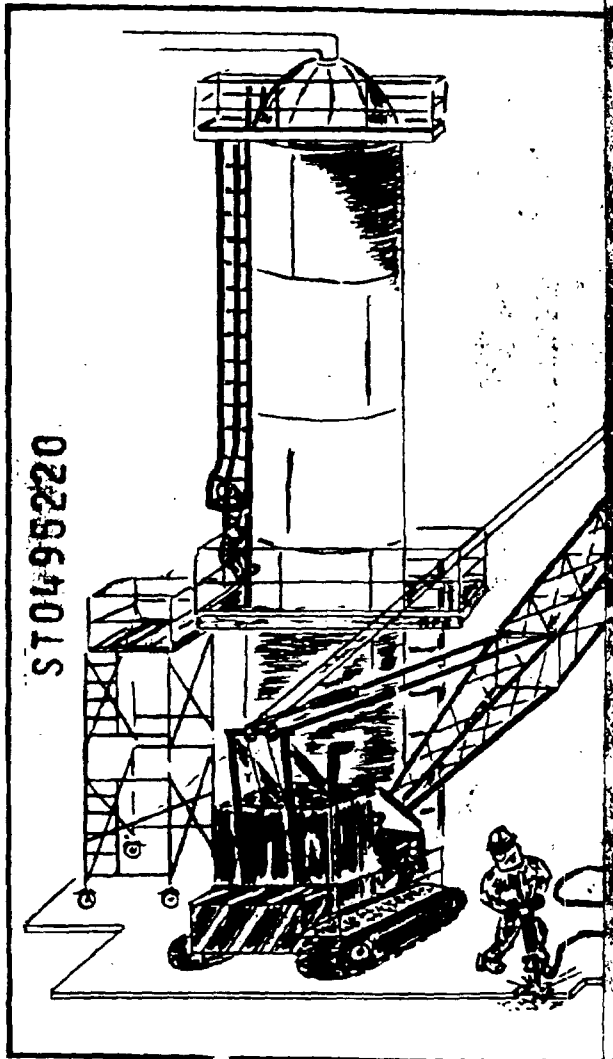
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