

TABLE OF CONTENTS

1.	Management Commitment	1-1
1.1	Safety Policy Statement - Patrick F. Taylor	1-1
1.2	Policy Memorandum - Hal L. Bettis	1-2
2.	Introduction	2-1
3.	Incident And Emergency Plans	3-1
3.1	Emergency Action Plan	3-1
3.2	Accident Reporting and Investigations	3-8
4.	General Safety Programs	
4.1	Responsibilities	4-1
4.2	Substance Abuse Policy	4-2
4.3	Employee Safety Orientation Program	4-5
4.4	Access to Employee Exposure and Medical Records	4-14
4.5	Safety Incentive Program	4-16
4.6	Safety Meetings	4-18
4.7	Safety Program Videos	4-20
4.8	Bulletin Boards	4-23
4.9	Contractor Safety	4-24
4.10	Visitor Safety	4-28
4.11	OSHA Inspections	4-29
4.12	Recordkeeping	4-31
5.	General Safety Measures	5-1
5.1	General Housekeeping Requirements	5-1
5.2	Safety Surveys	5-2
5.3	Safety in the Office	5-6
6.	Fire Prevention and Control	6-1
7.	First Aid	7-1

TABLE OF CONTENTS (continued)

8.	Offshore Safety	8-1
9.	Hazard Communication Program	9-1
10.	Safe Work Practices	10-1
10.1	Personal Protective Equipment	10-1
10.2	Hearing Conservation Program	10-16
10.3	Safety Signs and Color Coding	10-20
10.4	Blinding and Equipment Isolation	10-23
10.5	Confined Space Entry Program	10-25
10.6	Hot Work Program	10-31
10.7	Lockout/Tagout Procedures	10-36
10.8	Hydrogen Sulfide Safety Program	10-39
10.9	Transporting Hazardous Material	10-50
10.10	Asbestos Operations and Maintenance Program	10-54
11.	Operations Procedures	11-1
11.1	Calibration Schedules for Monitoring Instruments/Equipment	11-1
11.2	Crane Operations	11-3
11.3	Electrical Safety	11-8
11.4	Equipment Abandonment	11-9
11.5	Gas and Gaseous Conditions	11-10
11.6	Grounding and Bonding Procedures	11-12
11.7	Ladders	11-21
11.8	Leak Checking	11-23
11.9	Lifting and Moving	11-25
11.10	Motor Vehicles	11-26
11.11	Oxygen and Acetylene Safety and Hot Taps	11-31
11.12	Rope and Slings	11-33
11.13	Small Tools Safety	11-37
11.14	Stairways and Walkways	11-40
11.15	Storage and Handling of Compressed Gas Cylinders	11-41
11.16	Tank Cleaning Procedures	11-43
11.17	Tagging and Flagging	11-48
11.18	Welding and Cutting	11-50

LIST OF FIGURES

3.1-1	Emergency Facilities — Hospitals	3-6
3.2-1	Potential Hazard/Near Miss Report	3-11
4-1	New Employee Safety Orientation Checklist (Section I)	4-6
4-2	Employee Safety Orientation Worksheet (Section II)	4-9
4-3	Notice — Access to Medical and Exposure Records	4-15
6-1	Properties of Flammable Liquids and Gases	6-7
9-1	Hazard Communication Program — Contractor Notification	9-5
11.2-1	Standard Hand Signals for Crane Operations	11-6

1. MANAGEMENT COMMITMENT

1. MANAGEMENT COMMITMENT

1.1 SAFETY POLICY STATEMENT

Taylor Energy Company's Safety Policy insists that all operations are conducted in the safest manner possible. Property can be replaced, lost time and production can be replaced, but human life cannot.

Because of my concern over personal safety and the safety of my employees, individuals must feel that same concern about their own safety and strive on a day-to-day basis to conduct themselves in a cautious manner at all times.

My personal commitment to the safety of all our people has resulted in the following Company Policy:

- (1) To demonstrate by my personal leadership and practices concern for the safety of our employees;
- (2) To provide a safe, clean work place; safe and proper tools and equipment; and safe work procedures;
- (3) To provide training in the safe performance of individual jobs assuring that every employee recognizes that personal safety is one of the individual's fundamental responsibilities;
- (4) To insure that an Accident Prevention Program is put into practice by all employees; and
- (5) To insure that unsafe conditions which may contribute to personal injury are promptly reported, corrected and immediate action taken to prevent their recurrence, and that all accidents are analyzed so that immediate corrective action can be taken.

TAYLOR ENERGY COMPANY

Patrick F. Taylor, Chairman, President & CEO

1.2 POLICY MEMORANDUM

MEMORANDUM

TO: ALL EMPLOYEES
FROM: Hal L. Bettis, Chief Operating Officer
TAYLOR ENERGY COMPANY
DATE:
SUBJECT: SAFETY POLICY

Our employees are the most valuable asset of our company and I am committed to protect our employees. Accidents not only cost time and money, but most of all, they cause suffering and loss of life. This manual is part of our commitment to make our work places as safe as humanly possible. Each employee's assistance is needed to ensure that our safety program, supervised by our safety director, protects both themselves and those around them. Compliance with the Safety Manual is mandatory for all personnel. It is each individuals responsibility to work safely and to report any condition that may cause an accident to his or her supervisor.

Your cooperation in making our work places safer is important and appreciated.

Hal L. Bettis, Chief Operating Officer
TAYLOR ENERGY COMPANY

2. INTRODUCTION

2. INTRODUCTION

2.1 PURPOSE AND APPLICABILITY

This Safety Manual has been written and is provided as a safety guide for Taylor employees in its offshore operations. Taylor Energy Company is highly committed to implementing an active safety program throughout its operations. It is expected that any company or person working for Taylor will share that same commitment. It is necessary for each person and every company involved in offshore operations, from starting a location to producing wells, to do his or her part in promoting and participating in the Safe Operating Practices Program.

The primary purpose of this manual is to present the safety programs and safe operating practices that will be followed at Taylor's Offshore Operations Facilities. A copy of this manual will be maintained at each of Taylor's manned facilities. This copy will be available to all Taylor employees. The manual also provides guidance to Taylor's supervisors in the safe conduct of operations. The practices and procedures presented in the manual should be reviewed by employees at safety meetings and at other times when employees prepared to perform applicable work tasks.

This manual contains incident and emergency action plans as well as Taylor's general safety programs for employees, contractors, and visitors. The manual also presents specific safe work practices and procedures for various operations. In addition, the manual presents information on fire prevention and control and basic first aid. The information can be used for reference at each manned facility.

The safety program described in this manual applies to all Taylor Energy Company employees. Each employee must comply with the practices outlined in this manual and must report all accidents, injuries, deficiencies and safety violations. Failure to obey these safety rules can result in serious injury and may lead to disciplinary action, including termination.

This manual alone cannot prevent accidents or replace a common-sense approach to safety. Total commitment by management and a dedicated, involved work force are required in order to maintain an effective safety program.

Note: All applicable governmental rules, regulations, and restrictions that are currently in effect, as well as those that may become effective in the future, shall take precedence over any relevant information in this manual.

3. INCIDENT AND EMERGENCY PLANS

3. INCIDENT AND EMERGENCY PLANS

3.1 EMERGENCY ACTION PLAN

I. INTRODUCTION

Emergency procedures should be available for various emergency situations that could occur. Accurate procedures allow for rapid, organized and safe response. Examples of the type of situations that should have emergency procedures are: fire/explosion, injury accidents, oil spills, toxic or combustible gas release and vehicle accidents. Supervisors are responsible for ensuring that emergency procedures are available for all emergency situations that may arise in their operations.

Written emergency procedures are only effective if implemented and carried out properly. Drills are the best way to test the effectiveness of these procedures and should be performed on a regular basis, properly documented, and critiqued.

A. Fire/Explosion

Review station bill or local procedures at work assignment. In addition review the general procedures that are available in the Fire Protection section of this manual.

B. Injuries

It is the policy of Taylor Energy Company that all injuries will be immediately and properly evaluated to determine the extent of injury and urgency of seeking medical treatment. In the case of serious injury, the Field Foreman has the authority to arrange the fastest means of transportation available to the nearest suitable medical facility (Figure 3.1-1), regardless of cost.

In the case of all serious injuries, the following procedures apply:

Employee

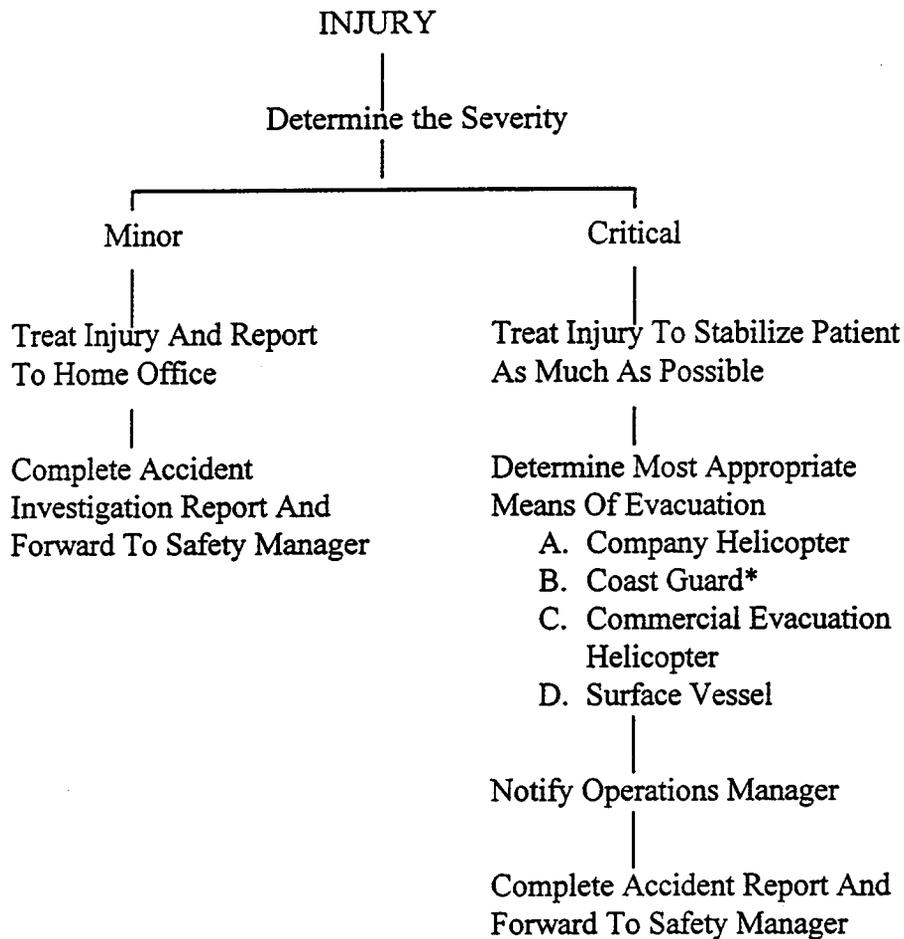
1. Provide first aid for the injured.
2. Notify the Field Foreman.
3. Return operation to a safe condition (if this can be done safely) or shutdown the process.
4. Secure the facility and control access to the area.
5. Do not discuss the incident with anyone other than your supervisor or company safety personnel.

DO NOT RELINQUISH CONTROL OF THE SCENE TO ANYONE OUTSIDE OF TAYLOR ENERGY COMPANY OR DESIGNATED CUSTOMER REPRESENTATIVES.

6. Handle contractor or public injury accidents in the same manner, except that the contractor's main office or supervisor should be notified as soon as possible. In the event of public injury, the public law enforcement agency having jurisdiction should be notified.

Field Foreman

1. Determine the severity of the injury. If there is any doubt as to the severity of the injury, proceed as worst possible case scenario and consult the Field Foreman Emergency Evacuation Decision Tree.
2. Field Foreman Emergency Evacuation Decision Tree



Contact the Coast Guard Operations Center at 504-942-3001 both day and night.

* The Coast Guard Rescue Coordinator Center in New Orleans can dispatch immediate rescue resources; helicopters and/or surface resources vessels depending on the severity of the emergency from numerous locations along the Gulf Coast. Their helicopters have all weather and day/night response capability and most often will have a trained EMT on board to assist the injured person.

C. Vehicle Accidents

If you are involved in an accident, IT MUST BE REPORTED and handled according to the following guidelines:

1. If you are involved in an accident, STOP.
2. If the vehicle poses additional danger for injury or damage, set emergency reflectors or flares in order to protect yourself and others.
3. Get help for injured persons. Render first aid care to the extent you are trained or qualified to administer.
4. Notify police and your supervisor as soon as possible by whatever means available.
5. Obtain necessary information at the accident scene to the best of your ability. At least obtain:
 - a. Name(s) of those involved
 - b. Drivers license numbers
 - c. Vehicle license plate numbers
 - d. Name(s) of law enforcement agency responding to accident. (Names and badge numbers would be desirable.)
 - e. Names and phone numbers of the witnesses
6. Return to office or base and complete a vehicle accident report with your supervisor.

D. Oil Spills

The following procedures should be followed in the event there are no Spill Prevention, Containment and Countermeasures available.

1. Observe and judge as to:
 - a. Whether or not human life, property or the environment is in danger.
 - b. Whether or not the spill can be readily stopped or brought under control.
2. Take prompt action to alleviate any danger and stop or control the spill.
3. After taking the above actions, immediately contact your supervisor and give an assessment of the situation. Communicate the need for any additional assistance or equipment as necessary. **THE SUPERVISOR WILL BE RESPONSIBLE FOR NOTIFYING MANAGEMENT AND THE REQUIRED GOVERNMENT AGENCIES.**

4. Supervisor - refer to the company Oil Spill Contingency Plan.

E. Toxic or Combustible Gas Release

Emergency procedures are required by regulation for certain toxic gases, one of the most common being hydrogen sulfide. In addition, regardless of the absence or presence of regulations, specific procedures may be developed for toxic or combustible releases at the discretion of management. BECOME FAMILIAR WITH THOSE PLANS THAT ARE IN EFFECT IN YOUR WORK AREA FOR TOXIC AND COMBUSTIBLE GASES.

In general the following procedure should be used for toxic or combustible gas releases:

1. Analyze the situation.
 - a. Is there a threat to life due to toxic gas or is there an explosion/fire hazard due to an escape of combustible gas? or both?
 - b. Can escaping gas be stopped without undue risk?
2. Take prompt action to alleviate the danger to yourself, others, and property.
 - a. Stop the release (without undue risk to yourself) and evacuate persons that could be affected. The order of these actions should be based on your judgment of what minimizes risk to life.
 - b. In the case of a gas release, all ignition sources including vehicles should be shut down.
 - c. Account for all personnel.
 - d. Isolate the leak area to prevent entry.
 - e. Notify the local law enforcement agency if the public could be affected, such as near by residence or public highway.
 - f. Notify your supervisor and give an assessment of the situation. Communicate any need for extra assistance.

II. Night Flight Capable Medical Evacuation Aircraft Services

New Orleans/Venice Area

Air Care 800-382-4006
PHI 504-534-2634 or 504-534-7131
U.S. Coast Guard 504-393-6020

Lafayette Area

Air Med 1-267-1111 (LA) or 800-888-2733

Morgan City/Houma Area

Air Logistics 504-395-6191
PHI 504-631-2131

Lake Charles/Cameron Area

ERA 800-256-2372

Beaumont/Sabine Pass Area

PHI 409-971-2455 or 409-971-2423

Houston/Galveston Area

Methodist Hospital 800-543-2785
U.S. Coast Guard 713-481-0025 or 504-942-3001

Corpus Christi Area

U.S. Coast Guard 512-939-2251 or 504-942-3001

FIGURE 3.1-1

FACILITY	PHYSICAL ADDRESS	CITY	STATE	ZIP	PHONE	LAT	LON
Abbeville General Hospital	118 N Hospital Dr	Abbeville	LA	70510	318-893-5466	N 2958.3	W 9206.4
Abrom Kaplan Memorial Hospital	1310 W Seventh St	Kaplan	LA	70548	318-643-8300	N 3000.28	W 9217.49
Acadia-St. Landry Hospital	610 E Hwy 80	Church Point	LA	70528	318-664-5435		
American Legion Hospital	1305 E Hwy 80	Crowley	LA	70528	318-783-2222		
AMI St. Jude Medical Center	180 W Esplanade Ave	Kenner	LA	70085	504-468-8600		
Assumption General Hospital	Whitaker Lane	Napoleonville	LA	70390	504-368-7241		
Baptist Hospital - Beaumont	607 Strickland Dr.	Beaumont	TX		409-835-3781	N 3012.0	W 9412.7
Baptist Hospital - Orange	3600 Florida St	Orange	TX	77730	409-863-1248	N 3006.0	W 9346.1
Baton Rouge Medical Center	100 Medical Dr	Baton Rouge	LA	70806	504-387-7000		
Brazosport Memorial Hospital	1532 Tulane Ave	Lake Jackson	TX	77566	409-297-4411	N 2904.1	W 9529.3
Charity Hospital at New Orleans	2701 Hospital Dr	New Orleans	LA	70140	504-568-3201		
Citizen's Memorial Hospital	1711 Wheeler	Victoria	TX	77801	512-573-9181	N 2848.5	W 9658.4
Coastal Bend Hospital	600 N Lewis St	Arensas Pass	TX	78336	512-758-8585	N 2756.5	W 9712.0
Deafarive Hospital	4200 Houma Blvd	New Iberia	LA	70560	318-365-7311	N 3001.2	W 9148.2
East Jefferson General Hospital	1501 Hospital	Melairle	LA	70006	504-458-5857	N 3004.5	W 9010.48
Franklin Foundation Hospital	210 Champagne	Franklin	LA	70538	318-828-0780	N 2948.7	W 9130.3
Gary Memorial Hospital	2810 Ambassador Caffrey Pkwy	Breaux Bridge	LA	70517	318-332-2178		
Hamilton Medical Center		Lafayette	LA	70506	318-981-2949		
Herman Hospital		Houston	TX		800-392-4357	N 2941.1	W 9522.7
Hotel Dieu Hospital	2021 Perdido St	New Orleans	LA	70112	504-588-3000		
Houma Hospital - New Orleans	6000 Bullard Ave	New Orleans	LA	70128	504-241-6335		
Iberia General Hospital	2315 E Main St	New Iberia	LA	70560	318-364-0441	N 3000.1	W 9147.5
Jo Ellen Smith Medical Center	4444 General Meyer Ave	New Orleans	LA	70131	504-363-7011		
John Sealy Hospital (UTMB)	301 University	Galveston	TX	77550	409-772-1521	N 2919.7	W 9447.4
Lady of the Sea General Hospital	Box 68	Galliano	LA	70534	504-632-6401	N 2927.6	W 9018.8
Lafayette General Medical Center	1214 Coolidge Ave	Lafayette	LA	70505	318-261-7991	N 3012.9	W 9201.6
Lake Charles Memorial Hospital	1701 Oak Park Blvd	Lake Charles	LA	70601	318-494-3000	N 3018.2	W 9314.9
Lakewood Hospital	1125 Marquette St	Morgan City	LA	70381	504-384-2200	N 2942.29	W 9112.06
Mainland Center Hospital	P.O. Box 2758	Texas City	TX	77592	409-938-5400	N 2926.8	W 9501.6
Meadowcreek Hospital	2500 Belle Chase Hwy	Gretna	LA	70056	504-382-3131		
Memorial Hospital	2608 Hospital Blvd	Corpus Christi	TX	78405	512-881-4000	N 2748.6	W 9727.7
Memorial Medical Center of Calhoun County	P.O. Box 26	Port Lavaca	TX	77979	512-552-6713	N 2839.2	W 9640.9
Mercy Hospital of New Orleans	301 N Jefferson Davis Pkwy	New Orleans	LA	70119	504-483-5000		
Ochsner Foundation Hospital	1516 Jefferson Hwy	New Orleans	LA	70121	504-838-3000	N 2857.3	W 9008.45
Plaquemine Hospital	3050 38th St	Pl. Arthur	TX	77642	409-983-4951	N 3000.6	9359.5
St. Joseph Memorial Methodist Hospital	5620 Reed Blvd	New Orleans	LA	70127	504-244-5474		

FIGURE 3.1-1 (Continued)

FACILITY	PHYSICAL ADDRESS	CITY	STATE	ZIP	PHONE	LAT	LOX
Rayne-Branch Hospital	301 S Chevre St	Rayne	LA	70578	318-334-4217		
South Cameron Memorial Hospital	Rt 1 Box 277	Cameron	LA	70631	318-542-4111	N 2950.6	W 9311.7
South Louisiana Medical Center	1978 Industrial Blvd	Houma	LA	70360	504-868-8140	N 2934.14	W 9041.23
Southern Baptist Hospital	2700 Napoleon Ave	New Orleans	LA	70115	504-889-9311	N 2956.20	W 9008.3
Spohn Hospital	600 Elizabeth St	Corpus Christi	TX	78404	512-881-3000	N 2748.5	W 9723.38
St Anne General Hospital	Hwy 1 & Twtn Oak Dr	Receland	LA	70394	504-537-6841	N 2942.30	W 9034.1
St Elizabeth Hospital	2830 Calder	Beaumont	TX	77707	409-892-7171	N 3005.3	W 9408.0
St Mary Hospital	3600 Gates Blvd	Pt Arthur	TX	77643	409-885-7431	N 2958.6	W 9358.2
St Mary Hospital	404 8th St	Galveston	TX	77550	409-763-5301		
St Patrick Hospital	524 Ryan	Lake Charles	LA	70601	318-436-2511	N 3019.1	W 9317.3
Terrebonne General Medical Center	936 E Main St	Houma	LA	70360	504-873-4141	N 2935.58	W 9043.08
Thibodaux General Hospital	602 N Acadia Rd	Thibodaux	LA	70301	504-447-5500	N 2947.1	W 9048.6
Touro Infirmary	1401 Foucher St	New Orleans	LA	70115	504-897-7011	N 2955.3	W 9055.36
Tulane Medical Center Hospital	1415 Tulane Ave	New Orleans	LA	70112	504-588-5263		
United Medical Center - New Orleans	3419 St Claude	New Orleans	LA	70117	504-948-8200		
University of South Alabama Medical Center	2451 Fillingim St	Mobile	AL	36617	205-471-7000		
West Calcasieu-Cameron Hospital	Cypress St	Sulphur	LA	70664	318-527-7035		
West Jefferson Medical Center	1101 Ave D	Marrero	LA	70072	504-347-5511	N 2953.6	W 9005.8

3.2 ACCIDENT REPORTING AND INVESTIGATION

I. REPORTING REQUIREMENTS

- A. All injuries, no matter how slight, will be reported to the Field Foreman and Safety Manager immediately.
- B. The Safety Manager will inform appropriate company personnel.
- C. A brief description of the accident or injury will be included in the morning report, and discuss in detail during the weekly safety meeting, specifically reviewing Lessons Learned.
- D. All injuries which occur during the course of employment must be reported on the Field Report of Injury Form. This form must be signed by the Supervisor and enough information should be given to clearly explain what happened. There must be enough information provided to complete the required OSHA 200 Form.
- E. Accidents which prevent the employee from returning to work on his next scheduled work day shall be reported as Lost-time accidents, and the number of days lost must be reported to the home office on the employees return to work.
- F. In cases of death from any cause or serious injury, the Safety Manager or Operations Manager shall be notified immediately. Any special documents that may be required by governmental authorities will be promptly filled out and processed according to their instructions.

*NOTE: Effective May 2, 1994 employers are required to orally report to OSHA work-related incidents resulting in the death of an employee or the hospitalization of three or more employees within eight (8) hours after the employer learns of the incident. It also applies to each fatality or hospitalization of three or more employees occurring within thirty (30) days of the incident.

**This report will only be made by Company Management. OSHA's toll-free central telephone number is 1-800-325-OSHA.

II. ACCIDENT INVESTIGATIONS

All accidents (LTA's and NLTA's) and "near misses" that could have resulted in serious accidents, will be investigated by the Safety Manager.

Where possible, the Field Foreman will participate in the investigation.

Accident investigations are to be conducted as soon as possible after the accident itself, as facts are clearer, more details remembered, and the conditions are nearest those at the time of the accident. The accident investigation will be conducted in the following manner:

- A. Interview the worker who had the accident, medical considerations permitting.
- B. Interview all other crew members and supervisors involved in the accident.
- C. Determine the facts, based on all information gathered.
- D. Determine who had the most control over what inflicted the injury or damage.
- E. Determine all factors or causes which led to the accident.
- F. Take steps to prevent a similar accident from happening again.
- G. Document the investigation on the Accident Investigation Report form.

III. NEAR MISS ACCIDENT REPORTING

- A. A near miss is an unplanned, unexpected occurrence that interferes with or interrupts the orderly progress of work or has the potential to cause personal injury or dollar loss through property damage. A near miss does not have to result in injury or damage.
- B. Employees shall report all near miss incidents to their supervisor as soon as possible following the incident. They also need to be reported during safety meetings on a written report. Figure 3.2-1 is an example of such a report.
- C. Operations supervisors should review all near miss incidents. Investigations should be documented. Recommendations to prevent recurrence shall be included in the review.
- D. Near miss documentation shall be forwarded to the Safety Manager who will disseminate the information throughout the Home Office.
- E. Operating supervisors shall be responsible for reviewing applicable near miss reports with their employees.

FIGURE 3.2-1

POTENTIAL HAZARD/NEAR MISS REPORT

DATE: _____ TIME: _____

LOCATION: _____

CHECK ONE:

POTENTIAL HAZARD _____ NEAR MISS _____

DESCRIPTION: _____

CORRECTIVE ACTION TAKEN (CHECK ONE) YES _____ NO _____

ACTION TAKEN: _____

IF NONE TAKEN-REASON: _____

WORK ORDER NUMBER: _____

COMMENTS: _____

SIGNATURE (OPTIONAL): _____

4. GENERAL SAFETY PROGRAMS

4. TAYLOR ENERGY COMPANY SAFETY PROGRAM

4.1 Responsibilities

A. Responsibility of employer

The responsibility of Taylor Energy Company is to provide good working conditions on well maintained property with adequate safeguards and competent supervision, and to ensure that each workman is properly trained and aware of the company safety rules.

B. Responsibility of employee

It is the responsibility of each employee to know and conform to approved safe operating procedures, and to fully use all the safeguards, safety appliances, and personal protective equipment to prevent injury to himself and his fellow workers.

All employees are required to report unsafe conditions immediately to their supervisor, and whenever practical, correct unsafe conditions immediately.

C. Responsibility of supervisor

The word "Supervisor," which in the context of this manual means "anyone having a degree of responsibility for the actions of another," will appear many times throughout this manual. The supervisor is the key to any good safety program; the safety of his crew is one of his major responsibilities and the supervisor's safety record is one of the main criteria used in judging his performance.

It is the responsibility of the supervisor to instruct employees as to their responsibilities in the safe performance of their duties and enforce each safety procedure, rule and regulation at all times.

In addition, the supervisor is responsible for inspecting the assigned work areas for the purpose of correcting unsafe conditions or acts and for reporting to accountable supervision those conditions or acts which cannot be corrected within the scope of their authority.

4.2 Substance Abuse Policy

I. BACKGROUND

Taylor Energy Company is committed to maintaining a safe and healthy work environment for all employees and others having business with our organization. Taylor Energy Company is also dedicated to providing a drug-free workplace. These provisions will enhance safe conduct of operations and go far toward attaining the highest work standards. Safety is very important at Taylor Energy Company. On-the-job impairment from the use of drugs or alcoholic beverages, as well as possession of firearms and other weapons pose critical threats to safety and to the work environment, generally.

The objectives of maintaining safety and a drug-free workplace are attainable through cooperation at every level and by explicitly and forcefully prohibiting the use, manufacture, distribution, dispensation, and possession of prohibited drugs, alcohol, or drug paraphernalia.

II. POLICY STATEMENT

Taylor Energy Company prohibits all individuals under its direction, including employee and contractors, from possessing, using, or being under the influence of illegal drugs or alcoholic beverages, at any office or other work location.

The possession of firearms, explosives, or weapons on the premises or properties of Taylor Energy Company, customers, or third parties is strictly prohibited. For the enforcement of this policy, premises and properties will include all vehicles and other means of transportation under the control or direction of Taylor Energy Company.

Additionally, all applicants, employees, and contractors will be required, as a condition of employment or contract, to submit to requested drug and/or alcohol testing from time to time. Such testing will be performed in accordance with this policy and within the requirements of Federal laws and regulations.

III. FEDERAL POLICIES AND STATUTES

Certain Federal statutes require Taylor Energy Company to implement a drug testing program for those of our employees who are covered under statutes and regulations mandating drug testing for our industry. These regulations include provisions for drug testing prior to employment, periodic testing, random testing, post-accident testing, and testing based upon "reasonable cause."

IV. ENFORCEMENT OF THIS POLICY

It is a condition of employment that every employee comply with this policy for his or her own safety, the safety of other employees, the public, and for the good of Taylor Energy Company. However, in order to ensure compliance with this policy, Taylor Energy Company will, from time to time, take one or more of the following steps:

- A. Searches of Taylor Energy Company premises and properties, including employees and others on premises. Searches may include personal effects and vehicles of such persons when on Taylor Energy Company property;
- B. Confiscation of prohibited items and substances, and where appropriate, delivery of such items to law enforcement authorities;
- C. Urine drug tests, breath tests, and other investigative examinations of persons involved in accidents, and other drug and alcohol testing set forth in the Taylor Energy Company Substance Abuse Plan.

V. POLICY VIOLATIONS

A. Prohibited Items and Substances

Any employee found in possession of or using, manufacturing, distributing or dispensing any of the items or substances prohibited by this policy shall be removed from Taylor Energy Company premises and shall be subject to disciplinary action up to and including termination of employment.

B. Failing a Drug Test

Any employee who, failing a drug test, as a result of testing or other medical examination, is found to have identifiable traces of a prohibited drug or substance in his or her system, regardless of the time or place in which this condition came about, will be considered in violation of this policy, will be removed from Taylor Energy Company premises and will be subject to disciplinary action up to and including termination of employment.

C. Refusal to Comply

Any employee who refused to comply with a search or test, or otherwise cooperate with an investigation, will be subject to removal from Taylor Energy Company's premises and discharge. Cooperation is a condition of employment, and a refusal to be tested upon request shall be treated the same as a positive test result.

D. Reporting to Work "Under the Influence"

Any employee who reports to work under the influence of a prohibited drug or alcoholic beverage will be subject to removal from a Taylor Energy Company premises and discharge. "Under the Influence" means having any detectable trace of a prohibited substance in an employee's system or a blood alcohol content (BAC) of .04% or higher. It is a condition of employment that all employees report for duty, at all times, in an unimpaired condition (fit for duty) and not "under the influence."

E. Contractor Employee and Third Parties

All contractors employees or third parties on Taylor Energy Company premises will be subject to applicable portions of this policy. Any such individuals found in violation of an applicable portion of this policy will be subject of removal from Taylor Energy Company premises and be responsible contractor official or vendor will be notified that this individual is barred from coming onto Taylor Energy Company premises or being assigned in any way to Taylor Energy Company.

F. Administration of This Policy

Taylor Energy Company Management is responsible for the Administration of this policy, however, the coordination, implementation, and enforcement of this policy may be delegated to other Taylor Energy Company Officials and Supervisors.

4.3 Employee Safety Orientation Program

I. GENERAL

- A. All newly hired personnel will be required to complete the New Employee Safety Orientation Program shortly after starting work. The employee's supervisor is responsible for having new employees complete this program.
- B. The initial training an employee receives must not be the only training the employee receives. Training is to be established and conducted often enough to enable the employee or employees to perform their jobs or duties in a safe manner.
- C. Supervisors shall be instructed in their responsibilities for the safety of their subordinates and equipment during normal operations and possible emergencies.
- D. Each new employee, regardless of prior experience, should have his job outlined and explained by the supervisor, or other designated employee. Observation of the new employee's work performance should be maintained until the applicable supervisor is satisfied that he or she can fill the position in a safe and effective manner.
- E. The employee's supervisor shall fulfill the requirements outlined below.

II. SUPERVISORS' INSTRUCTION OUTLINE

- A. Introduction - Explaining the following:
 - 1. Organization of Company
 - 2. Job Description
- B. Complete the following:
 - 1. To provide an overview of hazard recognition and the proper safeguards against those hazards, complete Section I with the employee.
 - 2. To acquaint the employee with Taylor Energy Company's attitude toward safety, have the employee complete Section II. Review with the employee his/her responses. Answer any questions the employee may have.
 - 3. Retain a completed copy of Sections I and II for your files and send the originals to your Safety Manager.

**FIGURE 4-1
NEW EMPLOYEE SAFETY ORIENTATION PROGRAM**

SECTION I

Name: _____

Date: _____

Instructions:

Each new employee, or transferee, regardless of prior experience, should have his job outlined and explained, and be given a thorough overview of hazard recognition and the proper associated safeguards against those hazards. The initial orientation shall include, but not necessarily be limited to, the following:

	<u>Operating Supervisor</u>	<u>Employee</u>
1. Operating supervisor discusses safe vehicle use and related personal safety.	_____	_____
2. Employee demonstrates that he has driving skills sufficient to safely drive company vehicle.	_____	_____
3. Employee understands and will follow these vehicle safety rules:		
a. Observe the speed limits. Lower speed may be required due to weather or road conditions.	_____	_____
b. Wear seat belt when vehicle is in motion, both driver and passengers.	_____	_____
c. Whenever necessary to leave the the vehicle, turn off motor, put in park, or in low gear, set emergency brake.	_____	_____
d. If vehicle must be left running to operate auxiliary equipment the wheels must be chocked to prevent vehicle from rolling.	_____	_____

4. The operating supervisor shall discuss and demonstrate where applicable special hazards and related personal safety in lease operations:

- a. Hydrogen sulfide orientation. _____
- b. Respiratory equipment orientation and correct method of wearing. _____
- c. Personal protective equipment orientation and issuance (i.e., safety hard hat, safety goggles, rubber gloves, hearing protectors, etc.) _____
- d. Orientation for working around high pressure fluids/gases. _____
- e. Hot/cold fluids or gases orientation. _____
- f. Chemical orientation/Hazard Communication. _____
- g. Extreme cold/hot weather operations. _____
- h. Electrical hazard orientation. _____
- I. Safe work habit orientation. _____
- j. Proper housekeeping orientation. _____
- k. Fire prevention, protection, and control orientation. _____
- l. Contractor relationship orientation. _____
- m. Facility safety orientation. _____
- n. Other (please list) _____

5. Operating supervisor discusses the accident prevention disciplinary policy with the employee.
6. Ensure employee knows where a copy of the Taylor Energy Company Safety Manual is located.
7. Upon completion of the orientation, keep one copy in the field, and send the original to the Safety Manager.

_____	_____
_____	_____
_____	_____

FIGURE 4-2
EMPLOYEE SAFETY ORIENTATION PROGRAM

SECTION II

INTRODUCTION:

Taylor Energy Company is sincerely interested in the safety of all its employees. We try to provide a safe and healthful work environment. Also, we provide safety training as a means to enable you to work in a safe and productive manner. Constant reminders will be provided for you to work safely. However, you will benefit from these provisions only if you make a conscious effort to work safely. If you are not doing your job safely, then you are not doing your job.

The following program is provided to acquaint you with Taylor Energy Company's attitude toward safety and to let you know what we expect from you. Read through the program and answer the questions as you come upon them. You may refer back to previously read material to get answers. When you are finished, check your answers with the answer key in the back.

I. Production With Safety

Taylor Energy Company is concerned about the safety of its employees. In fact the safety of its employees ranks above all other concerns. Naturally, production is also a major concern, but Taylor Energy does not want production without Safety. Taylor Energy Company wants you to be a safe and productive employee, which means that you are aware of, and practice its safety rules and regulations as prescribed in the Safety Manual. If you are not doing your job safely, then you are doing your job.

1. Taylor Energy ranks _____ above all other concerns.
2. A Taylor Energy employee practices the safety rules and regulations prescribed in the _____.

II. The Attitude of a Safe Worker

Taylor Energy Company wants safe workers who are careful to avoid injuring themselves as well as fellow workers. Remember, Taylor Energy does not want employees who endanger their own lives as well as those around them. The most important factor that determines a safe worker is his attitude. Safety in the oil field is no joke. It is extremely hazardous as evidenced by the type of accidents that have occurred in the past. However, regardless of the conditions you face in your day to day work, you can be safe if you have the proper attitude and think before you act.

3. As a condition of employment I am expected to work _____.
4. Safety is an _____.

III. All Accidents

Taylor Energy Company believes the majority of accidents are preventable. Every employee, including management, is responsible for preventing accidents. It is your job to avoid unsafe acts and to correct or report unsafe conditions as soon as possible to your Supervisor. Unsafe conditions should also be reported to the Safety Manager and at weekly safety meetings. Do not overlook an unsafe condition because it could result in an accident. By reporting and correcting unsafe conditions, you are doing your part to ensure a safe working environment.

5. _____ employee is responsible for preventing accidents.
6. Unsafe conditions should be _____ to your Supervisor and the Safety Manager immediately and reviewed at weekly Safety Meetings.

IV. Disciplinary Action

Compliance with safety rules, regulations and practices are a condition of employment. Violators of safety rules, regulations and practices, not only endanger themselves and their fellow employees, but are subject to disciplinary action. For everyone's sake, safety will not be taken lightly and these rules will be enforced.

7. I may be _____ if I fail to follow company safety rules, regulations and practices.

V. Personal Protective Equipment

Personal protective equipment is provided for your protection. Failure to wear prescribed equipment may result in personal injury to yourself or others. Remember, you are expected to work in a safe manner which includes wearing the proper personal protective equipment. Employee cooperation is essential if personal protective equipment is to provide the protection for which it is designed.

A. Hard Hats

Hard Hats are provided to protect you against head injuries, to emphasize safety and to encourage safe working practices. Hard hats are to be worn on all work locations regardless of the work involved, while outside of the living quarters on all offshore platforms.

B. Eye Protection

Protective eye and face equipment will be required where there is a reasonable possibility of injury that can be prevented by such equipment. Check with your supervisor to be sure of eye protection requirements at your work location.

All employees who normally wear corrective spectacles shall be required to wear either industrial safety spectacles or coverall goggles over regular prescription spectacles if their duties expose them to eye hazards or if they are required to visit locations where eye hazards exist.

Contact lenses shall not be worn in any field environment without a physicians authorization. If they are required for medical reasons chemical splash goggles will be worn at all times.

C. Ear Protection - (Ear muffs, plugs, etc.)

Ear protection will be worn wherever signs are posted requiring their use. Taylor Energy will provide appropriate hearing protection. We encourage hearing protection be worn at all times around high noise levels while off-the-job.

D. Required Safety Equipment

1. Safety Toe Boots
2. Hard Hats

Steel toe boots and hard hats are provided by the company and are required to be worn.

8. _____ are provided for you and are required to be worn on the job.
9. Taylor Energy Company will provide _____ and _____ protective equipment for your use.

VI. Weekly Safety Meetings

Every employee is required to attend weekly safety meetings. Weekly safety meetings are vital part of Taylor Energy's overall Accident Prevention Program. These meetings serve the following purposes.

- A. Identify and correct hazardous conditions in the working environment.
- B. Create a safety awareness within all employees.
- C. Stimulate and maintain interest in accident prevention.
- D. Provide an opportunity for each employee to express his/her ideas which will promote and improve the safety program.
- E. Instruct and train employees in safe methods of performing their work.

F. Keep employees informed of accidents and near miss of other locations.

Employee participation is necessary for a successful safety meeting. Don't be shy, your contributions to the meetings could save another's life.

10. Safety Meetings are held to help prevent _____.

11. Your _____ are a vital part of each safety meeting.

VII. Tailgate Safety Meetings

Tailgate safety meetings should be held before jobs that require special safety considerations or as a review for routine jobs that present hazards to the employee. A tailgate safety meeting is simply an on-the-job safety meeting in which the proper procedures for the job are discussed. Also, any possible hazards are discussed. A few minutes spent having a tailgate safety meeting could save an injury. These meetings should be documented and reported in the safety meeting log book.

VIII. Accident and Injury Causes

Accidents and injuries could be caused by many things. Bad attitude, poor housekeeping, lack of personal protective equipment, carelessness, bypassing safety devices, unsafe work practices and lack of knowledge are just a few of the possible causes. Remember if you have any questions about a particular job, ask your supervisor. Never perform a job when you are not aware of the possible hazards that may exist. Unsafe acts can result from lack of knowledge and awareness. **ASK QUESTIONS!**

12. If I have any questions about a job, I should ask my _____.

13. I should be aware of all the possible _____ that exist before I perform a particular job.

IX. Reporting of Injuries and Accidents

All injuries and accidents, no matter how minor, should be reported to your supervisor as soon as possible after occurrence.

The employee involved is required to fill out the appropriate accident form on the same day that it occurs. When completing the form, it is most important that you give a complete and accurate description. Don't be afraid to write too much.

14. Accidents and injuries should be reported the _____ day that they occur.

X. Conclusion

Taylor Energy Company's accident history is one of the best in the industry today. Our low accident rate is partially due to the fact that we are trying to ensure a safe and healthful work environment. But, the majority of credit must be given to our employees who realize the importance of safety and work accordingly. You are the bottom line in preventing accidents. Please work safely.

Employee's Name _____

I have completed the Employee Safety Orientation Program Sections I and II, and have received a copy of the Taylor Energy Company Safety Manual.

Employee's Signature _____ Date _____

Supervisor's Signature _____ Date _____

Safety Manager's Signature _____ Date _____

Answer Key:

1. safety
2. Taylor Energy Company Safety Manual
3. safely
4. attitude
5. Every
6. reported
7. disciplined
8. Hard hats, Safety shoes
9. eye and ear
10. accidents
11. contributions
12. Supervisor
13. hazards
14. same

4.4 Access To Employee Exposure And Medical Records

I. NOTIFICATION

- A. Upon first entering employment and at least annually thereafter, employees must be informed via a bulletin board posting of the following:
1. The existence, location and availability of employee records for exposure to toxic substances or harmful physical agents. The medical records are maintained in the home office.
 2. The person responsible for maintaining and providing access to the records. Contact your supervisor to initiate this request.
 3. The employee right of access to those records.

Notification can be accomplished by sending an annual letter to all employees or bulletin board postings that specify points 1-3 above (See Figure 4-3 for example of bulletin board posting). The supervisor in charge is responsible for seeing that notification is accomplished.

- B. The entire section pertaining to the Access to Employee Exposure and Medical Records is available for employee review by contacting the safety manager. It is readily available via the safety manager thus the entire section is not required to be posted.

II. RECORDKEEPING

- A. Employee exposure records shall be maintained for the duration of employment and for 30 years thereafter and should include the following:
1. Environmental (workplace) monitoring including personal, area, grab, swipe, etc. type samples.
 2. Biological monitoring - level of chemical in the blood, urine, hair, fingernails, etc.
 3. Material safety data sheets. (Refer to the Hazard Communication Program).

III. ACCESS

- A. Access to an employee record must be provided no later than 15 days after the request for access is made.
- B. Records or copies must be provided at no cost to the employees.

References

1. Occupational Safety and Health Administration, Department of Labor Standard, 29 CFR, Part 1910.20.

FIGURE 4-3

- NOTICE -

ACCESS TO MEDICAL AND EXPOSURE RECORDS

TAYLOR ENERGY COMPANY RETAINS AT 234 LOYOLA AVENUE, NEW ORLEANS, LOUISIANA, EMPLOYEE MEDICAL RECORDS AND RECORDS OF EMPLOYEE EXPOSURES TO TOXIC SUBSTANCES OR HARMFUL PHYSICAL AGENTS. THOSE RECORDS THAT ARE RELEVANT TO AN EMPLOYEE, AND A COPY OF THE OSHA STANDARD PERTAINING TO EMPLOYEE RIGHTS OF ACCESS TO MEDICAL AND EXPOSURE RECORDS ARE AVAILABLE FOR REVIEW BY CONTACTING THE VICE PRESIDENT OF ADMINISTRATION OR YOUR SAFETY MANAGER.

VICE PRESIDENT OF ADMINISTRATION

234 LOYOLA AVENUE

SUITE 500

NEW ORLEANS, LA 70112

PHONE: (504) 581-5491

4.5 Safety Incentive Program

I. PURPOSE

- A. The purpose of the Safety Incentive Program is to eliminate all accidents and injuries within the company.

II. GENERAL INFORMATION

- A. Because of the unique nature associated with offshore drilling and production work, the company's incentive program is provided as two separate programs described below:

- 1. Offshore

- A. Quarterly Award

- A cash award of \$50.00 is given to each eligible employee who completes the quarter without a lost time injury.

- B. Annual Award

- A bonus award of \$100.00 is given to each eligible employee who completes 4 consecutive quarters without a lost time injury.

- C. Special Bonus Award

- A special bonus award of \$100.00 is given to each employee member of a crew whose entire crew completes 4 consecutive quarters without a lost time injury.

Crews are defined as:

Crew A	-	MC 20/WD 133
Crew B	-	MC 20/WD 133
Crew A	-	Central Gulf
Crew B	-	Central Gulf

2. Onshore

A. Quarterly Award

A cash award of \$50.00 is given to each eligible employee who completes the quarter without a lost time injury.

B. Annual Award

A bonus award of \$50.00 is given to each eligible employee who completes 4 consecutive quarters without a lost time injury.

C. Special Bonus Award

A special bonus award of \$50.00 is given to each employee member of a crew whose entire crew completes 4 consecutive quarters without a lost time injury. Crews are defined as:

Circle Bar East
Circle Bar West
Hangar

III. SPECIAL BONUS AWARD

- A. The purpose of the Special Bonus Award is to motivate each employee to be aware of the actions of their fellow crew members and to become personally involved with the safety of the entire crew as well as their own.

IV. ELIGIBLE EMPLOYEES

- A. All employees, who by the nature of their job are routinely exposed to hazardous situations, are included in the program.

4.6 Safety Meetings

I. GENERAL REQUIREMENTS

- A. Supervisors are directly responsible for scheduling, attendance, and content of weekly safety meetings.

II. SCHEDULED SAFETY MEETINGS

- A. The field foreman shall make all employees aware of the dates and times of safety meetings. All hourly and field supervisors are required to attend each week.
- B. Weekly safety meeting topics will be assigned for each meeting, in accordance with the annual training program.
- C. The supervisor should review the safety topic before each meeting to ensure the appropriate video is prepared and ready.
- D. The supervisor should open every meeting with the following:
 - 1. Introduction of guests.
 - 2. Review of previous meeting minutes.
 - 3. Solicit comments regarding the inspection of safety equipment.
 - 4. Solicit comments regarding the need for any employee personal protective equipment.
 - 5. Solicit comments regarding near miss accidents or tail-gate safety meetings.
 - 6. Solicit comments concerning unsafe conditions.
 - 7. Introduce weekly safety training video.

III. OSHA CORE TOPICS:

- A. The OSHA core topics that are listed below must be reviewed each year with all employees. This information may be reviewed during a regular scheduled safety meeting or during a "special" meeting held outside the regular meetings.
- B. The safety manager is responsible to ensure this information is presented to the employee during each calendar year.
- C. OSHA Core Topics:
 - 1. Confined Space Entry
 - 2. Emergency Action Plan
 - 3. Fire Protection Program
 - 4. H2S (If Applicable)
 - 5. Hazard Communication
 - 6. Hazwoper
 - 7. Hearing Conservation
 - 8. Lockout/Tagout
 - 9. Personal Protective Equipment
 - 10. Respiratory Equipment Protection (If Applicable)
- D. Other topics that are recommended for discussion if applicable at your location during the year include:
 - 1. Blinding Procedures
 - 2. Combustible Gas, O2, H2S Meters
 - 3. Driving Safety
 - 4. Electrical Safety
 - 5. General Lease Work
 - 6. Hand Tool Safety
 - 7. Hot Work Permits
 - 8. Lighting Gas Fired Vessels
 - 9. NORM
 - 10. Prevention of Back Injuries
 - 11. Off-the-Job Safety

IV. ON-THE-JOB (TAIL-GATE) SAFETY MEETINGS

- A. Tail-gate safety meetings shall be conducted prior to non-routine or particularly hazardous jobs. The meeting may only last 5 to 10 minutes to discuss the job but it should cover:
 - 1. What is to be done?
 - 2. Where is it to be done?
 - 3. How is it to be done?
 - 4. Who is to do each segment of the job?
 - 5. What hazards exist and effective ways to safely handle them?
- B. The proper tools, special equipment, and personal protective equipment needed to do the job shall be reviewed.
- C. Employees having man-for-man relief shall review the following at shift changes:
 - 1. Status of anticipated jobs or work in progress, locks/tags that were placed on equipment.
 - 2. Review of potentially hazardous conditions.
 - 3. Exchange of any pertinent work-related information.

V. REPORTING SAFETY MEETINGS

- A. All safety meetings shall be documented in facility's Safety Meeting Log Book.
- B. The completion of personal protective equipment inspections should be noted in the log.
- C. Employees not in attendance shall be noted in the log and the supervisor should ensure that the content of the meeting is reviewed with employees who were absent upon their return to work.
- D. The Safety Meeting Log Book will be available at all times for review by appropriate personnel.

4.7 Safety Program Videos

TAYLOR ENERGY COMPANY OFFSHORE VIDEO SAFETY PROGRAM

<u>Counter</u>	<u>Title</u>
Tape 1	
00	Employee Safety Orientation
15	Book 'M Danno
31	Hazard Communications
44	OSHA's Hazardous Energy Source
54	Hand & Power Tool Safety
1:07	Personal Protective Equipment
1:17	Respirators & How To Use Them
1:29	Fit Test Respirators
Tape 2	
00	Eye Protection - A New Approach
15	Hearing Conservation
27	Bloodborne Pathogens
40	How To Stop Bleeding
49	Back Injury Prevention/Lifting Safety
59	Heat Stress
1:16	Accidents - It Can Happen To Me
1:26	Job Safety Analysis
Tape 3	
00	Hazardous Material Labeling
10	Hazardous Material Spills & Cleanup
24	Fire Protection/Electrical Safety
33	Flammables/Combustibles
42	Fire Extinguisher Training & Use
51	Electrical Safety Related Work Practices
1:05	ARC Welding Safety
1:16	Gas Welding Safety
Tape 4	
00	Cranes, Chains & Hoist Safety
12	Machine Guarding
24	Maintenance Person Safety
38	Confined Space
58	Asbestos Threat
	Lock-out/Tag-out

7 Safety Program Videos

**TAYLOR ENERGY COMPANY
OFFSHORE VIDEO SAFETY PROGRAM**

Counter

Title

Tape 1

00	Employee Safety Orientation
15	Book 'M Danno
31	Hazard Communications
44	OSHA's Hazardous Energy Source
54	Hand & Power Tool Safety
1:07	Personal Protective Equipment
1:17	Respirators & How To Use Them
1:29	Fit Test Respirators

Tape 2

00	Eye Protection - A New Approach
15	Hearing Conservation
27	Bloodborne Pathogens
40	How To Stop Bleeding
49	Back Injury Prevention/Lifting Safety
59	Heat Stress
1:16	Accidents - It Can Happen To Me
1:26	Job Safety Analysis

Tape 3

00	Hazardous Material Labeling
10	Hazardous Material Spills & Cleanup
24	Fire Protection/Electrical Safety
33	Flammables/Combustibles
42	Fire Extinguisher Training & Use
51	Electrical Safety Related Work Practices
1:05	ARC Welding Safety
1:16	Gas Welding Safety

Tape 4

00	Cranes, Chains & Hoist Safety
12	Machine Guarding
24	Maintenance Person Safety
38	Confined Space
58	Asbestos Threat
	Lock-out/Tag-out

**CIRCLE BAR RANCHES
VIDEO SAFETY PROGRAM**

<u>Counter</u>	<u>Title</u>
Tape 1	
00	Employee Safety Orientation
14	Book 'M Danno
31	Back Injury Prevention
40	How To Stop Bleeding
49	Preventing Unsafe Acts
1:00	Personal Protective Equipment
1:08	Respirators & How To Use Them
1:20	Fit Test Respirators
Tape 2	
00	Eye Protection
13	Hearing Conservation
22	Lockout/Tagout
32	Hazard Communication
42	Chemical Safety
50	Preventing Slips & Falls
1:02	Heat Stress
1:12	Fork Lift Safety
Tape 3	
00	Hand & Power Tool Safety
14	Vehicle Operation Safety
26	Vehicle Maintenance Safety
42	Workers' Comp. - The Injured Worker
50	Accidents - It Can Happen To Me
60	Job Safety Analysis
1:10	ARC Welding Safety
1:21	Gas Welding Safety
Tape 4	
00	Bloodborne Pathogens
13	Killer Bees/Wasps/Spiders

4.8 Bulletin Boards - Safety Information

I. GENERAL REQUIREMENTS

- A. Bulletin Boards for posting safety notices shall be displayed at locations where employees report to work. The field foreman are responsible for implementing and enforcing this program at their respective locations.
- B. Safety bulletin boards may be a section of an existing bulletin board or separate one.

II. ITEMS THAT MUST BE POSTED INCLUDE:

- A. OSHA poster: federal general notification as well as state notification poster(s) where applicable
- B. OSHA citations resulting from inspections: post as specified by OSHA
- C. Access to medical records notice
- D. OSHA Form 200: (Summary Section Only) from February 1 through March 1.
Note: Forms must be maintained for five years.

III. DISCRETIONARY ITEMS:

- A. Monthly accident statistical summary
- B. Safety meeting schedule and meeting minutes
- C. Photos or safety articles
- D. Safety newsletters
- E. Safety goals or bulletins
- F. Smoking policy and smoking areas
- G. Respiratory protection profile of that location

References

- 1. Occupational Safety and Health Administration, Department of Labor, 29 CFR, Parts 1903 and 1904.

4.9 Contractor Safety

I. GENERAL REQUIREMENTS

- A. Prior to working for Taylor Energy Company, outside companies shall complete and have on file a signed Taylor Energy Company Master Service Agreement.
- B. The Taylor Energy Company Contractor Safety Policy, Appendix I, shall be adhered to by all contractors.
- C. All injuries incurred by contractors should be handled as outlined in the incident/injury reporting procedure.
- D. Apprise all contractors of any known hazards prior to beginning work.
- E. Apprise contractors of the specific location and chemicals used in our operations that they could be expected to encounter. This requirement must be updated periodically apprising them of any new chemicals.
- F. Apprise contractors of the site specific Emergency Evacuation Plan.

APPENDIX I
CONTRACTOR SAFETY POLICY
GUIDELINES FOR ACCIDENT PREVENTION - CONTRACTORS

1. The prevention of accidents and injuries is of utmost importance to the employee and the Company. The Company will do all it can to provide a safe work environment for every employee. In turn, no employee should allow a condition, which they believe to be hazardous to exist, without either stopping the work or immediately notifying a Taylor Energy supervisor.
2. Safety meetings are held for the purpose of educating and training for the prevention of accidents. Every employee attending these meetings is encouraged to present his ideas or suggestions to improve the safety of this work environment.
3. All safety signs are erected for a definite purpose and should be observed whenever they are encountered. Safety signs shall conform to federal, state and local standards, signs shall be placed where they will render the greatest service and be maintained in good condition. Signs that are erected for a temporary purpose, must be removed by authorized personnel when no longer needed.
4. Safety tags are provided for employee protection and they shall be used whenever warranted. Tag warnings shall be observed by all employees and tags shall be removed by authorized personnel when no longer needed. Red rags shall not be used in lieu of Safety tags.
5. Every immediate supervisor shall make certain that their employees clearly understand the circumstances of the job to be performed and the safe practices necessary to perform it without accident or injury.
6. Each employee should be sure that he understands the hazards involved in any duty he is about to perform, and that all necessary precautions will be taken.
7. Every job should be planned so that it will be completed or brought to a "stopping place" by the end of the workday. Reckless haste to complete a job often creates unnecessary hazards.
8. When new or hazardous work is to be performed, the supervisor or foreman in charge shall call his workers together for a thorough discussion on the safety aspects of the job.
9. If additional material or equipment is needed to safely continue a job, the job shall be shut down or postponed until such material or equipment is obtained.
10. Shift men or relief crews coming on duty shall be informed, by the crew they are relieving, of any unusual circumstances or of any changes that might present hazardous conditions.

11. Every new employee shall be thoroughly indoctrinated in safety on the job when they are hired. This training should be documented and it should continue throughout his employment.
12. Experiences employees should assume the responsibility of assisting in the teaching of safe working practices to the new or inexperienced employee.
13. Scuffling, the playing of practical jokes or "horseplay" in any form among employees while on the job will not be permitted.
14. Loose, baggy or ragged clothing shall not be worn.
15. Clothing to adequately cover the body shall be worn.
16. Finger rings should not be worn while performing general field work. They should not be worn when performing electrical work.
17. Regular walkways, passageways, runways, etc., are provided whenever there is significant need. Use these and avoid the hazards of shortcuts.
18. Keep all walking and working surfaces clean, clear and free of obstructions. Tools and other materials should not be left lying around.
19. Non-flammable cleaning agents should be used whenever possible. If an effective non-flammable cleaning agent is not available, stoddard solvent, kerosene or other chemicals with a flash point of 100 degrees or greater shall be used. Carbon tetrachloride, lean oil, gasoline or other hazardous chemicals shall not be used for cleaning purposes.
20. Only cotton, rayon, paper or other suitable material shall be used for oil or cleanup rags, wool rags, shall not be used for this purpose.
21. Flashlights and electric lanterns shall be approved for areas where they are being used.
22. All injuries, no matter how minor, that occur on the job, shall be reported to the immediate supervisor. Failure to report an injury can subject the employee to disciplinary action.
23. All OSHA, other federal, state and local safety and health regulations shall be complied with. All Company employees should be made familiar with these regulations.
24. Think Safety, talk Safety and practice Safety, both on and off the job, and avoid the pain, suffering and inconvenience of accidents and resulting injuries.
25. All contractors shall wear appropriate personal protective equipment at all times while on location. Hard hat, safety glasses, hearing protection, and approved footwear.
26. Acquire proper permits before starting any work.
27. All contractors will have a current H2S certification card in their possession. Certification must be within the last 12 months.

APPENDIX II

CONTRACTOR SAFETY, HEALTH, ENVIRONMENTAL POLICY

Taylor Energy Company strives to hire contractors who conduct their activities in a manner consistent with appropriate safety, health, and environmental consideration. Contractors working for Taylor Energy Company are and shall remain independent contractors as to all work performed under the contract. The detail manner, means and methods of performing said work shall be under the control and direction of the contractor. The following are minimum requirements and expectations for contractors, and contractors shall take any additional precautions necessary or proper under the circumstances to prevent injury or death to persons or damage to property and/or the environment.

1. Contractors are expected to comply with applicable safety, health, and environmental regulations of agencies having jurisdiction at locations where services are performed for Taylor Energy Company.
2. Unless prior express contractual arrangements are made with Taylor Energy Company, contractors are expected to provide their employees with appropriate functional safety equipment and ensure that such equipment is used.
3. Unless prior express contractual arrangements are made with Taylor Energy Company or statutory requirements dictate otherwise, contractors are expected to provide their employees with appropriate safety, health, and/or other environmental training as required by National, State, local or other applicable codes and regulations, or Taylor Energy Company policy.
4. Contractors are required to notify the appropriate Taylor Energy Company representative or designee of contractor's/subcontractor's employee accident(s) resulting in reportable injuries, damage to Taylor Energy Company or third party's property, or incident(s) with probable infractions of environmental protection regulations. Contractors are also required to furnish copies of regulatory, administrative, or statutory reports concerning environmental infractions, or an accident, incident or occupational illness to the Taylor Energy representative.
5. Contractors are required to inform Taylor Energy Company of inspection(s) conducted by regulatory agencies and the results of said inspection(s) when working on a Taylor Energy Company location.
6. Contractors will be evaluated on their safety, health, and environmental performance. The assessment of a contractor's performance may include an evaluation of its safety, health, and environmental record-keeping, and if applicable, prior work experience with Taylor Energy Company. This evaluation will be used as criteria in selection of contractors for future Taylor Energy Company projects.

Nothing contained in this policy shall be interpreted to enlarge the legal duty of Taylor Energy Company to the contractor, their agents, employees or subcontractors. This policy will be administered by each operating location through its line management.

4.10 VISITORS SAFETY PROGRAM

I. GENERAL REQUIREMENTS

- A. The safety of visitors on Taylor Energy Company facilities is the responsibility of the operating supervisor over that facility. The individual(s) bringing visitors to these locations must coordinate their activities with the operating supervisor(s) prior to the trip.
- B. Visitors are defined as those who do not normally report to that specific work location. They may include vendors, or Taylor Energy Company employees from other locations.
- C. All visitors must report to the facility office before entering work locations.
- D. All visitors must receive a brief safety orientation from the operating supervisor, covering as a minimum:
 - a) Smoking Policy
 - b) Facility alarms and emergency evacuation procedures
 - c) Hazardous conditions and substances that may be encountered
 - d) Personal protective equipment requirements
 - e) Reporting of injuries/accidents policy
- E. Visitors must not tour work locations unescorted unless prior approval has been obtained.

II. PERSONAL PROTECTIVE EQUIPMENT

- A. Visitors must wear hard hats, and all other personal protective gear such as safety glasses and hearing protection as required.

4.11 OSHA Inspections

I. GENERAL INFORMATION

- A. Verify the credentials of any individuals who identify themselves as an OSHA Compliance Officer, before allowing an inspection or visit upon company locations.
- B. The employee or supervisor initially contacted shall notify the Operations Supervisor and Safety Manager through channels. If possible, defer the inspection until the Supervisor in charge or his designated representative arrives to accompany the officer. The Foreman shall accompany the inspection party during all inspections, whenever possible.
- C. Determine the basis for what type of inspection they want to conduct. There are five types:
 - 1. Employee Complaint: If the inspection was prompted by an employee complaint, acquire a copy of the registered complaint.
 - 2. Routine: If the inspection is referred to as "routine," have the compliance officer explain the criteria used for selecting the particular location.
 - 3. Imminent Hazard: Inspection based on a hazard that is life threatening and is moments away from occurring. Verify how and when the hazard was observed.
 - 4. Accident Investigation: Inspections are allowed by statute following work related accidents resulting in a fatality or the hospitalization of five or more employees.
 - 5. Media Referral: Due to publicity in media, OSHA may justify an inspection.
- D. Determine the scope of the inspection; safety or health inspection. A qualified company representative shall be on site for all health inspections.
- E. Determine the limits of inspection.
 - 1. What facilities and areas will be subject to the inspection?
 - 2. What employees or positions do they wish to speak with?
 - 3. What measurements, samples, or photographs do they wish to take?

NOTE: A designated employee shall take and record the same measurements, samples or photographs as does the compliance officer. All such items to be considered trade secrets and confidential material shall be marked accordingly.

- F. A search warrant shall not be required for entry. However, if one is presented, keep the company copy and attach it to the inspection report.
- G. The compliance officer(s) shall be accompanied at all times. A designated employee shall maintain a detailed record of the officer's activities. Do not guess or speculate in answering questions. Tell the truth. Do not allow tape recordings.
- H. The review of documents that are relevant to the inspection shall be permitted. Review all documents before releasing them. Keep copies of anything released.
- I. A reasonable number of employees may be questioned by the officer about local working conditions.
- J. Upon the compliance officer's request, allow one employee to accompany him during the inspection. Additional employees may accompany the inspection team if additional representation will further assist the inspection.
- K. All employees shall be advised not to sign anything prepared by OSHA. However, they should verbally acknowledge the accuracy of any OSHA documents.
- L. During the closing conference:
 - 1. Ask questions regarding any citations as to why it was issued and what standard it applies to.
 - 2. Take extensive notes. Assign one individual to take notes.
 - 3. Never give an abatement date for any citation.
- M. All documentation will be forwarded to the home office immediately following the review.

References

- 1. Occupational Safety and Health Administration, Department of Labor, 29 CFR 1903.

4.12 Recordkeeping

I. GENERAL

- A. The Field Foreman and Safety Manager are responsible to ensure that the records are accurate and available at each applicable office.
- B. The records outlined in Appendix I are those that are required to be maintained.
- C. Records are to be retained wherever employees report to work on a daily basis.
- D. The records should be maintained in a alphabetical order and retained in a central file cabinet. The purpose of filing the records in a central location within each office is to ensure they are available at all times to all employees.
- E. The records are to be filed promptly to ensure compliance.
- F. The frequency of inspection as well as the minimum time the records are to be retained are also identified in Appendix I.
- G. The records are to be inspected semi-annually to ensure their accuracy. This inspection should be documented on Appendix II and filed in the file entitled "Recordkeeping" in the local offices files.
- H. Records can be retained either electronically or a hard copy can be retained. The key to any record is the ability to "pull it" in a reasonably time frame to verify that an inspection or training has been completed. As long as one can produce a record to substantiate what has been done it does not matter if the record is maintained in a hard copy format or in an electronic file.

References

- 1. Various Occupational Safety and Health Administration, Department of Labor; 29 CFR Standards.

APPENDIX I

RECORDS

<u>Records to be Maintained</u>	<u>Frequency</u>	<u>Minimum Retention of Records</u>
Accident Reports (OCC & VEH)	Upon Occurrence	Indefinitely
Asbestos	Initial Survey	Indefinitely
Assured Grounding (Tools, Cords)	3 Months	1 Year
Combustible Gas	Prior to Use	1 Year
Contractor Accidents	Upon Occurrence	Indefinitely
Confined Space	Prior to Entry	1 Year
Cranes, Hoists, Slings Load Test	Prior to Monthly/Annual One Time	1 Year Life of Crane
Electrical (Gloves)	9 Months	1 Year
Bucket trucks	Annual	1 Year
Hot Sticks	Annual	1 Year
Emergency Action Plan Emergency Phone Lists	Annual Updated Version Posted	Indefinitely
Fire Extinguishers	Monthly	(On Tag)
Visual Inspection	Annual	Life of Extinguisher
Physical Inspection		
Fixed Detectors (H2S, Fire, O2)	3 Months	1 Year
Hazardous Communication List of Chemicals	Updated 6 Months	1 Year
MSDSs	Upon Receipt of MSDS (Send copy of MSDS to New Orleans)	30 Years

APPENDIX I (Continued)

RECORDS

<u>Records to be Maintained</u>	<u>Frequency</u>	<u>Minimum Retention of Records</u>
Hearing Conservation Employees in HCP Sound Surveys	Annual (August 1) Initial, as Needed	1 Year Indefinitely
Hot Work Permit	Upon Occurrence	1 Month
Hydrogen Sulfide Tank Tests Portable Detectors	Initial/5 Years Prior to Use	Indefinitely 1 Year
Ladders	Prior to Use	No Documentation
New Employee Orientation	Upon Occurrence	Indefinitely
NORM (If Applicable)	As Needed	Indefinitely
OSHA (Log, Inspections)	Update as Needed	5 Years
Radiation Sources (If Applicable)	Annual	Indefinitely
Respiratory Protection Air Quality (APC owned) Air Quality	Monthly 3 Months Batch	5 Years 1 Year 1 Year
Safety Meetings	Weekly	Indefinitely
Safety Relief Valves	Annual/5 Years	Indefinitely
Safety Training	Annual	Indefinitely
Vehicle Inspection (If Applicable)	Annual	1 Year

APPENDIX II

**SAFETY/INDUSTRIAL HYGIENE
REVIEW CHECKLIST**

Records	Status (√) if OK	Comments
Accident Reports (OCC & VEH)		
Asbestos		
Assured Grounding (Tools, Cords)		
Bulletin Board Information		
Access to Medical Records		
Emergency Phone List		
Hearing Conservation Standard		
OSHA Log		
OSHA General Poster		
Respiratory Protection Record*		
TSCA 8C and 8E		
Combustible Gas Indicators		
Contractor Accidents		
Confined Space Entry		
Cranes, Hoists, Slings/Safety Belts		
Electrical (Gloves) (Hot Stick)		
Emergency Action Plan		
Emergency Alarm Systems		
Fire Extinguishers		
Visual Inspection		
Physical Inspection		
Fixed Detectors (H2S, Fire, O2)		
Forklift Training		
Hazard Communication		
List of Chemicals		
MSDSs		
Hearing Conservation		
Employees in HCP/Tested		
Sound Surveys		
Hot Work Permit		
Hydrogen Sulfide		
Tank Tests		
Portable Detectors		

APPENDIX II (Continued)

**SAFETY/INDUSTRIAL HYGIENE
REVIEW CHECKLIST**

Records	Status (√) if OK	Comments
New Employee Orientation		
NORM (If Applicable)		
OSHA Log - Past 5 Years		
PCB (If Applicable)		
Radiation		
Recordkeeping (Alph. & Avail.)		
Respiratory Protection		
Air Quality		
PFT		
Safety Meetings Minutes		
Safety Relief Valves		
Safety Training		
Confined Space		
Fire		
H2S		
Hazard Communication		
Hazwoper		
Hearing Conservation		
Lockout/Tagout		
PPE		
Respiratory Protection*		
Vehicle Inspection (If Applicable)		

* May be in respiratory protection file or on bulletin board.

Additional Comments

5. GENERAL SAFETY MEASURES

5. GENERAL SAFETY MEASURES

5.1 General Housekeeping Requirements

I. HOUSEKEEPING

Proper housekeeping procedures are essential to facility safety and include the following:

- A. All work areas will be kept clean and free from oil, grease and other slippery substances.
- B. All walkways, stairways and exits will be kept clear of obstructions at all times. All openings will be kept covered.
- C. All equipment will be kept clean and painted in safety code colors.
- D. Paints and other flammable materials will be stored only in an appropriate paint locker and not left in working areas overnight.
- E. Wastes, such as chemical sacks, rags, used oil, etc. will not be allowed to accumulate. They should be properly disposed of as soon as possible.
- F. All shops will be cleared daily of scrap metal, and all parts and tools properly stored.

It is important for employees to realize that a job is not completed until the work area is clean and all tools returned to their proper area.

II. SANITATION AND HYGIENE

- A. All galley facilities will be maintained in a sanitary condition.
- B. Food handlers will bathe and wear clean clothing on a daily basis.
- C. Shoulder length or longer hair will be placed in a hair net or removed from the presence of food being prepared.
- D. Insects and rodents will be controlled and kept out of food storage areas.
- E. The dining area will be cleaned and sanitized following each meal.
- F. Toilet facilities will be washed with disinfectant daily for germ control.
- G. Personnel will bathe and change work clothing daily for sanitation purposes.
- H. Crew members will not "share" a drinking cup. Water fountains or disposable paper cups should be used.
- I. All non-potable water should be so labeled.
- J. Garbage will be kept in covered receptacles and disposed of daily in accordance with regulatory requirements.

5.2 Safety Surveys

I. GENERAL REQUIREMENTS

- A. Work locations shall be surveyed on a periodic basis to identify and help remedy unsafe conditions and unsafe work practices. Surveys shall be conducted by supervisors on a daily basis as part of their daily routine. The safety manager, in conjunction with operating personnel, shall conduct formal surveys with written reports.
- B. Field foreman are responsible for ensuring all safety deficiencies are corrected within specified time frames. They are also responsible for conducting safety surveys throughout their areas of operation on a continuing basis individually and in conjunction with the safety manager.

II. SPECIFIC AREAS TO BE SURVEYED

The following are common items within particular operating areas that should be reviewed during a safety survey for unsafe conditions. However, in no way can this list be all inclusive so surveys must not be limited to there items alone.

- A. Workshops
 - 1. Housekeeping
 - a. Stumbling, tripping hazards
 - b. Clean floors
 - c. Blocked exits
 - d. Storage of materials
 - (1) Flammable liquids
 - (2) Chemicals, etc.
 - e. Trash properly discarded daily
 - 2. Compressed Air
 - a. Must be regulated to 30 lbs. psi for cleaning
 - 3. Grinding Wheels
 - a. Sign requiring use of eye protection
 - b. Face shield and goggles available
 - c. Guards in place and properly adjusted
 - 4. Electrical Connections, Boxes - Properly set up, labeled, grounded

5. Tools - Clean, good shape
 6. Compressed Gas Cylinders - Properly labeled and stored
 7. Fire Extinguishers - Location, inspection records, etc.
- B. Storage Yards
1. Housekeeping
 2. Chemical Drums - Properly labeled and stored
 3. Storage Tanks Labeled
 4. Grounding and Bonding for Flammable Liquids
 5. Pipe Racks - Pipe properly stored and secured, pins in place.
- C. Vehicles
1. Fasten Seat Belt Sticker
 2. Seat Belts
 3. General Inspection
 - a. Lights
 - b. Tires
 - c. Brakes, etc.
 4. Fire Extinguisher
 5. Flammable Liquids - Safety can, labels, shipping papers
 6. Tools - Clean, good condition
 7. Personal Protective Equipment
 - a. Chemical gloves, goggles, eye wash bottles
 - b. Hard hat, hard hat rack, etc.
 8. Housekeeping
- D. Leases and Tank Batteries
1. Color Coding - Stairs, trip hazards, anchor markers, moveable parts
 2. Lease Signs, such as:
 - a. No Smoking Signs
 - b. Hearing Protection Signs
 - c. H2S Signs
 - d. Automatic Start-Up Signs
 - e. Hazard Communication Signs

3. Control Boxes and Disconnect Boxes - Properly labeled, connected, grounded
4. Tanks are in Good Condition - Thief hatch, no holes, vent line, etc.
5. Fire Walls or Dikes
6. Stairways and Walkways
7. Chemical Drums
 - a. Properly labeled
 - b. Properly stored
8. Chemical Injection Pumps - no leaks
9. Guards are in Place
10. Grounding Wires are in Place - Electric motors, control boxes, pumping units
11. Leaks or Spills
12. H2S Protection - Signs, wind socks, vents, air supply, etc.
13. Fired Vessels - Proper torch, lighting port, orange triangle
14. Housekeeping

III. UNSAFE WORK PRACTICES

- A. Unsafe work practices cause the majority of accidents leading to personal injuries.

Specific questions must be answered when conducting safety surveys. These questions include:

1. Personal protective equipment -
 - a. Are employees wearing the required protective equipment?
 - b. Does it provide adequate protection against employee exposures to harmful substances?
 - c. Are they using the equipment properly?
 - d. If not, why not? Is it inconvenient to get to or hampering?

2. Positions and actions of people -
 - a. Is anyone in danger of injury due to pulling or lifting heavy objects?
 - b. Are correct lifting techniques or mechanical aids being used?
 - c. Is anyone put into a position where he could fall, be trapped, or be hit?
3. Tools and equipment -
 - a. Are they being used properly?
 - b. Are they in a safe condition?
 - c. Are homemade tools in use?
4. Work Procedures -
 - a. Are they adequate?
 - b. Do they prevent all unnecessary risks?
 - c. Are they followed?

5.3 Safety in the Office

I. GENERAL SAFETY PRACTICES

- A. Wherever possible, filing cabinets should be arranged side by side and bolted together to prevent a cabinet from toppling forward when one of the higher drawers is opened.
- B. Where there is a single filing cabinet, great care must be taken to prevent toppling when a higher drawer is opened. If practical, arrange the files so that the lower drawers bear the heaviest load.
- C. Always close a drawer before opening another in the same cabinet.
- D. Never leave a drawer pulled out from a piece of office furniture or equipment.
- E. Use extreme caution when pulling out typewriter platform of typewriter desk when there is no typewriter on the platform. Without counter balancing weight of typewriter, the platform snaps into place with sufficient force to cause severe injury to hand or arm caught between platform and desk top.
- F. Keep items such as paper clips, thumbtacks, rubber bands, pencils, and the like off the floor where they are a slipping hazard.
- G. Always stand on an approved ladder or stool to get articles out of reach from the floor. Never use a swivel chair or other makeshift device to reach high places.
- H. Use staplers, paper cutters, pencils, knives and scissors with care; they can produce serious cuts or puncture wounds. Paper cutters should be left in a closed and guarded position.
- I. A paper edge is capable of inflicting a painful cut. Avoid cuts by picking up an individual sheet of paper at the corner, not at the side.
- J. Handle a sharpened pencil as carefully as you would an open knife or an ice pick. Do not place sharpened pencils or other pointed objects upright in a container or upright in a pocket of the clothing.
- K. Never throw glass, cans with rough edges, or similar objects in a wastepaper basket. Never use a wastepaper basket as an ashtray.
- L. Distorted metal wastepaper baskets, sharp burrs on metal furniture, and splintered edges on wooden furniture should be eliminated by repair or replacement.
- M. Keep electric and telephone or radio cords off floors and out of aisles. Cords which are worn or have exposed wires shall be replaced.
- N. Furniture should always be arranged to avoid contact with heaters.

- O. Remove any type of spilled liquid from the floor immediately.
- P. Observe these precautions with doors:
 - 1. Open doors into offices and hallways carefully; something or someone may be on the other side. Approach blind corners with caution.
 - 2. Approach doors that open toward you from the side, so that you will not be in the path of the door's swing if it should be opened unexpectedly.
 - 3. Never stand in front of a door that opens toward you.
- Q. It is good safety practice to equip doors that are opened frequently, such as doors to reproduction rooms, with glass windows.
- R. Tack down loose carpeting or flooring without delay.
- S. Broken glass tops on desks must be removed as soon as possible.
- T. All flammable materials must be kept in approved containers, with contents labeled for identification.
- U. When floors are waxed, a nonskid wax should be used.
- V. Placing the feet on a desk or table while sitting on a chair can cause a painful and serious falling injury, particularly if the chair has casters.
- W. If you must lick envelopes, beware of mouth cuts from the paper. Then your only worry is germs. To avoid both cuts and germs, use a moistener.
- X. Pass scissors handle first, blades together, and keep them where they cannot fall.
- Y. Use handrails when climbing or descending stairs or using escalators.
- Z. In case of a fire -
 - 1. Know the locations and methods of operation of all fire fighting equipment in the building.
 - 2. Know which type of extinguisher is effective on wood, oil, grease, and/or electrical fires.
 - 3. Know how to report a fire.
 - 4. Have escape routes planned in case of a fire. Remember to avoid elevators.
 - 5. Be familiar with survival techniques in case you are trapped by a fire.
- AA. Electrical outlets must not be overloaded. Bear this in mind when using portable electric heaters.

II. WAREHOUSE/STORAGE AREAS

- A. Gasoline or any other highly volatile materials should be stored in appropriate outside storage. Paint and thinners in large quantities should be stored outdoors or in approved lockers.
- B. Allowable floor or platform loading will be determined by authorized professional personnel. Do not exceed loads which are posted or otherwise stated.
- C. If heavy fittings are placed in bins, strips should be placed across the lower part of the bins to keep such fittings from falling out when on of them is removed.
- D. Proper provisions shall be made to safely reach material in the higher shelves.
- E. Inspect shelving periodically for strength.
- F. A non-skid surface should be provided on ramps and walkways where there is danger of slipping.
- G. Warehouses and other storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Aisles, stairways, walkways, and loading platforms shall also be kept free of such materials.

III. STAIRS AND WALKWAYS

- A. Whenever possible, avoid carrying tools or material in a way that would prevent free use of one hand while going up or down stairways. Use the hand rails.
- B. Stairs to attic type storage areas in warehouses must be equipped with adequate railings and proper lighting.
- C. All tank steps, walkways and stairs must be free of obstructions at all times.
- D. When walkways and steps are provided, they must be used. Do not take shortcuts.
- E. No tools, equipment, or material shall be left on walkways.

6. FIRE PREVENTION AND CONTROL

6. FIRE PREVENTION AND CONTROL

I. GENERAL REQUIREMENTS

The very nature of our industry makes fire an ever-present danger in our daily operations. Add to this the necessity of concentrating men and equipment in a small area, close to drilling and production hazards, and it is easy to see that the importance of fire prevention cannot be over-emphasized.

The first line of defense in a fire prevention program is a well-trained crew. It is the supervisor's responsibility to see that his crew is properly trained in all areas of fire safety. This can be done as part of weekly safety meetings and fire drills. Each crew member should familiarize himself with the types of fires and the proper fire fighting equipment for use with each type. He should also know the operation and location of all fire fighting equipment on his facility. The properties of flammable liquids and gases are listed in Figure 6-1.

II. FIRE PREVENTION

- A. All fires on Company property shall be reported.
- B. The prevention of fires is of utmost importance. Good housekeeping and maintenance must be followed to keep fire hazards at a minimum.
- C. A fire watch will be present with a CO2 or ABC-type of dry chemical fire extinguisher during welding and cutting operations. He will wear approved welding safety eyewear, and will remain in the area after completion of the work there is no fire danger.
- D. Oil, diesel fuel, or petro-chemicals that can ignite will be prevented from collecting.
- E. Explosion-proof covers will not be removed from energized electrical equipment in a potentially explosive area.
- F. Matches and cigarette lighters should not be carried into any area where an explosive atmosphere may be present. No matches other than safety matches and no single-action cigarette lighters should be carried into any operating area.
- G. Smoking will be confined to areas specifically designated by management.

Smoking is not permitted around shale shakers, on or under the floors of drilling rigs, in the immediate vicinity of tank batteries, oil, and gas wells, or in any area suspected to contain flammable vapors, regardless of whether a "No Smoking" sign is displayed. Any area subject to contamination by flammable liquids or gas should be designated by local management as a "No Smoking" area, and a sign to that effect should be displayed.
- H. Cans of oil, kerosene, oily rags, waste, etc. will not be allowed near stoves, furnaces, or gas fires.

- I. Oily waste or oil-soaked clothing must not be left lying around. Spontaneous combustion may result and cause a fire. To prevent such fires, covered metal containers for disposal of oily rags, waste, and other flammable rubbish must be provided. These must be emptied often enough to keep premises in a safe, sanitary condition.
- J. All buildings in which gas or gasoline is being handled will be well ventilated at all times.
- K. Before an open flame, such as a welding torch, is carried into a closed building or tank, a test must be made to detect the presence of gas, using an approved type of combustible gas indicator.
- L. Explosives will not be permitted on T.E.C. facilities except under specially controlled conditions.
- M. Do not overload electrical circuits.
- N. When a high-gravity, vapor-pressure hydrocarbon liquids, such as condensates, gasoline, and some crude oils, are drawn into open metal containers, the open container must be grounded by means of either threaded connections or a bonding wire to the vessel or piping, in order to prevent any possible ignition source from generation of static electricity.
- O. The use of gasoline as a cleaning agent on Company property is strictly forbidden. An electrician should be contacted for a recommended cleaning agent for electrical equipment.
- P. Be sure all storage tanks are located so they will not add to a fire. All tanks will be labeled as to contents.
- Q. Unless authorized, no liquid shall be drawn from a high pressure field separator bleeder line to an open vessel for any use whatsoever.
- R. Lines containing hydrocarbons or combustible materials under pressure must not be heated with an open flame to remove ice or paraffin plugs.
- S. All gas or gasoline leaks should be reported and repaired immediately. If immediate repair is not possible, adequate warning signs must be posted, and extra precaution against fires instituted.
- T. When testing for gas leaks on domestic gas connections, use soap suds or approved leak detector fluid. Never use an open flame.
- U. Since paint and insect sprays and most paint removers are usually flammable, their use near open flames or other sources of ignition must be avoided. Read the labels on the containers.
- V. Inspection and maintenance of all fire equipment will be performed by a competent inspector. Records of inspection and maintenance must be maintained. The following general guidelines will be observed:

1. Portable fire extinguishers shall be inspected at least monthly. At regular intervals, not more than one year apart, extinguishers shall be thoroughly examined and/or recharged or repaired to insure operability and safety, or replaced as needed. Each extinguisher shall have a durable tag securely attached to show the maintenance or recharge date and the initial or signature of the person or company performing the service. Weekly visual checks should be made to insure serviceability of equipment.
 2. Hydrostatic tests of 75% of factory test pressures shall be conducted if portable extinguisher shows evidence of corrosion or mechanical injury. Extinguishers must be hydrostatically tested at intervals not exceeding the following: Carbon dioxide extinguishers-5 years; dry chemical units with stainless steel, aluminum or soldered brass shells-5 years; dry chemical units with brazed-brass or mild-steel shells-12 years.
 3. Due diligence must be used in keeping sprinkler systems in good operating condition.
 4. At least annually, all carbon dioxide or Halon systems shall be thoroughly inspected and tested for proper operation. At least semi-annually, all high pressure cylinders shall be weighed to insure a loss in content not exceeding 10%.
 5. At least annually, all dry chemical systems including alarms, shutdowns and other associated equipment shall be thoroughly inspected and checked. At least semi-annually, all expellant gas containers shall be checked by pressure or weight against the required minimums. Except for stored pressure systems, the dry chemical in the system storage container shall be sampled at least annually.
- W. Fire drills should be held at least monthly to familiarize personnel with location and operation of fire extinguishing equipment.
- X. Training in the use and care of available fire fighting equipment aboard will be conducted frequently. As a minimum, one different item of firefighting equipment will be reviewed during each fire drill.
- Y. The Supervisor will ensure that his facility has emergency station bills displayed in prominent locations and see that all employees familiarize themselves with their emergency duties and assignments.
- Z. Fire drills will be held in accordance with the station bill and a record of the activity recorded in the Safety Meeting and Training Log.

- AA. Fire fighting equipment is for fire use only, and shall be kept in its designated place at all times when not in use.
- BB. All fire protection equipment must be located in designated areas that are clearly identified with appropriate markings. This equipment should be located in the vicinity of likely fire hazards, but it must be accessible to operating personnel. The number, type, and location of extinguishers must meet the latest applicable standards.
- CC. Fire extinguishers partially used shall be discharged of pressure, recharged or replaced immediately.
- DD. All fire Extinguisher hose nozzles should be kept free of obstruction at all times.
- EE. All employees should be instructed in the proper use of available fire fighting equipment. Those working at places where special precautions against fire must be taken are required to be so instructed.
- FF. No repairs shall be made to the outer shells of fire extinguishers which depend on pressure of chemicals for operation.
- GG. All fire hoses and hose reels should be hydrostatically tested to and one-half times the available working pressure at least every 12 months, or more frequently if circumstances so indicate.
- HH. Firewater systems should have a primary and secondary power source for operating pressure-maintenance facilities. They should be remotely located from potential fire hazard areas. These facilities should be started and operated weekly and all personnel should be familiar with starting and operating procedures.
- II. Automatic fire protection systems using foam, CO2, Halon, freon, or other fire extinguishing chemicals should be inspected semi-annually to assure proper operation of sensing and automatic trip devices such as thermal detectors and gas monitors. Personnel assigned to locations where automatic extinguishing systems are employed should be instructed to vacate enclosed buildings in the event of extinguisher discharge to prevent excessive inhalation of the chemical.
- JJ. Adapters should be available to connect city fire equipment to existing equipment where practical.
- KK. An empty or defective fire extinguisher should never be rehung until it has been serviced or repaired. It is necessary that extinguishers operate at top efficiency the instant they are used. Fire extinguishers should be kept filled. Manufacturers' instructions for refilling and maintaining extinguishers must be followed.
- LL. Sock-type filters that have been exposed to gas having any sulfur content should be disposed of immediately.

- MM. The burning of waste oil, grass, brush, rubbish, and other combustible materials is prohibited without supervisory authorization. Extreme care should be used to prevent accidentally starting a fire when working in dry woods, brush, marshes, and prairies.
- NN. All AFFF units should be sampled and sent to the manufacturing facility for analysis at least annually.
- OO. All AFFF units or stations should be inspected at least monthly following these procedures.
 1. Check hose and all fittings for leaks by pressurizing the unit.(eductor type)
 2. Check reels for free movement and corrosion, lubricate as necessary.
 3. Work the eductor handles to ensure free movement. (On eductor type units)
 4. Check nozzle for obstructions, damage, corrosion, etc.
 5. Insure that metering valve is adjustable and set in t he proper position (3% or 6%) on eductor type units.
 6. Check AFFF tank level and fill if necessary.
 7. Flush hose and nozzle with "fresh water" and restore unit to stand-by or ready position.

III. CLASSIFICATION OF FIRES

In order to express the relative fire extinguishing potential of portable fire extinguishers, the following classification plan has been established.

Fires can be divided into four basic types:

- A. Class 'A' fires involving ordinary combustible materials (such as wood, cloth, paper, rubber, and many plastics) requiring the heat-absorbing (cooling) effects of water, water solutions, or the coating effects of certain dry chemicals which retard combustion.
- B. Class 'B' fires involving flammable or combustible liquids, flammable gases, greases, and similar materials where extinguishment is most readily secured by excluding air (oxygen), inhibiting the release of combustible vapors, or interrupting the combustion chain reaction.
- C. Class 'C' fires involving energized electrical equipment where safety to the operator requires the use of electrically non-conductive extinguishing agent. (Note: when electrical equipment is de-energized, the use of class A or B extinguishers may be indicated)
- D. Class 'D' fires involving certain combustible metals such as magnesium, titanium, zirconium, lithium, potassium, sodium, etc., requiring a heat-absorbing extinguishing medium not reactive with the burning metals.

IV. RATING OF FIRE EXTINGUISHERS

Based upon the preceding classification of fires and also upon fire extinguishment potentials as determined by physical testing of fire extinguishers by Underwriters' Laboratories, Inc., ratings have been established for portable fire extinguishers.

These ratings consist of a NUMERAL, A LETTER or combinations thereof. They appear on the labels affixed to the extinguishers listed by Underwriters' Laboratories. These NUMERALS and LETTERS signify the following:

- A. In the case of Extinguishers suitable for use on Class A fires, the NUMERAL is indicative of the approximate relative fire extinguishing potential of various sizes of the different suitable extinguishers available, e.g., a 4-A extinguisher can be expected to extinguish approximately twice much fire as a 2-A EXTINGUISHER.
- B. In the case of extinguishers suitable for use on Class B fires, the NUMERAL is also indicative of the approximate relative fire extinguishing potential of various sizes of the different suitable extinguishers available, and in addition, the NUMERAL is an approximate indication of the square foot area of deep layer flammable liquid fire which an average operator can extinguish, e.g., a 10-B unit can be expected to extinguish 10 square feet of deep layer flammable liquid fire when used by an average operator.
- C. In the case of extinguishers suitable for use on Class C fires, no NUMERAL is used since Class C fires are essentially either Class A or B fires involving energized electrical wiring and equipment. The size of the different suitable extinguishers installed should commensurate with the size and extent of the area involving the electrical hazard or containing equipment being protected.
- D. The LETTERS refer to the classes of fire on which the use of the particular extinguisher is most effective for fire extinguishment.

Examples:

A foam extinguisher, rated 2-A, 5-B. This extinguisher should extinguish approximately twice as much Class A fire as a 1-A extinguisher, and five times as much Class B fire as a 1-B extinguisher. Also, the extinguisher should extinguish a fire in a deep layer of flammable liquid, such as a dip tank having a surface area of 5 square feet, when used by an average operator.

A dry chemical extinguisher, rated 10-B, C. This extinguisher should extinguish approximately ten times as much Class B fire as a 1-B unit and should successfully extinguish a deep layer flammable liquid fire of 10 square feet area when used by an average operator. It also is safe to use on fires involving energized electrical equipment.

A multi-purpose extinguisher, rated 4-A, 20-B, C. This extinguisher should extinguish approximately four times as much Class A fire as a 1-A extinguisher, 20 times as much Class B fire as a 1-B extinguisher and a deep layer flammable liquid fire of 20 square feet when used by an average operator, and it is also safe to use on fires involving energized electrical equipment.

Source: NFPA-10 Standard for Installation of Portable Fire Extinguishers

Figure 6-1

PROPERTIES OF FLAMMABLE LIQUIDS AND GASES

	Flash	Ignition	*Flammable Limits		Boiling
	Point	Temp.	% by volume in air		Point
	<u>Deg. F</u>	<u>Deg. F</u>	<u>Lower</u>	<u>Upper</u>	<u>Deg. F</u>
Acetylene	gas	581	2.5	81.0	-118
Ammonia (anhydrous)	gas	1204	16.0	25.0	28
Benzene (benzol)	12	1040	1.3	7.1	176
Benzine (pet. ether)	0	550	1.1	5.9	95 - 140
Butane	gas	761	1.9	8.5	31
Carbon Disulphide	-22	194	1.3	50.0	115
Carbon Monoxide	gas	1128	12.5	74.0	-314
Ethyl (grain) Alcohol	55	689	3.3	19.0	173
Ethylene Glycol	232	752	3.2		387
Gasoline (100 octane)	-36	853	1.4	7.4	varies
Hydrogen	gas	752	4.0	75.0	-422
Kerosene	100	410	.07	5.0	304 - 574
Methane	gas	1004	5.0	15.0	-259
Methyl (wood) Alcohol	52	725	6.7	36.0	147
Natural gas	gas	900 - 1170	3.8 - 6.5	13.0 - 17.0	
Petroleum Crude	20-90	← varies widely →			
Propane	gas	842	2.2	9.5	-44
Toluene (toluol)	40	896	1.2	7.1	231
Turpentine	95	488	0.8		300
Varsol (#1)	108	560	1.1	6.0	320 - 390
Vinyl Acetate	18	800	2.6	13.4	161

* Based upon normal atmospheric conditions. The general effect of increase of temperature or pressure is to lower the limit and raise the upper limit. Decrease of temperature or pressure has the opposite effect.

The "flash point" of the liquid is the temperature at which it gives off vapor sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel used.

The "Ignition Temperature" of a substance, whether solid, liquid, or gaseous, is the minimum temperature required to initiate or cause self-sustained combustion independently of the heating or heated element.

The "Boiling Point" of a liquid is the temperature of the liquid at which its vapor pressure equals the atmospheric pressure.

Source: NFPA-325-M 1969 Fire Hazard Properties, etc.

7. FIRST AID

REFERENCE INDEX BASIC FIRST AID FACTS

SECTION	SECTION TITLE	PAGE
7.1.	BASIC FIRST AID FACTS	7-1
7.1.1.	GENERAL	7-1
7.1.2.	BASIC FIRST AID OBJECTIVES	7-1
7.1.3.	OVERALL GUIDELINES	7-2
7.2.	FIRST AID GUIDELINES	7-4
7.2.1.	LOSS OF BREATHING AND CIRCULATION	7-4
	CPR PROCEDURES	7-5
7.2.2.	HEART ATTACK	7-6
7.2.3.	BLEEDING	7-6
7.2.4.	SHOCK	7-8
7.2.5.	CHOKING	7-9
7.2.6.	BURNS	7-10
7.2.7.	ELECTRIC SHOCK	7-12
7.2.8.	INHALATION OF TOXIC GAS OR SMOKE	7-12
7.2.9.	EXPOSURE TO HYDROCARBONS (LIQUIDS AND GASES)	7-12
7.2.10.	POISONS	7-13
7.2.11.	HEAT EXHAUSTION	7-13
7.2.12.	HEAT STROKE	7-14
7.2.13.	HYPOTHERMIA	7-15
7.2.14.	IMMERSION FOOT (TRENCH FOOT)	7-17
7.2.15.	INSECT STINGS	7-17
7.2.16.	VENOMOUS SNAKE BITES	7-18
7.2.17.	SPIDER BITES	7-19
7.2.18.	POISONOUS PLANTS	7-20

7. FIRST AID

7.1. BASIC FIRST AID FACTS

7.1.1. GENERAL

The American Red Cross defines first aid as the “immediate and temporary care given the victim of an accident or sudden illness until the services of a physician can be obtained.” Effective first aid consists primarily of common sense and a few simple rules.

The intent of this section is to present the basic first aid guidelines that must be administered to a victim of an accident or sudden illness until a qualified physician or paramedic can be obtained. These guidelines are not intended to replace advanced first aid or medical training, but if they are followed, the possibility of death or severe damage to the injured person will be dramatically reduced.

The following conditions require that basic life support procedures be used immediately:

- A. Loss of breathing or circulation can cause death or brain damage in four to six minutes.
- B. Severe bleeding can cause death in one to two minutes.
- C. Poisoning can cause serious injury or death in seconds, depending on the particular type of poison. Every second counts in preventing further damage.

7.1.2. BASIC FIRST AID OBJECTIVES

- A. The primary objective in first aid is to sustain life by utilizing basic life support techniques to:
 - 1. Maintain an airway.
 - 2. Maintain breathing.
 - 3. Maintain circulation.
 - 4. Control bleeding.
 - 5. Treat for shock.
 - 6. Get medical care for the victim.

- B. The first aid provider must avoid panic, offer reassurance, inspire confidence, and do no more than necessary until medical help arrives.
- C. If there is no dispensary, clinic, or hospital in the near proximity of the worksite to treat employees, one or more employees must be adequately trained to render first aid. Only approved First Aid Kits will be kept on site.

NOTE: For employees that may be sensitive to insect bites and/or stings, benadryl should be included as the only oral medication necessary for the first aid kit. Individuals who are hypersensitive to insect stings should carry their own personal physician prescribed kit at all times.

- D. Oxygen equipment should be kept at field sites for use in the event of heart attack or exposure to noxious fumes. It should be of the type that delivers oxygen on demand.

The pressure-demand resuscitator should only be used when the site is extremely remote and individuals are present who have received advanced first aid training and know how to properly use resuscitators. A resuscitator in the hands of an untrained person can further complicate the victim's condition.

7.1.3. OVERALL GUIDELINES

Know the location of the first aid station, life support equipment, emergency showers and eye wash fountains.

Know the emergency phone numbers for reporting accidents and obtaining ambulances, helicopters and boats.

Become familiar with the toxic and poison chemicals and gases that are commonly used. (See appropriate sections in this manual.) Pay particular attention to the information on hydrogen sulfide (H₂S) and sulfur dioxide (SO₂).

Inform the supervisor and co-workers if you are sensitive to certain medication such as penicillin, allergic or hypersensitive to insect bites, diabetic, or if you require medication for ailments such as high blood pressure, hypertension, etc.

Clothing contaminated with any chemical or petroleum product should be removed.

Do not attempt to remove foreign material from another person's eye.

If acid, caustic, toxic or another injurious substance is splashed on the skin or clothing, immediately wash it off with water. Use the emergency shower if required and remove contaminated clothing at once. In some cases, special neutralizing agents are available and should be used as prescribed.

Eyewash fountains should be used if acid, caustic, toxic or other injurious substances are splashed into the eyes. If eyewash fountains are not readily accessible, wash with a gentle stream of potable water. Do not use high pressure water.

When providing first aid to an injured person, do not panic; offer reassurance, inspire confidence, and speak in a soft, gentle voice.

If there is no dispensary, clinic or hospital at or near the work site, at least two personnel per shift must be adequately trained to render first aid.

7.2. FIRST AID GUIDELINES

7.2.1 LOSS OF BREATHING AND CIRCULATION

A person whose breathing and circulation have stopped will die or suffer brain damage if these functions are not restored in four to six minutes. The initial evaluation of a victim should follow the procedures developed by the American Red Cross for basic life support, called the "ABC evaluation."

- A. Airway - After assuring yourself that the victim is unconscious, open the airway by tilting the head back. Look into the mouth and remove anything that is blocking or could potentially block the airway. This includes gum, partial plates, and chewing tobacco.
- B. Breathing - Determine whether the victim has stopped breathing or not. Do this by placing the cheek next to the victim's nose and mouth to feel an exchange of air. At the same time, watch for any chest movement.
- C. Circulation - Initially place the tips of two fingers on the larynx (voice box) and slide them gently into the groove between the voice box and the muscle of the neck. This is the location of the carotid artery where you can feel if the heart is circulating blood.

If breathing has ceased, begin mouth-to-mouth or mouth-to-nose resuscitation. If circulation has stopped, begin external cardiac massage. When combined, these procedures are known as cardiopulmonary resuscitation (CPR).

To be performed effectively, the procedures *must* be learned in a certified course. Although the procedures will be briefly discussed in this section, the discussion is not intended to replace an official course.

CPR

The following CPR procedure should be performed by a single rescuer after evaluation indicates that breathing and circulation have stopped.

- A. Deliver four quick breaths using mouth-to-mouth or mouth-to-nose breathing. Do this in such a way that the victim does not have a chance to completely exhale.
- B. Place the heel of one hand over the lower half of the sternum (breastbone) and place the other hand on top of the first hand. Keeping the arms straight, deliver a quick, downward, piston-like thrust to compress the victim's chest 1½ to 2 inches. This procedure compresses the heart between the sternum (breastbone) and the backbone, forcing it to circulate blood. Deliver this thrust 15 times at a rate of approximately 80 times per minute.
- C. After 15 compressions, immediately tilt the victim's head back and deliver two quick breaths mouth-to-mouth.
- D. Repeat the cycle of delivering 15 compressions and two breaths until medical help arrives.
- E. Once a minute, check the carotid artery for a pulse. Do this between compressions and the two breaths.
- F. If you feel a pulse, deliver one breath every five seconds while ensuring that circulation is still present. If breathing and circulation return, keep a close watch over the victim in case these processes stop again.

The following CPR procedure is used if a situation involves two rescuers:

- A. One person does the ABC evaluation while the other rescuer prepares to deliver external cardiac massage.
- B. The rescuer who has done the evaluation and found no breathing or circulation delivers four quick breaths by mouth-to-mouth resuscitation.
- C. When the four breaths are completed, the other rescuer starts delivering compressions at the rate of 60 times per minute.
- D. After every fifth compression, the first rescuer delivers one breath mouth-to-mouth. The ratio then becomes five compressions to one breath until help arrives or a pulse is restored.

Never practice CPR procedures on real people. These are violent maneuvers that can injure a person if improperly executed. These procedures are learned in a formal CPR course in which life-size mannequins are used for practice.

Conditions that can cause breathing and/or circulation to stop include: electric shock, inhalation of gas such as H₂S, inhalation of smoke, lack of oxygen, heart attack, drowning, or a hard blow to the chest.

7.2.2. HEART ATTACK

For heart attack victims, use the following procedure:

- A. Perform an ABC evaluation as defined above. Begin CPR if breathing and circulation have ceased. Continue CPR until the vital signs have been restored.
- B. If breathing and circulation are present, keep calm and reassure the victim.
- C. Loosen the clothing and help the victim get into a comfortable position (usually halfway between lying and sitting). **Do not** carry or lift the victim more than necessary. Have someone call for medical help.
- D. **Do not** give the victim any liquids without a doctor's advice.

7.2.3. BLEEDING

Severe bleeding results from wounds to large blood vessels. Bleeding **must** be controlled quickly. Don't waste time—apply direct pressure over the wound. The following procedure should be used in the event of severe bleeding:

- A. Place a clean pad, handkerchief, or cloth over the wound and press firmly with the hands. If you do not have a pad or bandage, close the wound with the hand or fingers.
- B. Apply pressure directly over the wound.
- C. Hold the pad firmly in place with a bandage, necktie, cloth strip, etc.
- D. Raise the bleeding part higher than the rest of the body unless bones have been broken.

- E. Keep the victim lying down.
- F. Keep the victim warm. Cover the victim with blankets or coats, and put something under the victim when the victim is found lying on a cold or damp surface.
- G. If the victim is conscious and can swallow, and if abdominal injury is not suspected, give plenty of liquids (such as water, tea, or coffee).
- H. Get medical help.

A tourniquet should be used only to treat severe, life-threatening bleeding that cannot be controlled by other means (usually an amputated, mangled, or crushed arm or leg, or bleeding of several arteries). The procedure for applying a tourniquet is as follows:

- A. Use only a strong, wide piece of cloth. *Never* use wire, rope, twine, or other narrow materials.
- B. Place the tourniquet immediately above the wound, between the body and the edge of the wound. Some normal skin should be left between the tourniquet and the wound. If the wound is near a joint, place the tourniquet at the closest practical point above the joint.
- C. Make sure the tourniquet is just tight enough to stop the bleeding. If possible, attach a card to the victim showing the time and place the tourniquet was applied.
- D. Once the tourniquet has been applied, the victim should be taken to a medical facility immediately. The tourniquet should be removed only by a physician or medical personnel who are prepared to control bleeding.
- E. One to two hours is the maximum time that a tourniquet can be left in place without causing further damage.

7.2.4. SHOCK

Whenever someone suffers from trauma or emotional upset, shock may be present. Shock *must* be considered as a possible complication of every injury and severe illness. Shock occurs when the circulation to vital organs of the body (especially the brain) slows down. This condition is severe and can be life threatening if it is not corrected. The symptoms of shock include the following:

- A. Cold, clammy skin
- B. Shallow breathing
- C. Rapid pulse
- D. The victim feels cold and may even be shaking.
- E. Weakness
- F. Confusion or disorientation

Shock should be treated as follows:

- A. Have the victim lie down.
- B. Keep the airway open. If the victim vomits, turn the head to the side so the neck is arched with the chin pointing down.
- C. If the victim complains of being cold, use a blanket or coat for a cover.
- D. Increase circulation to the brain by elevating the victim's legs so that the head is lower than the body.
- E. Reassure the victim.
- F. If the victim is conscious and can swallow, administer fluids (water, tea, soft drinks, etc.).
- G. *Never* give the victim alcoholic beverages.
- H. *Do not* give the victim fluids if you think the abdomen may be injured.

7.2.5. CHOKING

If the victim cannot speak, cough, or breathe, take the following action until medical help arrives:

A. For a conscious victim:

1. Stand just behind and to the side of the victim, who can be standing or sitting. Support the victim with one hand on the chest. The victim's head should be lowered. Deliver four sharp blows between the shoulder blades. If this technique does not lessen choking, go to step 2:
2. Stand behind the victim, who can be standing or sitting. Wrap the arms around the victim's middle, just above the navel. Clasp the hands together in a doubled fist and press in and up in quick thrusts. Repeat this maneuver several times. If choking continues, repeat a cycle of four back blows and four quick thrusts until the victim is no longer choking or becomes unconscious.

B. For an unconscious victim:

1. Place the victim on the ground and deliver rescue breathing. If the victim does not start breathing and if it appears that the air is not going into the victim's lungs, go to step 2:
2. Roll the victim onto one side, facing you, with the chest against the knee. Then, deliver four sharp blows between the shoulder blades. If the victim still does not start breathing, go to step 3:
3. Roll the victim face-up and deliver one or more manual thrusts. To deliver the thrusts, place one hand on top of the other, with the heel of the bottom hand in the middle of the abdomen, slightly above the navel and below the rib cage. Press into the victim's abdomen with a quick upward thrust. Do not press to either side. Repeat this action four times if the victim does not start breathing. Even if breathing begins, go to step 4:

4. Clear the airway.
 - a. Hold the victim's mouth open with one hand, using the thumb to depress the tongue.
 - b. Make a hook with the middle finger of the other hand, and, in a gentle sweeping motion, reach into the victim's throat and feel for a foreign object that may be blocking the air passage. Repeat the following procedure until the air passage is clear; administer four back blows, four abdominal thrusts, probe in the mouth, and try to inflate the lungs.
5. If the object has not been retrieved, but the victim suddenly seems all right, take the victim to the hospital anyway. This action is particularly important if the swallowed object is a fish bone, chicken bone, or another jagged object that could cause internal damage if it passes through the victim's digestive system.

7.2.6. BURNS

Burns can occur from heat sources (thermal), chemicals, and low temperature liquids. Extensive burns are very painful, and the victim often goes into shock or becomes dehydrated. Large burns are also easily contaminated and infected.

A. HEAT BURNS

Use the following procedures for victims of heat burns:

1. For small burns, if the skin is not broken, immerse the skin in clean, cool water or apply ice to relieve the pain. If the skin is broken, place a sterile gauze or clean cloth soaked with cool water or ice over the burn.
2. *Do not* break blisters.
3. For large or extensive burns: place a clean cloth over all burned areas to prevent exposure to air. Wet the burn with cool water. The victim should lie down with the head and chest lower than the remainder of the body. Raise the feet, if possible.

B. CHEMICAL BURNS (OF THE SKIN)

Use the following procedures for victims of chemical burns:

1. Immediately flush the burn with water. Speed in applying diluent (water) helps reduce the extent of the injury.
2. Apply a stream of water to the burn while removing the victim's clothes.
3. Place the cleanest available material over the burned area.
4. If the burn area is extensive, make the victim lie down. Place the head and chest a little lower than the rest of the body, and raise the legs if possible. Extensive burns should be examined by a doctor. Seek medical attention promptly.

C. CHEMICAL BURNS (OF THE EYES)

Check the victim's eyes for contact lenses and remove them if they are present. Wash the eyes by plunging the head into a vessel of clean water and having the victim blink rapidly, or by allowing water from a drinking fountain or hose to flow into and flush the eyes. If neither of these procedures can be done immediately, pour clean water into the victim's eyes from a drinking cup. It is a good practice to keep an eyewash bottle filled with clean water available for emergency use. If the victim's eyelids will not remain open, get another person to hold the lids open, and wash the eyes for 15 minutes. Use only water to wash chemical burns. Never use another chemical to flush the burns, because this procedure can increase the extent of the injury.

D. COLD BURNS

Cold burns can result when liquefied petroleum gas (LPG), carbon dioxide (CO₂), or Nitrogen (N₂) is released to atmosphere from pressurized containers and if dry ice (solid CO₂) contacts the skin. Cryogenic liquids such as helium and natural gas (LNG) can cause extreme injury but are not commonly seen at the work site. Injuries from LPG, N₂, or CO₂ are caused by freezing the skin or tissue and should be treated as follows:

1. Simple burns on the skin should be treated by flushing with water. Extensive burns should be examined by a doctor.
2. Eye burns can be very destructive. If LPG, low-temperature CO₂, or N₂ contacts the eyes, flush the eyes with water and seek immediate medical attention.

7.2.7. ELECTRIC SHOCK

For a victim of electric shock, perform the following procedure:

- A. Throw the switch to turn off the current, or use a dry board or stick to remove the electric contact from the victim.
- B. Do the ABC evaluation as defined in Section 30 and begin CPR if breathing and/or circulation have ceased.
- C. If breathing and circulation are present, remain with the victim until medical help arrives. It is important that an individual who has suffered an electric shock be evaluated by a physician, since electric shock can severely injure many parts of the body.

7.2.8. INHALATION OF TOXIC GAS OR SMOKE

- A. The victim should be removed from the contaminated area immediately. Nevertheless, do not attempt to rescue the victim by yourself if help can be found quickly. Do not enter the contaminated area without respiratory equipment.
- B. Keep the victim lying down until medical help arrives.
- C. If breathing and/or circulation has stopped, perform CPR.

Hydrogen sulfide (H₂S) and sulfur dioxide (SO₂) are often encountered at producing sites. These two gases are extremely dangerous if inhaled. It is imperative that each person familiarize himself with the physical properties and the methods of detection, protection and treatment from inhalation.

7.2.9. EXPOSURE TO HYDROCARBONS (LIQUIDS AND GASES)

- A. An individual overcome by vapors must be removed from exposure immediately. A physician should be called. If breathing is irregular or stopped, administer artificial respiration.
- B. If a liquid petroleum product is swallowed, do not induce vomiting. Call a physician promptly.

- C. For skin contact, remove contaminated clothing and wash the skin with soap and water. If the petroleum liquids splash into eyes, wash the eyes with clear water for 15 minutes or until irritation subsides.

7.2.10. POISONS

If poisons are swallowed, professional advice should be obtained as soon as possible. Identify the poison and follow the doctor's advice. If a doctor or poison control center cannot immediately be reached by phone or radio, the following guidelines apply in most cases:

- A. Try to identify the substance ingested.
- B. Induce vomiting by putting a finger down the victim's throat, unless the substance swallowed is a hydrocarbon. In that case, do not induce vomiting, since that action may aggravate the condition.
- C. Call a physician, emergency room, or poison control center for advice. If you cannot identify the poison, have the victim drink milk or a solution of milk and raw eggs to coagulate the material. Try again to induce vomiting by forcing the victim to gag.

7.2.11. HEAT EXHAUSTION

The symptoms of heat exhaustion include the following:

- A. Pale, cold, clammy skin
- B. Rapid, weak pulse
- C. Weakness, headache, or nausea
- D. Cramps in abdomen or limbs
- E. Excessive perspiration

Heat exhaustion should be treated as follows:

- A. Move the victim to a cool place in the shade.
- B. Make the victim lie down so the head is lower than the rest of the body.

- C. Give the victim water to drink and, if available, stir one-quarter teaspoon of salt into the water.
- D. Get medical help.

7.2.12. HEAT STROKE

Heat stroke is life threatening, and immediate measures **must** be taken to cool down the victim and get medical care. The symptoms of heat stroke include the following:

- A. Flushed, dry, hot skin
- B. Rapid, strong pulse
- C. Temperature well above normal and skin hot to the touch.
- D. Headache, dizziness, nausea
- E. Unconsciousness

Heat stroke should be treated as follows:

- A. Move the victim to a cool place.
- B. Treat the victim for shock (see #7.2.4 above).
- C. Cover the entire body with cold water, using either a sponge or a hose. Cover the victim with ice, if available.
- D. If the victim is fully conscious and can swallow, administer water, or, if available, one quarter teaspoon of salt in a glass of water.
- E. ***Do not*** offer alcoholic beverages.
- F. Obtain medical help immediately.

7.2.13. HYPOTHERMIA

Hypothermia is a body temperature reduction caused by the insufficient generation of heat. Hypothermia may occur at temperatures both above and below freezing, and it is especially common in wet environments. Wind combined with cold weather makes the body temperature drop faster than calm, cold weather does. Wind chill increases the risk of hypothermia. If hypothermia is not recognized and treated quickly, it may result in death.

The following precautions help prevent hypothermia:

- A. Before going outside, rest and eat properly.
- B. Continue food intake once outside.
- C. Make sure clothing and outer wear are windproof and waterproof.
- D. Carry emergency survival equipment.
- E. Before beginning an outdoor task, think about what must be done to remain at the location overnight. Make sure a shelter is available to carry out that encampment.
- F. When working in a cold environment, reduce sweating by removing clothing layers and then putting them back on when resting.
- G. Exercise (isometric) to help the body produce heat.

The symptoms of hypothermia include the following:

- A. The signs observed by others are poor coordination, slowness, stumbling, thickness of speech, amnesia, irrationality, poor judgment, hallucinations, bluish or puffy skin, dilated pupils, decreased heart and respiratory rates, weak or irregular pulse, and stupor.
- B. The symptoms noticed by the victim include intense shivering, muscle tenseness, fatigue, numbness or coldness, poor coordination, stumbling, poor articulation, disorientation, a decrease in shivering followed by muscles going rigid, bluish or puffy skin, and a slow, irregular, or weak pulse.

Hypothermia should be treated as follows:

- A. Reduce heat loss by sheltering the victim from wind and weather.
- B. Isolate the victim from the ground. Replace wet clothing with windproof, waterproof clothing, and have the victim increase his or her exercise level if possible.
- C. Administer heat by giving the victim hot drinks. *Do not* give the victim alcoholic beverages.
- D. Place the victim in a sleeping bag with another person.
- E. Make the victim huddle with others for body heat. If you are in a permanent location, immerse the victim in water heated to 100-108 °F.

IMMERSION HYPOTHERMIA

Immersion in near-freezing water for only a few minutes while inadequately dressed causes rapid and total body cooling. If remedial action is not taken, death may result.

The following precautions help prevent immersion hypothermia:

- A. Wear an insulated life vest, or, preferably, a float coat. This device *must* be zipped and hooked properly in order to insulate and maintain flotation.
- B. Stay alert and out of the water.
- C. If accidentally immersed in cold water, move as little as possible. The head should be kept out of the water, the legs drawn up to the chest, and arms crossed over the chest. This position conserves body heat and improves the chance of survival.

The symptoms of immersion hypothermia are identical to those of hypothermia. Victims of immersion hypothermia should be treated gently and warmed immediately.

- A. Gently remove wet clothing and place the victim in a warm sleeping bag. If the victim is very cold, it may be necessary for one or two other people to remove their clothing and climb into the bag, using body heat to rewarm the victim.

- B. *Do not* allow the victim to exercise or move, because activity increases the flow of cold blood from the extremities to the heart.
- C. Warm liquids are appropriate only for immersion victims with body temperatures above 90°F.

7.2.14. IMMERSION FOOT (TRENCH FOOT)

Immersion foot affects only the feet. It results from wearing boots and socks that are very cold and wet for prolonged periods of time.

- A. To prevent immersion foot, replace wet socks with dry socks and rewarm the feet every six or eight hours.
- B. The symptoms of immersion foot are similar to those of frostbite: a sense of cold to numbness to false warmth, dead skin turning white, and impaired motion of the toes.
- C. To treat immersion foot, dry and rewarm the feet by wrapping with blankets. The affected areas should never be rubbed. Lukewarm water may be used, but never use hot water, heat lamps, or flame to warm the affected areas.

7.2.15. INSECT STINGS

- A. A person who is stung by a wasp, bee, yellow jacket, ant, fire ant, or other stinging insect will suffer pain and mild swelling.
- B. To treat insect stings, the stinger should be removed. This procedure can be done easily with tweezers, and ice should be applied to the area through the gentle rubbing of an ice cube on the bite sites. Normally, nothing more needs to be done.
- C. Some people are hypersensitive to insect stings. These people react to stings with great swelling, or they develop hives beyond the area of the sting. Some hypersensitive people have difficulty breathing or collapse entirely. Usually, these people are aware that they are reacting more severely to each new bite. A hypersensitive person should obtain a kit to carry at all times, to be used in the event of a sting. Associates and the person's supervisor should be told that the person is hypersensitive to insect stings.

7.2.16. VENOMOUS SNAKE BITES

The common venomous snakes are the rattlesnake, the copperhead, the cottonmouth and the coral snake. Basic first aid for snake bites should be administered as follows:

- A. Keep the bite at the level of the heart. Elevation will hasten spread of venom.
- B. *Do not* give the victim alcoholic beverages.
- C. Victims should not run, since this action will speed up circulation and increase the spread of venom.
- D. Keep the victim warm, but do not apply heat to the wound.
- E. Keep the victim calm and quiet.
- F. Transfer the victim to a medical facility as soon as possible.
- G. *Do not* apply ice or a cold pack to the bite.
- H. Notify the exact location to the supervisor, medical officer or someone else if a radio or telephone is available.
- I. If possible, identify the snake and kill it.
- J. If it takes more than one hour to reach a medical facility:
 - 1. Place a constricting band (not a tourniquet) two or three inches above the bite. This band is not intended to constrict the flow of blood, and you should be able to insert at least one finger between the band and the skin.
 - 2. Make two incisions, one through each fang mark, with a sharp knife, a razor blade, or a blade from a snakebite kit (*do not* make an "X"). The incisions should be 1/4-inch long and 1/8-inch deep, just deep enough for blood to start oozing.
 - 3. Apply suction to the wound using the rubber suction cup from the snakebite kit. If nothing else is available, use mouth suction. (*Do not* use mouth suction if you have open sores in the mouth.)

K. Coral snakes inject the venom by chewing the flesh. As a result, suction and a constricting band are ineffective for extracting venom. Treat a coral snake bite as follows:

1. Wash the bite with clean water.
2. Transfer the victim to a medical facility as soon as possible.

7.2.17. SPIDER BITES

There are many species of spiders which produce venom, but only a few are capable of penetrating the skin. The black widow and brown recluse (fiddle back) spider are two species that can penetrate the skin and whose venom may be as poisonous as venom from snakes. Typical symptoms for spider bites and venomous snake bites are:

- A. Swelling and pain at the bite site
- B. Headache
- C. Nausea and/or vomiting
- D. Joint pain and muscle cramps

Treat a spider bite as follows:

- A. Have the victim lie down.
- B. **Do not** use constrictive bands or suction cups. This method is not effective for spider bites.
- C. Take the victim to a medical facility as soon as possible.
- D. If pain is severe, an ice cube can be massaged on the bite site. This action will help relieve the pain. **Do not** apply ice or cold packs to the wound for a prolonged period of time.
- E. **Do not** allow the victim to walk.
- F. **Do not** give the victim alcoholic beverages.

The black widow spider is usually found in dark, moist places. It is usually jet black in color and has a red, hour-glass mark on its abdomen. The bite of this spider immediately causes severe pain at the bite site.

The brown recluse spider (fiddle back) is normally found in sheds, houses, closets, and under leaves. It has a violin-shaped mark on its back. The bite of this spider causes little or no immediate pain. Many times, the victim is not aware of the insect bite until several hours have passed and a crusted wound surrounded by a black bulls-eye appears at the bite site. This wound is an indication that tissue damage caused by the venom has occurred. This damage can cause tremendous disability to the victim because the venom literally destroys all the tissue it encounters.

7.2.18. POISONOUS PLANTS

Skin poisoning can result from contact with poison ivy, poison oak, or poison sumac. Symptoms include itching, redness or blisters on the skin after contact with poison plants. To treat contact with poison plants, take the following steps:

- A. Remove the victim's clothing from the affected area. Be careful not to let the clothing drag across unaffected skin. It may be necessary to cut the clothing away from the affected areas.
- B. Wash the exposed area with mild soap and water. Lather and rinse several times.
- C. Sponge the affected area gently with rubbing alcohol, if it is available.
- D. If blisters appear on the skin, call a physician.

8. OFFSHORE SAFETY

8. OFFSHORE SAFETY

I. STATION BILLS

The station bill is a document which provides specific instructions as to standard Taylor Energy Company emergency signals and procedures to be followed in case of fire, other emergencies, and abandoning ship. It establishes the chain of command and identifies each man's emergency and abandon ship stations and his responsibilities at those stations. All crew and other personnel not required to perform specific actions are collected at one point, where they can be accounted for.

Station bills will be posted on the bulletin boards, office, and other highly visible areas. Every employee, service employee and visitor is required to read the station bill and know the platform emergency procedures.

No changes should be made to the station bill's content unless approved by Taylor Energy's home office.

II. EMERGENCY SIGNALS

The alarm system will be installed so that when activated, it is audible from all areas. When conducting emergency drills, the appropriate signal for each drill should be given to familiarize all crew members with the signals. Standard signals in use on all Taylor Energy Company facilities are as follows:

- A. Fire and Emergency - Intermittent signal on general alarm system for not less than 15 seconds.
- B. Abandon Ship - A continuous signal on the general alarm system.
- C. Man Overboard - Hail, and pass the word "MAN OVERBOARD".
- D. Dismissal - From fire and emergency station, three short rings on the general alarm system.

III. EMERGENCY DRILLS

All drills shall be conducted weekly to simulate an actual emergency. All personnel will report to their respective stations, and be prepared to perform their assigned duties. It shall be the responsibility of each man on board to familiarize himself with the alarm signals and with his particular duty and station. Drills shall be conducted at various times to ensure that persons who cannot participate in an emergency drill on one date can participate in a drill on another date. Drills are for training and should be held for this purpose. All drills will be properly recorded in the Safety Meeting and Training Log book.

- A. Fire Drills - Each platform will have a designated emergency crew of reliable personnel who would actually fight a fire. All other personnel will don their life preservers and proceed to their emergency stations. The supervisor will select a place for a simulated fire at each drill. The emergency crew will proceed to this area and verbally "walk through" the procedures, equipment, and problems associated with fighting the simulated fire.

Following the drill, two fire hoses should be pressurized at the same time to check lines for adequate pressure.

Periodically, a portable fire extinguisher due for service should be discharged to demonstrate the correct use of this equipment.

Supervisors will ensure that all personnel respond to the drill as specified.

- B. Abandon Ship Drills - Upon initiation of the drill, all crew members will immediately don their life jackets and proceed to their abandon ship stations. The abandon ship drill will, of course, stop short of actually abandoning the platform. If the platform has motorized life boats or capsules, there will be at least two people that are well trained in launching and operating the equipment assigned to each boat. These people will be the assigned boat commander and alternate. Weather permitting, some of this equipment will be launched and operated by these people. Launching equipment, such as davits, winches, etc., will be operated weekly. This may be done at the time of the drill or at other times. There is no need to launch a life boat full of people unless an emergency really exists. New employees may take a familiarization ride at least once while operators are being trained if the situation permits.

- C. Man Overboard - Man overboard drills will be conducted to practice procedures to be taken for such an emergency. Under no circumstances will a person be placed in the water for realism. The following actions are taken when a man is overboard:

1. Throw a life ring with a retrieving line as close to the man as possible, without striking him.
2. Hail, and pass the word "MAN OVERBOARD" to all personnel in the vicinity.
3. Post a lookout to keep the man in sight at all times. At night direct searchlights to the man overboard.
4. Alert standby vessel and other vessels in the area.
5. If possible, lower the personnel basket over the side to effect rescue of victim.
6. Muster the crew to determine who and how many persons are missing.
7. Once recovered, treat the victim with any first aid required. If necessary, send him ashore as soon as possible for a thorough examination by a physician.

- D. Hydrogen Sulfide - H₂S drills should be conducted in areas where H₂S is known or suspected to be present. These will be conducted weekly until the crew reaches a high level of readiness. Then they will be conducted at least monthly. During H₂S drills, personnel will be given demonstrations on the use of self-contained breathing apparatus (SCBA). Portable toxic gas detectors will be given a function test during H₂S drills to ensure that they are working properly and that the operator is familiar with the operation.

IV. ROUGH WEATHER PROCEDURES

- A. All Field Foreman are responsible for obtaining weather forecasts and reports from the most reliable local sources, on a routine basis. Using these, the Field Foreman will keep units informed of weather forecasts at all times, enabling crews to be properly prepared for heavy weather conditions.
- B. Platform Supervisors should also monitor weather reports on their own, by all available means, recording and posting reports when rough weather is anticipated.
- C. Whenever weather reports indicate a weather condition which is likely to interrupt operations, the following actions should be taken:
1. Alert all personnel of the imminent rough weather conditions.
 2. Alert all support/standby vessels of the approach of rough weather.
 3. Advise the shore base of all actions being taken.
 4. Secure all equipment and material on all exposed decks.
 5. Check the condition of all lifeboats and life rafts. Ensure that they are ready for use.
 6. Check the alarm system, foghorn and navigation lights for proper operation.
 7. Be prepared to shut down all operations if conditions dictate.
- D. The Field Foreman may determine, based on weather observation or information sent to him, that the worsening weather situation requires that operations be shut down. The following actions should be taken:
1. Alert all personnel that operations are being shut down due to deteriorating weather conditions.
 2. Release all support vessels not required for evacuation purposes. Know their plans and destinations for the imminent rough weather.
 3. Follow prescribed procedures (based on facility type) for preparing the facility for temporary abandonment.
 4. Have all non-essential personnel standing by for possible early evacuation.

- E. If the Field Foreman receives information or determines through his own observation that the weather is going to deteriorate to a point which may endanger the lives of the crew, he may decide (or be instructed by his superiors) that evacuation of the facility is necessary. He should be advising the shore base of his observations throughout this period. When this decision has been reached, the following actions should be taken:
1. Shut off all engines and machinery except for the emergency generator.
 2. Turn on navigation lights and foghorn.
 3. Begin an orderly evacuation to the standby boat, accounting for all personnel by NAME.
 4. Conduct a final inspection of the facility to ensure that the facility and wells are secured for temporary abandonment.
 5. Remove all valuable documents (logs, manifests, etc.)
 6. Notify the shore base that the facility has been evacuated. Identify all personnel evacuated. Double check accountability of personnel.
 7. The shore base will notify Authorities of the temporary abandonment of the facility due to rough weather conditions.

V. OFFSHORE COMMUNICATIONS

- A. All offshore facilities must have properly functioning communications with both the shore base and with supply vessels and aircraft.
- B. Under normal circumstances, radio equipment will be handled only by qualified radio operators. The following personnel should be familiar with the use of all radio equipment:
1. Supervisors
 2. Crane operators
- C. All radio transmission equipment must be turned off and red-tagged during shooting and perforating operations.
- D. Only authorized personnel will be permitted to service or repair radio communications equipment.
- E. A list of emergency frequencies and stations will be maintained with radio equipment.
- F. Lifeboats emergency radio transmitters will be periodically checked and tested.

VI. LIFE-SAVING EQUIPMENT

- A. Escape Capsules and Covered Lifeboats - Lifeboats will be stowed in easily accessible locations. As part of emergency drills, crew members should regularly receive complete instructions on proper lifeboat launching procedures. A supervisor on each crew should be designated alternate. The lifeboat commander and alternate should be completely knowledgeable in all lifeboat equipment and procedures. He should maintain order on the lifeboat, and ensure that the lifeboat is not launched until all assigned passengers are aboard, or until the safety of the boat is not jeopardized. When lowering the boat into the water, the rudder should be positioned to steer away from contact with the abandoned facility. The motor should be running when the lifeboat enters the sea to give the craft immediate maneuverability. When in the water, all personnel should remain seated to maintain the stability of the lifeboat.

Under certain conditions of wind, weather, or tide, it may not be possible to safely launch lifeboats on the windward side of the platform. In these cases, it may be safer to use life rafts on the lee side.

Passengers will keep all water-tight doors and hatches closed and dogged. The upper hatch will be closed and dogged following observation activity. Survival capsules and lifeboats will have their lowering mechanisms and engines operated each week (preferably during drills) to ensure that the equipment is operating properly.

- B. Life rafts - Life rafts, both the inflatable enclosed type and the rigid type will have a painter (rope) securely attached to the platform that is long enough to permit launching. Instructions for operation of the inflatable rafts will be posted in prominent locations throughout the facility, and on the raft shell.
- C. Life rings - Life rings will be located at various positions around the perimeter of the platform, enabling easy access to one at any location on the facility. They will not be permanently secured in any way. They will be thrown as near to the man overboard as possible without striking him. They should be maintained clean and stenciled with the company name and location.
- D. Life jackets - All personnel on the facility will have a personal lifejacket which is usually kept in the sleeping area. There should be spare lifejackets located at various points throughout the facility. Life jackets will be maintained in well-marked containers to prevent damage due to exposure. Lifejackets only will be worn to emergency drills. Lifejackets are not to be worn while working. When worn, they should be always be tied neatly in a tight and secure manner.
- E. Work Vests - Work vests are used when performing routine work over water, when making personnel transfers to boats, and anytime when working conditions could possibly result in falling overboard. They are made to resist deterioration due to exposure to water, oil, or chemicals. They allow greater freedom of movement while working. However, many of them do not maintain the wearer in a face-up position in the water, making them unsuitable for wear as an emergency life preserver. Unserviceable work vests will be destroyed as per regulations to prevent unintended use.

VII. EMERGENCY ABANDONMENT PROCEDURES

Emergency abandonment procedures are implemented when an emergency condition exists, involving the risk of immediate danger or serious injury to personnel. Under these conditions, all actions are directly concerned with the immediate evacuation of all personnel to safety, and require the immediate execution of a well-rehearsed abandon ship plan. Each facility has an approved Emergency Evacuation Plan which should be followed in case of an actual emergency. However, the following are general considerations for a safe abandonment:

- A. The supervisor will ensure that an SOS is transmitted, giving the facility's name, location, and type of emergency.
- B. The abandon ship signal will be activated. If the alarm system fails, the order will be dispatched by PA system, whistles or any other means to alert all crew members.
- C. Lifeboats will not be launched until either all assigned personnel are aboard, or it is determined that the lifeboat is in jeopardy due to the emergency situation.
- D. Evacuation will take place swiftly, but in an orderly manner, to avoid panic and unnecessary injuries due to hasty actions. Supervisors must know their duties and stay highly visible to accomplish this.
- E. Personnel isolated from the lifeboats will move quickly to other equipment, such as inflatable or rigid life rafts. These will be launched and boarded by the most safe means.
- F. When possible, board lifeboats and rafts directly while on the facility or descend to them by stairs, ladders or nets. Try to avoid actually entering the water. This is especially important in cold water where exposure can be dangerous. Even in warm waters it is possible to be carried by swift currents.
- G. A jump should be risked only if there is no other means of escape.
- H. Lifeboats and rafts in the water will maneuver a safe distance from the facility, keeping a close watch for more survivors.
- I. If lifeboats are equipped with emergency transmitters, the SOS will be continued until acknowledged by rescue vessels.
- J. Once aboard rescue vessels, the senior man present will hold a muster of all facility personnel, determining who and how many personnel are still missing.

VIII. HELICOPTER OPERATIONS

- A. General - When being transported to and from the facility site by helicopter, Taylor Energy Company employees will abide by the instructions of the helicopter pilot. Flight personnel have the authority to refuse flight accommodations to anyone who appears to be intoxicated in any form, or who refuses to follow the instructions of flight personnel. When in flight, the pilot of the aircraft is in charge at all times.
- B. Boarding Procedures - The following procedures are to be followed anytime a helicopter is to be boarded, whether on land or offshore.
1. All passengers must be properly manifested, giving their name, weight and baggage weight.
 2. Passengers unfamiliar with helicopters will be briefed on proper procedures prior to boarding.
 3. The individual offshore responsible for drawing up manifests must ensure that each flight's total weight does not exceed the helicopter's payload limit.
 4. Boarding a helicopter will only be done at the signal of the pilot.
 5. Personnel will always approach the helicopter from the front, in view of the pilot, and at a low crouch. Never approach from the rear, or otherwise be in the area of the tail rotor.
 6. Long articles carried by passengers must be carried parallel to the ground (horizontally) to avoid being struck by the helicopter rotors. All articles and hats will be clutched tightly to prevent their being blown into the rotors.
 7. Never load anything on a helicopter without the pilot's knowledge.
 8. All cargo items must be securely fastened.
 9. Passengers will be seated in accordance with the pilot's instructions. All passengers must immediately don life preservers and fasten safety belts.
 10. Smoking is not allowed in or around the aircraft at any time.
 11. Passengers will remain seated at all times once aboard the aircraft.
 12. Hazardous material, such as compressed gas bottles, pyrotechnics, or explosives will not be transported on the helicopter when passengers are aboard.
 13. When evacuating a seriously injured crewman, or one who is delirious or otherwise unstable, he should always be accompanied by a fellow crewman, to render immediate care to him in flight.

C. Offshore Landing Procedures

1. A wind sock will be provided on the facility, visible to the pilot. It should be illuminated at night.
2. The helideck will be kept clear of personnel and equipment at all times. Personnel will not wait for helicopters on the helideck.
3. When helicopters are landing or taking off from the facility, the crane booms will be stowed or at least positioned so that they do not interfere with the operation of the aircraft.

D. Fueling Procedures

1. Smoking is not permitted during helicopter refueling operations.
2. All fuel hoses and nozzles must be properly grounded prior to beginning refueling.

E. Inflight Procedures - Prior to take off, the pilot will establish and maintain communications with the departure facility, who in turn will notify the arrival facility of the ETA. If the helicopter fails to meet its ETA and there is no communication with it, or if the pilot sends a "MAY DAY" distress signal, the facility should immediately inform the Coast Guard and all other stations or boats in the area, to initiate rescue operations.

F. Emergency Landing Procedures - If the pilot announces that he is forced to make an emergency landing in the water, the following procedures will be taken by all passengers:

1. Remove glasses and dentures.
2. Ensure that all safety belts are tightly fastened, and Stow all loose articles.
3. Check the location of emergency exits and life rafts. Decide on your escape route through the nearest exit. Ensure that you know how to release your seat belt and how to open the emergency exit while descending.
4. Do not try to jump from the helicopter before it has ditched. Wait for the pilot's command to fasten seat belts and open exits.
5. All helicopters operating offshore have some type of flotation gear which will keep the helicopter afloat for a short time.
6. When exiting the helicopter, do not inflate the life preserver before you are out of the helicopter and into the water.
7. Ensure that the life raft is removed from the helicopter. Again, do not inflate the life raft until it is out of the helicopter.

8. If the helicopter capsizes, wait until the cabin fills with water. As the water reaches your chin, take a deep breath, release your seat belt, and pull yourself hand by hand to your pre-planned escape exit while maintaining a firm grasp on your reference point. It is extremely important to maintain a reference point with at least one hand so as not to become disoriented prior to exiting the helicopter. Exit the helicopter at right angles to the aircraft.
9. Swim about ten feet away from the helicopter in order to clear all parts of the aircraft and inflate your life preserver. If disoriented, follow the bubbles to the surface.
10. Calmly enter the life raft and await rescue. Be extremely careful not to puncture the life raft with sharp clothing articles as you enter the life raft. If life rafts are lost, stay huddled together in the water, as a group of people are easier to detect and can give moral support and assistance to each other.

IX. CREW BOAT SAFETY PROCEDURES

- A. The captain of the crew boat is in charge of the craft and passengers are expected to obey his directions at all times.
- B. The crew boat captain can deny permission to board the craft to anyone who appears to be intoxicated or under the influence of drugs.
- C. Baggage and equipment brought aboard a crew boat will be stored so as not to block compartments, exits, or life-saving devices while underway.
- D. Passengers riding crew boats will familiarize themselves with the location and use of life-saving and fire fighting equipment on the craft prior to getting underway.
- E. **All passengers riding crew boats will remain seated while the craft is underway.**
- F. A crew boat's wheel house is off limits to passengers, except when authorized to enter by the captain.
- G. Upon arrival at the offshore location, all passengers will remain inside the passenger compartment, except for the given number that will be allowed to ride the personnel transfer basket at one time.
- H. Neither facility supplies nor equipment will be transferred in the facility personnel transfer basket. Cargo basket should be used for this purpose.
- I. The personnel transfer basket will be rigged with tag lines for landing the basket on deck.

X. PERSONNEL TRANSFER FROM CREW BOATS

- A. When on or off loading personnel, no more than four persons and their personal luggage will be allowed on the personnel basket at a time. No equipment will be transferred in this basket at anytime.
- B. When transferring personnel from the platform onto a crew boat or vice versa, the basket will not be raised or lowered directly over the craft in the water, but swung to one side of the craft and lifted or lowered over the water.
- C. USCG approved life jackets or work vests will be worn and properly fastened when a personnel basket is lowered over the side of the platform to transfer personnel or perform work.
- D. Personnel will stand on the outside ring of the personnel basket with arms locked through the rope webbing.
- E. The personnel basket is constructed so that it is capable of serving as a temporary life raft for the maximum number of persons that it is designed to carry. This feature will protect the riders if the basket should be dropped into the water. The basket should be equipped with a stabilizer to alleviate sudden shock.
- F. Personnel will not be transferred using cargo nets or any container other than an approved personnel basket.

XI. MATERIAL TRANSFER TO/FROM SUPPLY BOATS

Hoisting of heavy material is hazardous under the best conditions. The hazards are compounded when material must be transferred to or from supply boats rolling with the sea. Extreme caution must be exercised by the crane operator and the personnel on the supply boat to prevent injury while conducting these operations. The following safety rules will be observed.

- A. Before sending personnel down to the work boat, the crane operator will discuss the operation with them, explaining how he intends to conduct the transfer, giving the order of items to be hoisted, and designating a signal man if required.
- B. Heavy lifts will not be attempted from a supply vessel alongside, unless the vessel has been securely moored.
- C. Personnel on the supply boat must stay alert and must move clear of hoisted equipment before it is picked up.
- D. **Tag lines will be used for all lifts.**
- E. Loads will be raised and lowered over the water and not the boat.

- F. Personnel must be extremely careful when loosening tie-downs on bundled pipe on boats, as the rolling action of the boat can send the pipe rolling dangerously across the deck. Pipe should be checked whenever possible.
- G. Always send enough men to the boat to safely and properly rig the equipment on the boat. At least one man should be experienced in this type of operation.
- H. There should be two-way radio communication between the boat and the facility whenever loading operations are being conducted.
- I. Never get inside of a material basket while the crane boom is still attached to it.

XII. TAYLOR ENERGY COMPANY SUPERVISORY DISCRETION

In the event that Taylor Energy Company supervisory personnel determine that conditions exist which would make a boat or helicopter trip unsafe, then Taylor Energy Company supervisory personnel may decide to abort the trip and their decision will override the decision of another person.

9. HAZARD COMMUNICATION PROGRAM

9. HAZARD COMMUNICATION PROGRAM

I. REGULATED MATERIALS AND WRITTEN PROGRAM

- A. The OSHA Hazard Communication Standard regulates all chemical substances which present a physical or health hazard. Substances which meet these criteria are defined in Appendix I and have been defined as hazardous substances by OSHA.
- B. All chemical substances used at Taylor Energy Company facilities, as defined in Appendix I, are subject to this policy. This program does not apply to chemicals subject to the Consumer Product Safety Act, wood products, foods, or tobacco products. It states that a consumer product which is hazardous and used in the same manner as normal consumer use and which results in a duration and frequency of exposure which is not greater than exposures experienced by consumers is not subject to the requirements of the hazard communication standard - including MSDS's. The stipulation Taylor Energy Company has placed on consumer products is that they should not normally be stored in quantities exceeding 5 - 10 gallons or significantly more than a consumer would normally store in a home or garage.
- C. Each location must have a written Hazard Communication Program. This program will satisfy the written requirements as long as the provisions set forth below are followed and are available upon request of a compliance officer.
- D. The Safety Manager is responsible for coordinating this program. The field foreman at each location is responsible for implementing and enforcing this program.

II. MATERIAL SAFETY DATA SHEETS (MSDS)

- A. Each field location shall maintain a current MSDS for each substance covered by the Hazard Communication Standard that is used at that specific location.
- B. Purchased products should not be accepted unless a MSDS accompanies the delivery.
- C. Each location must send a MSDS for substances used on that specific facility to the Safety Manager to be included in the master list.
- D. A chemical inventory shall be maintained at each central field office for chemicals used within their specific areas. This inventory should be updated

every 6 months. These updates shall be kept on location with a copy being forwarded to the Safety Manager on a semi-annual basis.

- E. If a chemical is no longer in use the MSDS shall not be thrown away. MSDS's are considered employee exposure records and must be maintained on file for 30 years. This file will be retained in the Home Office.

III. LABELING

A. Chemical Container Labeling - Containers Received

All chemical containers received from vendors must be labeled and must be delivered with a Material Safety Data Sheet. Labels shall include:

1. Identity - Chemical or common name as it appears on the Material Safety Data Sheet (MSDS).
2. Hazard Warnings - Must convey the hazards associated with that chemical.
3. Handling Procedures and First Aid - This may include appropriate procedures such as the use of personal protective equipment, work practices, engineering controls, first aid and medical information.
4. Contact Information - The emergency contact number in case of spill or accident.

B. Secondary Container Labeling - In Plant/On Platform/In Field

1. All bulk chemical dispensing units should be labeled with the vendors label which informs the user as to A above.
2. A labeling system has been developed for secondary containers. This labeling system will satisfy requirements and conform to the following:
 - a. Labeling shall be consistent throughout each facility.
 - b. Labels must be linked to the MSDS available for that substance. The chemical name identified on the container must match the name on the MSDS.

C. Process Vessel Labeling

1. All storage tanks that contain substances regulated by the standard shall be labeled. Labeling shall be consistent throughout the facility. It is not mandatory that the process vessels be labeled as long as the products they contain are identified via the alternative labeling provision of the OSHA standard.
2. Labels or signs identifying the substance must appear as stated on the MSDS or correspond to a consistent numbering system that correlated to a central sign that specifies what the numbers mean. The chemical names on the central sign must appear as stated on the MSDS as well.

IV. EMPLOYEE INFORMATION AND TRAINING

- A. Employees who may be exposed to hazardous chemicals in the course of their routine responsibilities or in a foreseeable emergency, shall be provided with information and training about these potential hazards. Such information and training shall be provided at the time of initial assignment, annually thereafter, and whenever a new hazard is introduced to the employee's work area.
- B. Employees' training shall include:
 1. Requirements of the OSHA standard and any additional state requirements.
 2. Operations within their work area where hazardous chemicals are present.
 3. Location and availability of hazard communication material such as the written program and MSDS.
 4. Methods and observations that may be used to detect the presence or release of a hazardous chemical.
 5. The physical and health hazards associated with chemicals or classes of chemicals in the work area.
 6. Actions necessary for employees to protect themselves from these hazards.
 7. Details of the developed Hazard Communication Program.

V. INFORMING EMPLOYEES OF OTHER HAZARDS

- A. Employees must be informed as to the chemical hazards of non-routine tasks and the hazards associated with chemicals in unlabeled pipes in their work areas. The primary methods to be used will include:
 - 1. Pre-job (job planning) meetings
 - 2. Scheduled safety meetings
 - 3. Tail-gate safety meetings
 - 4. Preparation and availability of procedures
 - 5. Safety bulletins or posting of specific information
 - 6. Required annual training sessions

VI. CONTRACTOR NOTIFICATION

- A. It shall be the field foreman's responsibility to inform the contractor's representative at the start of a project, or upon assignment, as to the hazards associated with the chemicals that the contractor's employees may encounter during their work at that facility. This can be accomplished by making the pertinent MSDS available to the contractor's representative.
- B. Each contractor must be notified of where the MSDS's are located as well as the chemicals on location.
- C. A sample Contractor Notification Letter is provided in Figure 9-1.

References

- 1. Occupational Safety and Health Administration, Department of Labor; 29 CFR 1910.1200.

FIGURE 9-1
Sample Contractor Notification Letter

August 8, 1994

Contractor's Name and Address
Hazard Communication Program (HCP)

Taylor Energy Company in compliance with the Hazard Communication Standard 1910.1200 of OSHA is notifying you of the type and location where your employees may encounter workplace chemicals.

The HCP requires that the Material Safety Data Sheets (MSDS) are readily available to all Taylor Energy Company and contract employees on the chemicals that may be encountered in the work environment.

The attached list of chemicals are identified as those that may be on-site at any given time at the following work location(s):

The MSDS's are available at the Taylor Energy Company offices listed above between 8:00 A.M. - 5:00 P.M. Monday through Friday. If you or any of your employees would like to review them, please contact any Field Foreman or the Safety Manager at the home office.

Please feel free to request any MSDS that you may wish to review or copy for your employees further review.

Safety Manager

APPENDIX I

DEFINITION OF PHYSICAL AND HEALTH HAZARDS OF CHEMICALS

I. GENERAL

- A. Any chemical that has a physical or health hazard as defined below constitutes an OSHA-defined hazardous chemical.

II. PHYSICAL HAZARDS

A. Combustible Liquids

Any liquid having a flash point at or above 100°F (37.8°C), but below 200°F (93.3°C), except any mixture having components with flash points of 200°F (93.3°C), or higher, the total volume of which make up 99 percent or more of the total volume of the mixture.

B. Compressed Gases

1. A gas or mixture of gases having, in a container, an absolute pressure exceeding 40 psi at 70°F (21.1°C); or
2. A gas or mixture of gases having, in a container, an absolute pressure exceeding 104 psi at 103°F (54.4°C) regardless of the pressure at 70°F (21.1°C); or
3. A liquid having a vapor pressure exceeding 40 psi at 100°F (37.8°C) as determined by ASTM D-323-72.

C. Explosives

“Explosive” - A chemical that causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

D. Flammable

1. “Aerosol flammable” - An aerosol that, when tested by the method described in 16 CFR 1500-45, yields a flame protection exceeding 18 inches at full valve opening, or a flashback (a flame extending back to the valve) at any degree of valve opening;

2. "Gas, flammable":
 - a. A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen(13) percent by volume or less; or
 - b. A gas that, at ambient and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit.
3. "Liquid flammable" - Any liquid having a flash point below 100°F (37.8°C), except any mixture having components with flash points of 100°F (37.8°C) or higher, the total of which makes up 99 percent or more of the total volume of the mixture.
4. "Solid flammable" - A solid, other than a blasting agent or explosive as defined in 1910.109 (a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard. A chemical shall be considered to be flammable solid if, when tested by the method described in 16 CFR 1500.44, it ignites and burns with a self-sustained flame at a rate greater than one-tenth of an inch per second along its major axis.

E. Organic Peroxides

"Organic Peroxides" - An organic compound that contains the bivalent-O-structure and which may be considered to be a structural derivative of hydrogen peroxide when one or both of the hydrogen atoms has been replaced by an organic radical.

F. Oxidizers

"Oxidizer" - A chemical other than a blasting agent or explosive as defined in 1910.109 (a), that initiates or promotes combustion in other materials thereby causing fire either of itself or through the release of oxygen or other gases.

G. Pyrophorics (Iron Sulfide)

"A Pyrophoric" - A chemical that will ignite spontaneously in air at a temperature of 130°F (54.4°C) or below.

H. Unstable

“Unstable (reactive)” - A chemical which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shocks, pressure, or temperature.

I. Water-Reactive

“Water-reactive” - A chemical that reacts with water to release a gas that is either flammable or presents a health hazard.

NOTE: These definitions and criteria, taken from 29 CFR 1910.1200, will be considered updated or revised as 29 CFR 1910.1200 is updated or revised.

III. HEALTH HAZARDS

A. Carcinogen (cancer causing agent): A chemical is considered to be carcinogen if:

1. It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen; or
2. It is listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens published by the National Toxicology Program (NTP) (latest edition); or
3. It is regulated by OSHA as a carcinogen.

B. Corrosive: A chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. For example, a chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described by the U.S. Department of Transportation in Appendix A to 49 CFR, Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. Corrosive shall not refer to action on inanimate surfaces.

C. Highly toxic: A chemical falling within any of the following categories:

1. A chemical that has a median lethal dose (LD50) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

2. A chemical that has a median lethal dose (LD50) of more than 200 milligrams per kilogram but not more than 1,000 milligrams per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.
 3. A chemical that has a median lethal concentration (LD50) in air of more than 200 parts per million but not more than 2,000 parts per million by volume of gas or vapor, or more than two milligrams per liter but not more than 20 milligrams per liter of mist, fume, or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighing between 200 and 300 grams each.
- D. Target organ effects: The following is a target organ categorization of effects which may occur, including examples of signs and symptoms and chemicals which have been found to cause such effects. These examples are presented to illustrate the range and diversity of effects and hazards found in the work place, and the broad scope employers must consider in this area, but are not intended to be all-inclusive.
- | | | |
|----|---|---|
| a. | <p>Hepatotoxins:</p> <p>Signs and Symptoms:</p> <p>Chemicals:</p> | <p>Chemicals which produce liver damage.</p> <p>Jaundice; liver enlargement</p> <p>Carbon tetrachloride; nitrosamines.</p> |
| b. | <p>Nephrotoxins:</p> <p>Signs and Symptoms:</p> <p>Chemicals:</p> | <p>Chemicals which produce kidney damage.</p> <p>Edema; proteinuria</p> <p>Halogenated hydrocarbons; uranium.</p> |
| c. | <p>Neurotoxins:</p> <p>Signs and Symptoms:</p> <p>Chemicals:</p> | <p>Chemicals which produce their primary toxic effects on the nervous system.</p> <p>Narcosis; behavioral changes; decrease in motor functions.</p> <p>Mercury; carbon disulfide.</p> |
| d. | <p>Agents which act on the blood or hematopoietic system:</p> <p>Signs and Symptoms:</p> <p>Agents:</p> | <p>Decrease hemoglobin function; deprive body tissues of oxygen</p> <p>Cyanosis; loss of consciousness.</p> <p>Carbon monoxide; cyanides.</p> |

- | | | |
|----|---|---|
| e. | Agents which damage
Signs and Symptoms:
Agents: | Chemicals which irritate or damage the pulmonary tissue of the lungs:
Cough, tightness in chest, shortness of breath.
Silica; asbestos. |
| f. | Reproductive toxins:
Signs and Symptoms:
Chemicals: | Chemicals which affect the reproductive capabilities, including chromosomal damage, (mutations) and effects on fetuses (teratogenesis).
Birth defects; sterility.
Lead: DBCP. |
| g. | Cutaneous hazards:
Signs and Symptoms:
Chemicals: | Chemicals which affect the dermal layer of the body.
Defatting of the skin; rashes; irritation.
Ketones; chlorinated compounds. |
| h. | Eye hazards:
Signs and Symptoms:
Chemicals: | Chemicals which affect the eye or visual capacity.
Conjunctivitis; corneal damage.
Organic solvents; acids. |

These definitions and criteria, taken from 29 CFR 1910.1200, will be considered updated or revised as 29 CFR 1910.1200 is updated or revised.

10. SAFE WORK PRACTICES

10. SAFE WORK PRACTICES

10.1 PERSONAL PROTECTIVE EQUIPMENT

I. HEAD PROTECTION

Safety hats are provided by the Company and will be worn by all employees wherever head injury hazards exist, or in the case of offshore work, whenever outside of the living quarters.

Issue hats are selected for their protective qualities and no other types may be worn on the job.

Hair long enough to constitute a hazard while working around moving machinery or rotating tools and equipment must be secured by a net or tied back. Hair styles that make it impossible to wear a safety hat properly are not permitted.

Beards that constitute a hazard while working around moving machinery or rotating tools, or when they interfere with proper fit of any breathing apparatus are not permitted.

II. SAFETY SHOES OR BOOTS

Safety shoes or boots (steel-toes) are required by all offshore personnel. Safety shoes are provided by Taylor Energy Company.

III. PROPER CLOTHING

A. Only work clothes are close-fitting and in good repair will be worn by employees on the job. Clothing will be kept clean by frequent washing to reduce the health and fire hazard of wearing oily clothes. All Employees will have a clean change of work clothes available permitting changing out of oil-saturated clothing.

B. Loose fitting jewelry, such as necklaces, bracelets, or rings also pose a hazard around machinery and will not be worn while on the job.

C. Chemical goggles, protective gloves, and an acid proof apron are minimum requirements for handling chemicals that may be harmful to the skin or eyes.

D. Work clothes are provided by Taylor Energy Company.

IV. EYE AND FACE PROTECTION

- A. Each Field, and Ranch employee shall be issued spectacle-type safety glasses to be worn whenever special purpose eye protection is called for.

NOTE: For individuals requiring corrective lenses, Taylor Energy Company will provide for one pair of Safety Prescription Glasses each year. Contact the Safety Manager for details.

- B. IMPACT-TYPE GOGGLES MUST BE WORN WHEN CHIPPING, SCRAPING, BUFFING, GRINDING, HAMMERING, OR WHEN ENGAGED IN ANY ACTIVITY INVOLVING HAZARDS TO THE UNPROTECTED EYE BY FLYING OR FALLING PARTICLES OR OBJECTS.
- C. Complete coverage eye protection must be worn when dust hazards exist and when using any type of pneumatic tool.
- D. Splash-proof chemical goggles must be worn when handling hazardous chemical liquids, powders, or vapors, such as in cleaning material with chemical solutions, or in any other operation where the eyes may be exposed to hazardous chemicals in either liquid or solid form.
- E. Contact lenses do not provide eye protection; on the contrary, they increase the need for eye protection. In dusty areas, foreign particles may become trapped under the contact lens and damage the cornea. Chemicals splashed in the eyes may concentrate under the lens and prevent proper flushing of the eyes with water. Electrical flashes from a short circuit can cause contact lenses to adhere to the cornea.

Where contact lenses are required for special medical reasons, goggles or spectacle-type safety glasses with side shields must be worn for additional protection.

Wearers of contact lenses must inform their supervisors and/or fellow employees of the fact so that proper emergency treatment can be given if necessary.

- F. To insure maximum protection and comfort, any type of eye protection must be adjusted properly to the face.
- G. Various types of "antifogging" compounds for lenses are available and may be used to maintain clear vision where fogging conditions exist.

- H. An approved cover-glass, impact-type safety goggle (for use over corrective glasses) shall be furnished to employees who are only occasionally exposed to eye hazards.
- I. A person near other persons who are doing work requiring the use of safety goggles must also wear goggles.
- J. Cover glasses must be used with all welding goggles, helmets, and shields.
- K. Suitable eye protection must be worn when inspecting tubing under hydraulic pressure.

V. HEARING PROTECTION

As you listen to me, you're using one of our really amazing abilities: hearing. Our ears process sounds so they get to the brain and we hear them. They also allow us to distinguish the sounds so that we can tell a shout from a whisper; music from machinery; the voice of a friend from the voice of a stranger.

Your ears also process noise, but they don't like it much. Noise above certain levels can damage parts of the ear so that you stop hearing some kinds or levels of sound. You probably won't be aware of it - at first - but hearing loss caused by noise is a serious risk and a permanent one.

Some work areas have dangerously high noise levels. It's estimated that up to 16 million Americans are exposed to high noise levels at work. That's why we have hearing conservation programs. Your hearing is too delicate and too important to risk.

Hearing Conservation Awareness

Hearing is one of the five (5) senses necessary to go through life in a rather normal way. However, in the course of a lifetime if we don't care for our hearing we could damage our hearing sensors and permanently lose our hearing.

Hearing loss is caused by loud noises. That is to say that noise is an unwanted or unpleasant sound that could possibly damage the ear nerves. How We Hear: We hear sounds, that are nothing but vibrations that enter the outer part of the ear, the part we can see. The vibrations move little hair-like cells stimulate the auditory nerve. This nerve sends the signal to the brain where we "hear" the sound.

Overexposure to noise can be distracting and irritating which can lead to hearing problems. Too much noise can cause many problems such as:

1. Becoming tired from the strain of listening or talking over loud sounds.
2. Inability to hear safety or work instructions.
3. Morale and work efficiency because of physical, mental stress.
4. May even lose part or all of hearing ability.

Noise is measured in to (2) ways: LOUDNESS which is measured in decibels (dB) with special noise or sound meters. PITCH OR FREQUENCY Which is measured in hertz (Hz). Anyone not wearing hearing protection can risk their hearing loss if they are exposed to more than 90 (dB) over an 8 hour workday. A noise level of 140 (dB) is considered highly dangerous. Examples of loudness are as follows:

WHISPER	10dB
QUIET HOUSE	30dB
STREET SOUNDS	70dB
FACTORY	80-90dB
SANDER	85dB
SUBWAY	90dB
PNEUMATIC DRILL	100dB
CAR HORN	120dB

High frequency shrill noises such as whistles are more likely to harm your hearing than low frequency noises from rumbling machines. Noise that is both loud and high-pitched has the worst effect on your hearing. It is simply more than the delicate ear structure can take, and can actually breakdown parts of the ear. People don't "ADJUST" to loud noise-they just lose their hearing.

OSHA requires that all companies have a HEARING CONSERVATION PROGRAM. This requires that all employees be tested by Audio Metric Testing. Noise levels at the workplace should be checked if testing indicates any area having over 85dB for an 8-hour period. The employer will notify all concerned individuals if the noise level is too high in any work area. The company may also take action to reduce that noise. Action may include improving hearing protection to employees handling noisy equipment.

Many hearing protectors are available and your company provides you with a variety of them but, they are not of any use unless you wear them. Hearing protection is the responsibility of each employee, making sure he wears them. The company provides them USE THEM-IT'S YOUR HEARING.

GUIDELINES FOR PERMISSIBLE NOISE EXPOSURES

Duration per day (hours)	Sound level dBA
8.....	90
6.....	92
4.....	95
3.....	97
2.....	100
1-1/2	102
1	105
1/2	110
1/4 or less	115

VI. HAND PROTECTION

- A. Gloves will be worn whenever practical and while handling rough material or substances, and when the hands are wet from any substance causing a slippery grip.
- B. Rubber gloves must be worn when acids, caustic soda, and soda ash are handled. Rubber gloves are also necessary in certain situations including electrical work.

VII. RESPIRATORY PROTECTION

To protect Taylor Energy Company employees from possible respiratory hazards, a Respiratory Protection Program has been developed. The primary goal of the program is to reduce respiratory hazards through engineering or alternative methods. However, it is not always possible to predict when a hazard may occur. Therefore, the program must also educate the employee on respiratory hazards and their safeguards.

This Respiratory Protection Program is designed to set out policies and practices which, upon implementation, will ensure having the equipment and training necessary to effectively safeguard the health of the employees and other personnel. This program meets the requirements of U.S. Coast Guard 142.39, Respiratory Protection.

Hazards Requiring the Use of Respirators

- A. Breathing air contaminated with harmful dusts, fogs, mists, gases, smokes, sprays or vapors, and oxygen deficient atmospheres are hazards against which personnel shall be protected. This shall be accomplished:
 - 1. Insofar as feasible by accepted control measures (for example, enclosure or confinement of the operation, general and local ventilation or substitution of less toxic materials) or
 - 2. When effective controls are not feasible (or while they are being instituted) by mandatory use of appropriate respirators.

- B. Respiratory Hazards are Classified into Three Types
 - 1. Oxygen Deficiency
 - 2. Gas and Vapor Contaminants
 - 3. Particulate Contaminants

Each may be further described as:

- a. Immediately dangerous to life or health or
- b. Not immediately dangerous to life or health

Respiratory hazards that are not immediately dangerous to life or health may cause chronic problems that in the long term may be unhealthy. Consequently, personnel protection is necessary.

C. Criteria for Evaluating Respiratory Hazards

1. Oxygen Deficiency

Normal breathing air contains approximately 21% oxygen by volume at sea level. If the oxygen concentration in air drops below a certain value, breathing the air is considered immediately dangerous to life or health. This concentration depends on the oxygen partial pressure in the atmosphere and is a function of the altitude. To determine the oxygen concentration of the work atmosphere, a qualified person shall test the space to be entered with properly calibrated direct-reading oxygen indicator or other suitable device. This Taylor Energy Company program specifies use of a minimum 20% oxygen concentration for all work atmospheres and locations. Personnel shall not be allowed to enter areas where the oxygen content is found to contain less than 20% oxygen.

2. Toxic or Disease Producing Contaminants

Atmospheres are considered hazardous if they contain toxic or disease-producing contaminants (gas vapors or particulates) which exceed Permissible Exposure Limits PEL given by the Material Safety Data Sheets or as required in separate U.S. Coast Guard, MMS, or standards. Respirators shall be worn while working in areas with atmosphere which exceed these permissible exposure/time criteria or when concentrations are unknown but suspected to approach the PEL. Also, respirators shall be worn in emergency and rescue operations whenever the gas or particulate concentrations exceed the "Acceptable Ceiling Concentration" levels. (e.g. hydrogen sulfide, has a ACC of 50 ppm for ten minutes once per day if no other measurable exposure occurs during that work day.)

3. Monitoring Equipment

Atmosphere monitoring equipment shall be calibrated in accordance with the manufacturer's recommendation and at a frequency sufficient to maintain accuracy.

Respirator Selection

A. Exposure Considerations

Respirators shall be selected on the basis of the hazards to which having the worker is exposed. The following factors shall be considered in the selection of respirators:

1. Location

The location of the hazardous area with respect to a safe area having respirable air shall be considered as this will allow planning for escape of workers if an emergency occurs.

2. Time

The time period that a respirator must be worn and environmental conditions shall be taken into account (e.g., tank capacity required).

3. Physical Characteristics

Physical Characteristics, functional capability and performance limitations of the various types of respirators shall be considered.

B. Regulatory Guidelines

Respirators shall be selected from among those tested and approval by the National Institute of Occupational Safety and Health (NIOSH). The selection shall be made in accordance which ANSI Z88.2.

C. Respirators for Oxygen-Deficient Atmospheres

For all oxygen-deficient atmospheres, only self-contained positive pressure air breathing apparatus with full face piece or positive pressure air-line breathing equipment combined with auxiliary self-contained air supply for emergency egress is acceptable to Taylor Energy Co. Positive pressure equipment produces positive pressure to the face piece inlet during both inhalation and exhalation.

D. Respirators for Atmospheres with Gas and Vapor Contaminants

Respirators for use in gas and vapor atmospheres that contain adequate oxygen and are not immediately dangerous to life or health may be either of the pressure demand or positive pressure air breathing type mentioned above or the chemical cartridge or canister type, full or half mask, with the absorbent chemical designed for the specific exposure conditions. These chemical absorbent masks are mainly intended for very low concentrations of toxic gases. Cartridge and canister equipment produce negative pressure in the respiratory inlet during inhalation. If the specific exposure concentrations are suspected of equaling or exceeding amounts considered "immediately" dangerous to life or health, only positive pressure air breathing equipment shall be used.

E. Respirators for Atmospheres with Particulate Contaminants (Dusts, Fogs, Smoke, Spray)

Particulate-filters with quarter mask, half mask or full face piece shall be used providing the unit meets the respiratory protection factor criteria of NIOSH for the specific conditions encountered. For example, OSHA regulations for asbestos require use of a continuous flow or pressure demand, supplied-air respirator whenever the concentration of asbestos fibers in the work atmosphere exceeds 100 times the permitted eight hour exposure limit. Mechanical filter respirators (dust mask) provide protection against particulate matter such as non-volatile dusts, mists, or metal fumes. Respiratory protection is required for sandblasting offshore. An air-line continuous flow hood type respirator with blower is recommended. Selection of the appropriate respirator is based on the type, toxicity, and particle size of the particulate matter.

Respirator Preservation

A. Fit Testing

Personnel required to use respirators on a routine basis, and who have difficulty with the face piece supplied, shall be individually face-fitted with a respirator of the correct type for the application. The selected respirator shall be durably marked to indicate the assigned user. A qualitative respirator-fitting test (irritant smoke test) shall be carried out for each wearer of a negative-pressure respirator at least annually.

B. Inspection

All respirators shall be inspected routinely before and after each use by the wearer. This shall include a check for the tightness of connections and the condition of the face piece, headbands, valves, connecting tube, canisters, and air bottles or tanks.

Individually assigned respirators shall be inspected for defects, cleaned, and disinfected by the wearer after each day's use. Other respirators shall be inspected monthly and cleaned and disinfected after each use.

C. If a problem comes up about the respirator, report it to the Field Foreman for repair.

D. Replacement Date

Replacement cartridges, canisters or air tanks shall be legibly marked by the wearer with the date of installation.

E. Application Inspection

Frequent inspections shall be conducted to assure that the proper respirator is being used and that it is properly maintained in good condition. These inspections can be made at anytime unless conditions warrant greater frequency. The inspector shall also verify that adequate replacement stocks of cartridges, canisters, or air tanks are available to the user and that change out is being effected as required.

These inspections and the findings shall be documented and records maintained.

F. Storage

Respirators shall be stored in a manner that will protect them against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Emergency and rescue used respirators shall not be placed in obscure or concealed areas and shall be quickly accessible at all times and the storage cabinet, or container shall be clearly marked.

Special Problems

A. Physical Limitations

Persons shall not be assigned to tasks requiring the use of respirators unless it has been determined that they are physically able to perform the work and use the equipment. Wearing a respirator can often entail added stress on the wearer, therefore, a person with cardiac or bronchial problems or other health conditions that may be detected by a physical shall not be assigned tasks requiring the use of respirators. To establish medical fitness, the potential wearer shall be instructed as to the conditions that could occur with respirator usage and be required to complete a questionnaire.

B. Respirator Fit

The supervisor shall assure himself that wearers of respirators are capable of obtaining a respirator fit that will provide a good face seal.

1. Facial Feature

Normal variations in face size and shape, and in some cases, disfigurement, may affect the ability of employees to obtain a respirator seal.

2. Facial Hair

Established facial hair in the area of the respirator seal will reduce or negate the protection provided by the respirator. This effect is much greater with negative pressure respirators than with positive pressure devices. Personnel who have facial hair in the area of the respirator seal shall not be permitted to wear tight fitting respirators. This includes dust masks, cartridge/canister masks, SCBAs, etc. Air supplied hoods are not considered tight-fitting.

3. Corrective Eye Wear

a. Eyeglasses also cause leakage when respirator seal passes over the temple bar. For this reason, standard safety glasses should not be worn when using a full face piece respirator.

b. Wearing contact lenses under respirators is not permitted. This is because of the possibility of an irritant penetrating between the lens and the eyeball, causing respirator wearer to unthinkingly remove his mask in a hazardous area.

- c. Special frames that will fit inside a full face mask are available for those who require corrective eye wear and must wear respirators.
 - d. Further training is required before utilizing any mask other than the half-mask provided.
- C. Protective Clothing

Special protective clothing may be required for certain atmospheres. Such requirements shall be determined on a case by case basis.

D. Explosion Hazards

Certain atmospheres requiring the use of respirators are also an explosion hazard. In such cases, added special precautionary measures shall be taken.

Jobs Which Require The Use Of Respirators

- A. Spray painting or working in areas where paint spray contaminants exceed permissible exposure limits (PEL) require the use of respiratory protective equipment. As a rule, all personnel working downwind of painting operations or where visible paint spray can be seen or smelled shall wear respiratory protection. The specific hazards vary with paints and solvents utilized in the paint program. Lead, chromium, and organic vapors in levels exceeding acceptable PEL's may be encountered.
- B. Sandblasting or working in areas downwind of blasting operations pose particular respiratory hazards. The inhalation of lead and chromium particles exceeding OSHA PEL's must be considered along with inhalation of airborne crystalline silica. Personnel not directly involved in abrasive blasting operations, but performing activities in the adjacent vicinity, must be aware of potential hazards and use proper respiratory protective equipment.
- C. Welding and cutting operations may involve exposure to toxic gases, fumes, and dusts, therefore, adequate ventilation or proper respiratory protection must be implemented. Depending upon the type of electrodes utilized, base metals being welded or cut, and whether or not the base metal is coated various inhalation hazards will be encountered. (i.e. Gases, the oxides of nitrogen, carbon monoxide, ozone - Metallic dusts and fumes). All personnel exposed to the hazardous atmosphere must have the same protection as the welder or cutter.

Welding and cutting operations in open air conditions or in large well-ventilated areas generally present low health hazard risk. Confined spaces such as welding shops, vessels and tanks where gases and air-borne articles may exceed maximum permissible limits require proper ventilation and/or respiratory protective equipment.

Welding or cutting involving coatings or fluxes that contain elements such as zinc, fluorine, beryllium, lead, or cadmium and their compounds require proper ventilation and use of respiratory protection adequate for specific hazards encountered.

Outdoor welding and cutting involving lead, mercury, and cadmium require workers to wear respiratory protective equipment specific to the hazards. Reference OSHA 1926-353 and 1926-354 for specific procedural requirements.

- D. Grinding and buffing procedures present respiratory hazards involving dusts and particles that may exceed permissible limits and require proper respiratory protection equipment and/or ventilation.
- E. Chipping and sanding of grout materials, especially in enclosed areas such as the compressor stations, produce airborne dusts and particles which may contain epoxies and other compounds requiring job specific respiratory protective equipment.
- F. Locations where treating chemicals are stored or pumped present possible hazards from toxic vapors and fumes. Respiratory protection with the appropriate filter cartridge for organic vapors, chemical hazards, etc. are required.
- G. Repair and maintenance of equipment and piping containing low levels of "Naturally Occurring Radioactive Material" (NORM) requiring vessel entry or activities which create dust (e.g. grinding, buffing, drilling, etc.) necessitate the use of a high efficiency particulate filter mask of other suitable protection by all employees.
- H. Exposure to airborne particles of friable asbestos can cause a number of disabling and fatal diseases. For that reason, the repair and maintenance of piping, process equipment, and structures involving asbestos removal, renovation or demolition requires respiratory protection. The severity of exposure to asbestos imposes other restrictions and requirements beyond respiratory protection that limit contact during normal maintenance practices. However, we must be aware of its presence in engine exhaust insulation, piping insulation, and in living quarters

- I. Operating procedures which involve "Man-made Mineral Fibers" (MMMF), defined as refractor ceramic fibers, fibrous glass, and mineral wool require specific procedures and planning. Each operation that presents possible exposure to airborne fibers shall have written procedures, appropriate respiratory protection, proper ventilation and personal protective equipment and hygiene.
 1. Fibrous Glass - Produced mainly from borosilicate glass. Generally in one of three forms:
 - a. Glass wool - used as thermal and acoustical insulation. 90% of the market.
 - b. Continuous Glass Filament - (textile fibers; non-respirable) Used in the manufacture of textiles, as reinforcement in plastics, rubber, and paper products. 5-10% of the market.
 - c. Special Purpose Fibers - Used in aerospace and as a filter material. Less than 1% of the market.
 2. Mineral Wools - Slag wool, rock wool, and glass wool are wool-like silicate fibers generally called "mineral wool". Predominantly used in thermal and acoustical insulation.
 3. Refractory Ceramic Fiber (RCF) - Generally contain no significant amount of free silica. Manufactured by melting clay at high temperatures and contain mostly alumina and silica.

Although considered less hazardous than asbestos "Man-made Mineral Fibers" have been proven to present enough of a respiratory hazard to warrant the control of exposure. Except for small scale incidental tasks all MMMF work should be conducted by qualified contractors; however, all Taylor Energy employees working within or adjacent to MMMF work locations must use proper respiratory protection.

Man-made mineral fibers are normally found in areas where insulation is used for required (e.g. burners, heaters, hot piping and equipment, building ceilings, etc.). Due to the fact that there are no regulatory restrictions placed on the used of MMMF, which pose definite long term respiratory hazards, proper precautions and guidelines must be followed. As a minimum half mask respirators with high efficiency filters above minimum exposure limits.

- J. All jobs where exposure to vapors, gases, dusts, or particulates is above the permissible limits (PEL) as given on material data sheets must be evaluated for applicable respiratory protection.
- K. Some jobs, such as mixing paint, using acids for samples, etc. when done with adequate ventilation does not require respiratory protection, however, when these same jobs are done within a closed area, the necessity of respiratory protection or increased ventilation becomes necessary.

Unusual Jobs or Emergency Situations

Many chemicals, under normal operating conditions, will not cause over exposure to personnel. But, in emergencies such as during a fire or spill, exposure can exceed permissible exposure limits. In these situations, personnel should take necessary steps to:

- A. Ventilate the work area, or
- B. Evacuate the work area if the level of contamination is suspected to exceed the permissible exposure limit.

VIII. SAFETY BELTS

Safety belts are required whenever working exposed to a possible of more than six feet. The safety line shall be of braided plastic-coated cable construction, or of nylon rope, both properly spliced with snaplink-type fasteners. All safety belts will be kept clean, using fresh water only to prevent corrosion, and inspected regularly for serviceability. If a safety belt is found to be unsafe, it should be destroyed immediately to prevent its further use.

10.2 HEARING CONSERVATION PROGRAM

I. PROGRAM REQUIREMENTS

- A. All operating locations shall comply with OSHA 1910.95 and Taylor Energy Company policy regarding the protection of employees from occupational noise exposure. A hearing conservation program will be established at those locations where employees are exposed to noise levels of 85 dBA time weighted average (TWA) for eight hours or a TWA of 82 dBA for employees who work 12 hour shifts. All applicable employees who meet these exposure levels shall be included in the hearing conservation program.
- B. The hearing conservation program shall include:
 - 1. Initial workplace noise surveys. Areas will be surveyed again when significant process or equipment changes occur.
 - 2. Noise dosimetry monitoring for employees to determine if they will be included in the program.
 - 3. Properly selected hearing protection devices that reduce exposure levels below 85 dBA for an 8-hour TWA or 82 dBA TWA for 12 hour shift employees.
 - 4. Annual audiometric testing and evaluation of employees in the hearing conservation program.
 - 5. An annual training program for employees in the program.
 - 6. Assessment and implementation of feasible engineering and/or administrative controls to reduce noise exposures.
- C. The Safety Manager will administer and coordinate this program. The operating supervisors are responsible for compliance and enforcement of the program.

II. SOUND LEVEL SURVEYS AND DOSIMETRY TESTING

- A. Sound level surveys will be conducted with an ANSI approved Type II sound level meter. Meters will be calibrated and adjusted to altitude differences prior to use in accordance with the manufacturers' specifications. Post-survey calibrations shall also be performed by the person conducting the survey.

- B. Results of surveys will be documented and retained on file. The sound level data shall be plotted on a diagram of the location and posted for employee review.
- C. All surveys shall be conducted with the sound level meter in the A-weighted slow response mode.
- D. Dosimetry testing of employees shall determine which employees or job classifications at operating locations are to be included in the hearing conservation program. A representative sample from each operating classification will be necessary to confirm noise exposure.
- E. Dosimetry results will be documented by the Safety Manager. Dosimetry documentation are considered employee exposure records and are to be maintained on file for 30 years.
- F. The sound survey should be completed shortly after a new installation is complete if it generates a high noise. These surveys need to be redone only if equipment is removed or noise attenuated via engineering means that could possibly lower the noise level. If the noise level is already above 85 dBA a new survey is not required.
- G. Noise dosimeters shall be calibrated before and after use. All manufacturers' instructions for dosimeter use shall be carefully followed.

III. AUDIOMETRIC TESTING

- A. All employees in the hearing conservation program shall receive annual audiometric testing. The initial audiogram shall serve as the baseline audiogram upon which the subsequent annual audiogram will be compared.
- B. Ideally, employees shall have a 14-hour quiet period immediately preceding their audiometric examination. As a last resort, suitable hearing protection must be utilized by employees who cannot avoid noise exposures prior to their audiometric exam.
- C. Operating locations shall ensure that audiometric testing is performed with audiometrics within the tolerances permitted by ANSI, S3.6-1969. Audiometers shall be calibrated before use and shall be operated and maintained as specified in OSHA 1910.95.

- D. Audiograms shall be sent to the Administration Department where they will be evaluated. The Administration Department will forward the results directly to employees' residence with a summary sheet sent to the Safety Manager. The Administration Department is responsible to ensure employees are notified as to the testing results, in writing, if the audiogram indicates significant threshold shifts. Notifications must be received within 21 days from the time a threshold shift is confirmed.
- E. Employees are to be retested at company expense if an employee had a significant threshold shift since his last test.
- F. The Safety Manager is responsible to coordinate the audiometric testing for the employees included in the HCP.

IV. HEARING PROTECTION DEVICES AND SIGNS

- A. All employees who enter areas where sound levels are 85 dB or greater shall wear adequate hearing protection. Employees who work 12 hour shifts shall wear hearing protection where sound levels are 82 dB or greater.
- B. Hearing protectors must attenuate employee exposure at least to an 8-hour TWA of 90 dBA, and preferably to a TWA of 85 dBA. For employees who have experienced a standard threshold shift, hearing protectors must attenuate exposure to an 8-hour TWA of 85 dBA or lower. Contact your Safety Manager to ensure approved hearing protectors are utilized.
- C. Employees shall be given the option of using hearing protectors that are the most comfortable as long as the attenuation value is not compromised.
- D. All areas that require hearing protection to be worn by employees shall have a sign posted stating this requirement at each entry point. The following wording is recommended: NOTICE - Hearing Protection Required.

V. TRAINING PROGRAM

- A. All employees in the hearing conservation program shall participate in annual training that shall include the following:
 - 1. The components of the hearing conservation program.
 - 2. The requirements of OSHA and Taylor Energy Company regarding occupational noise exposure.
 - 3. How the ear hears and the effects of noise exposure on hearing.
 - 4. The importance, purpose, attenuation ratings of hearing protectors as well as the proper selection, fitting, use, and care of hearing protectors.
 - 5. Areas where noise exposures can occur within their workplace.
 - 6. The purpose, results, and evaluation of audiometric testing.
- B. An outline of the training program shall be retained on file by the Safety Manager.
- C. All training must be documented and records maintained by the Safety Manager or designee.

VI. ENGINEERING AND ADMINISTRATIVE CONTROLS

- A. Locations will employ feasible engineering controls to attenuate noise exposures wherever practical.
- B. Administrative controls, for example, limit employees noise exposure during a shift by providing necessary quiet time with a different job.

References

- 1. Occupational Safety and Health Administration, Department of Labor, 29 CFR, 1910.95.
- 2. American National Standards Institute, specifications for Sound Level Meters, ANSI S1.4-1983, Specifications for Audiometers, ANSI S3.6-1969, Specifications for Personal Noise Dosimeters, ANSI S1.32-1980.

10.3 SAFETY SIGNS AND COLOR CODING

I. SAFETY SIGNS

- A. Danger signs will be used only where immediate hazards exist and where special precautions are necessary.
- B. Caution signs will be used to warn against potential hazards or cautions against unsafe practices.
- C. Safety instruction signs will be used where appropriate to remind personnel to emphasize safety.
- D. The slow moving vehicle emblem will be placed on the rear of any vehicle which moves at 25 miles per hour or less on public roads.
- E. Replacement of existing sign(s) is warranted if the sign does not conform to standards, contains misleading information or is damaged to the extent that it cannot be easily read.
- F. When it is impractical to immediately obtain permanent signs, prepare temporary signs showing the required information entered in appropriate space with freehand lettering.
- G. Signs shall be furnished with blunt or rounded corners and shall be free from sharp edges, splinters, burrs, or other sharp projections. Fastening devices shall be located so they don't constitute a hazard.
- H. If signs currently in place convey the same meaning as other required signs, then they do not have to be replaced unless they are damaged or not legible.

II. SPECIFIC SIGN APPLICATIONS

- A. Equipment that starts automatically and presents a hazard shall be designated by a sign visible from normal walking pattern around the equipment.
- B. Exits shall be marked by a readily visible sign that is distinctive in color and provides contrast with surroundings. They shall be illuminated by a reliable light source providing not less than five foot-candles on the sign surface. The word **EXIT** shall be in legible letters at least 6 inches high and 3/4 inch wide. Passages that may be mistaken for exits shall be so designated by a sign with wording such as: "not an exit."

- C. Areas where noise levels exceed 82 dBA where employees work 12 hour shifts and 85 dBA where employees work 8 hour shifts shall be posted with hearing protection required signs.
- D. Signs shall conform to specifications appearing in 29 CFR Part 1910 and APC Instruction Letter GO-618.
- E. Signs used for compliance with Department of Transportation regulations shall conform to the applicable section of CFR 49.
- F. Required safety signs are:
 - 1. Hazard communication type signs that identify the contents of chemical containers, tanks, and process vessels. This requirement includes secondary chemical containers (5 gallon containers filled from bulk tanks or drums).
 - 2. Hydrogen sulfide signs at the entrance to buildings or locations where hazardous concentration of H₂S may be present. Suggested wording: "CAUTION - HYDROGEN SULFIDE GAS MAY BE PRESENT, AUTHORIZED PERSONNEL ONLY."
 - 3. The sign to be located at the base of tank stairways that contain H₂S with a concentration of 300 ppm or greater when measured level with the thief hatch:

Danger (red, black and white)
Hydrogen Sulfide
Positive Pressure Respiratory Protection and
Standby Person Required When Tank(s) Opened
 - 4. Signs requiring trucks and tank cars to be properly prepared for loading hydrocarbons, suggested wording: "CAUTION - CHOCK WHEELS, BOND AND GROUND BEFORE TRANSFERRING HYDROCARBONS."
 - 5. Signs warning personnel that equipment may start automatically, suggested wording: "DANGER - EQUIPMENT STARTS AUTOMATICALLY."

III. COLOR CODE APPLICATION

- A. Color code applications as specified in 29 CFR, Part 1910 and APC Instruction Letter GO-856 will be followed in all painting and marking of company facilities and equipment.
- B. As a general rule, the color of warning beacon globes shall be:
 - 1. Red - Fire or Immediate Danger, High Combustible Gas and H2S Gas
 - 2. Yellow - Low Combustible Gas or Caution
 - 3. Blue - Mechanical or Operational Problems (Warning)
- C. Hose colors for use with compressed gases shall be:
 - 1. Red - flammable gases
 - 2. Green - oxygen
 - 3. Black - breathing air
 - 4. Blue - inert gases
- D. The colors utilized by your facility must be specified in writing and communicated to all employees if different than those described above.

References

- 1. Occupational Safety and Health Administration, Department of Labor, 29 CFR Parts 1910.37, 1910.97, 1910.145, 1910.47.
- 2. American National Standards Institute (ANSI) 253.1-1967.

10.4 BLINDING AND EQUIPMENT ISOLATION

I. GENERAL REQUIREMENTS

- A. Blinds shall be installed to effectively isolate equipment, vessels, and piping from other parts of operating areas so repairs, maintenance, or cleaning can be conducted in a safe manner. Closing a block valve will not be sufficient in isolating the area when entering a confined space. Disconnecting is also an adequate means of isolation.
- B. Exceptions to blinding must be approved by the Field Foreman. The Field Foreman are responsible for the implementation and enforcement of this program.
- C. Before opening any flanged joint for the installation of a blind:
 - 1. Verify the exact locations where blinds are necessary.
 - 2. Determine from the designated operator that the equipment or piping is prepared for, and properly released for blinding. Verify that lines and equipment have been depressured and drained. Also, ensure that drain valves are open by using proper rod-out equipment.
 - 3. Determine what product or material has been contained in the equipment or piping. If this material is hazardous, secure and wear the appropriate protective clothing and equipment.
 - 4. If equipment is under more that slightly above atmospheric pressure, make sure that the Field Foreman in charge has granted approval.
- D. When opening any flanged joint for the installation of blinds:
 - 1. Wear protective clothing and equipment as dictated by the circumstances. Always wear appropriate eye protection.
 - 2. Remove flange bolting leaving a minimum of two, then loosen these bolts and without completely removing the nuts spread the flanges to install the blind. Always spread the flange on the side away from the workman first so any sudden release will be directed away.
 - 3. Flanges should be open a minimum length of time consistent with the safe installation of the blind.
 - 4. When opening flanges suspected to contain toxic gasses self contained breathing apparatus are to be worn unless it has been definitely established through testing that no toxic gasses are present.

E. Installation of Blinds

1. Blinds will be installed at the flange closest to the vessel, tank or equipment under consideration.
2. Blinds will be installed on the side of block valves that is most consistent with pressure testing requirements.
3. When vessels or process equipment is interconnected in such a way that blinding of each is not possible or practical, the combination is to be considered as one vessel. The combination will be appropriately blinded and prepared as a unit.
4. A blind may have a gasket installed on both sides but a minimum of one gasket installed on the pressure side of the blind is required.
5. Blinds should also be tagged and the blind location, person installing, date recorded in the blind record, if applicable at your facility.

F. All Blinds will be installed with the following considerations in mind:

1. Will the blind effectively accomplish its purpose in the selected location?
2. Can the blind be removed safely when its removal is required? The precautions taken during the installations of the blind shall be followed when removing the blind.
3. Is the selected location accessible to personnel and equipment?
4. Is the blind located at the flange closest to the equipment, tank or vessel?
5. Is the blind the correct size and pressure rating?
6. Has the line, vessel or equipment contained toxic or corrosive material?
7. Have provisions been made to eliminate or reduce spillage or prevent pollution?

10.5 CONFINED SPACE ENTRY PROGRAM

NOTE: Taylor Energy Company Personnel are NOT authorized to enter any confined space without the advance approval of the Operations Manager.

I. ATMOSPHERIC TESTING, PERSONAL PROTECTIVE EQUIPMENT, AND ISSUING OF PERMITS

A. General

1. A confined space is any tank, vessel, or similar enclosed area that has a hazardous or potentially hazardous atmosphere and/or a restricted means of entry and egress that is entered by company or contract personnel. A hazardous atmosphere is any atmosphere containing a toxic substance above the OSHA or ACGIH (American Conference of Governmental Industrial Hygienists) recommended exposure levels, whichever is most stringent. A hazardous atmosphere may also contain a combustible gas or an oxygen deficient atmosphere.
2. Confined space is further defined as any tank, vessel, silo, vault, pit or open-topped space more than 4 feet deep (except open-topped spaces whose width is greater than the depth) or any other enclosed space that has one or more of the following characteristics:
 - a. Contains an actual or potentially hazardous atmosphere (i.e. an accumulation of toxic or combustible agents, or an oxygen deficient or oxygen rich atmosphere).
 - b. Makes ready escape difficult (i.e. prevents egress in a normal walking position).
 - c. Restricts entry for rescue purposes.
3. The operating supervisors are responsible for implementing and enforcing the confined space entry program.

B. Preparation of Confined Space

1. Before entering the interior of any vessel or tank, it shall be drained, washed, purged, and flushed to the extent practical.
2. Blind all necessary flanges or disconnect all lines which may carry harmful agents to ensure that no vapors or fluids can leak into the confined space area. Double block and bleed isolation of equipment is not sufficient for confined space entry. Lockout and tag all necessary pumps, motors, or any other energy source to ensure complete isolation to the confined space. All established electrical lockout/tagout and blinding procedures for equipment isolation shall be followed.
3. The use of purging and mechanical ventilation should be considered prior to entering confined spaces unless conditions prevent its use. Ventilation equipment must be hazard classed for the area it will be used in; for example, Class I Division II explosive proof fans may be required if ventilation is used.

NOTE: Special considerations must be given to tanks that are being purged with an inert gas. "Normal" combustible gas indicators will not accurately measure the combustible gas in a tank being purged as it drops from the UEL through the explosive range to the LEL. Special instruments, such as a MSA tankscope, must be used to accurately monitor combustible gas in an "inert" atmosphere.

C. Testing Confined Space Atmospheres

1. Confined space atmospheres must be tested before entry is allowed. The atmosphere must be tested for oxygen content, flammability (LEL), and any suspected toxic contaminants such as hydrogen sulfide, NORM, etc.
2. In such instances, where entry is required to test the atmosphere, the individual conducting the test shall wear a SCBA (self-contained breathing apparatus) or airline positive pressure respirator with egress bottle. The Respiratory Protection Program shall be followed when using respiratory equipment.

3. All equipment used for atmospheric testing shall be calibrated and operationally checked prior to use according to manufacturer specifications. The atmospheric tests and operational checks that precede the issuing of a permit should be as close as practical to the time the work is to begin and recorded on the entry permit.
 - a. Oxygen content: The percentage of oxygen for unprotected entry into a confined space shall be no less than 19.5 percent nor greater than 22 percent. The oxygen level must be monitored before the flammability test is conducted.
 - b. Entry will not be allowed if LEL is greater than 10 percent.
 - c. Direct Reading Instruments are the only units approved for Confined Space Entry Jobs. Contact your safety manager if you have questions.
4. Portable or fixed DANGER signs must be posted at all point(s) of entry to the confined space which may not be safe for unprotected entry, or where a hazardous atmosphere may accumulate. Signs shall conform to APC specifications and shall state: Confined Space - Entry by Permit Only.
5. Those confined spaces that do not require respiratory protection based on the test results shall be continuously monitored with an oxygen meter during the performance of work. The area must be evacuated immediately if the oxygen content falls below 19.5 percent by volume if proper respiratory equipment is not being used. The area must also be evacuated immediately if the oxygen content rises above 22 percent by volume if proper respiratory equipment is not being used.
6. Continuous monitoring shall also be conducted for toxic gasses and combustible gasses (LEL) which may be released during the course of work. Continuous monitoring for toxic and combustible gasses is MANDATORY on all confined space work regardless of respiratory protection provided. The area must be evacuated if the combustible gasses rise above 10 percent LEL. The area must be ventilated to ensure the LEL is below 10 percent before re-entry is permitted. The confined space is continuously monitored because the LEL may rise above the 10 percent safe level.

D. Confined Space Entry Permits

1. Work in a confined space will not be allowed until a confined space entry permit is completed and a tailgate safety meeting has been held. Permits must have an expiration time. Permits will not be valid for shifts other than the one in which the work started.
2. A copy of the permit shall be retained on file at the local operating center office or field office where the work occurred for at least one year upon completion of the work.
3. Place the permit in a transparent envelope or large ziplock bag at the entrance of the confined space during performance of work.

E. Personal Protective Equipment

1. Company personnel authorized to enter a toxic/oxygen deficient atmosphere shall be provided with the proper respiratory equipment and operating instructions. This equipment shall be checked prior to use to ensure operability. Contract personnel entering a hazardous atmosphere shall provide their own proper respiratory equipment in conjunction with a satisfactory respiratory protection program. Taylor Energy Company will not provide equipment to contractors.
2. Proper personal protective equipment (gloves, goggles, hearing protection, etc.) shall be used where applicable. The safety manager will assist to ensure the proper protective equipment is utilized.

II. STANDBY PERSON AND RESCUE

- A. A written rescue plan shall be maintained and followed. The plan shall include, at a minimum:
1. An assessment of the hazard
 2. Personnel required to perform the rescue
 3. Precautions to be taken while in the confined space
 4. Personal protective equipment to be used
 5. Rescue equipment needed
 6. Tools or other special equipment needed
- B. This plan should be reviewed before the permit is initially issued. It is only necessary to review this plan once on those jobs requiring numerous permits to be issued, unless the personnel change.
- C. In all cases of confined space entry, an employee(s) shall be posted outside of the entry exit in order to handle emergencies. Circumstances may require more than one person posted at different access/entry points. The standby man must have proper respiratory protective equipment immediately next to opening with equipment being tested and out-of-case ready for immediate use prior to work commencing.
- D. The standby person(s) shall be in constant communication by the most practical and effective means available with the individual(s) in the confined space. The standby person will have a SCBA or supplied-air respiratory equipment and rescue equipment available at all times in the event of an emergency.
- E. Safety belts and lifelines will be used by persons first entering a confined space that is suspected to have a hazardous atmosphere. These lines shall be attended by a standby person(s). If the area is determined to be safe for entry through atmospheric testing, then the lifelines are no longer necessary.
- F. The standby person must be aware of their responsibilities as a rescue team member and must also be trained CPR and First Aid.

III. EMPLOYEE TRAINING

- A. Employees must be trained so they know the relevant aspects of safety regarding confined spaces. Training shall include but not be limited to:
 - 1. Type of confined space to be entered
 - 2. Chemical or physical hazards involved
 - 3. Work practices and techniques
 - 4. Atmospheric testing procedures
 - 5. Personal protective equipment to be used
 - 6. Rescue procedures

- B. All new employees shall be trained prior to their first confined space entry work. Retraining shall be performed periodically, preferably annually. All training shall be documented and maintained on file at the location.

References

- 1. National Institute of Occupational Safety and Health (NIOSH) - Criteria for a Recommended Standard: Working in Confined Spaces, NIOSH Pub. No. 80-106.

10.6 HOT WORK PROGRAM

I. GENERAL REQUIREMENTS

A. A hot work permit must be issued before hot work is performed within 150 feet of an area where combustible or flammable vapors are or could exist in an “upset” condition. Hot work is defined as any work that will generate sufficient heat to ignite combustible and/or flammable materials. Combustible materials are substances that will freely support combustion once ignited. The following activities are examples of hot work; however, there may be more that are applicable at specific locations:

1. Welding
2. Flame Cutting
3. Grinding
4. Portable Heaters or Steamers
5. Hot Oil Units
6. Electrical Tools/Equipment (that are not explosion proof or intrinsically safe)
7. Sandblasting operations (static charges)

B. The supervisors are responsible to ensure that all work is authorized and permitted prior to starting work regardless of who is performing the hot work.

II. HOT WORK PROCEDURES

A. Obtain authorization from the supervisor overseeing the work before beginning any hot work. Any person may authorize the stoppage of work if there is reason to believe an unsafe condition/situation exists.

B. The company representative responsible for supervising hot work must complete the hot work permit prior to starting work.

NOTE: A hot work permit is not necessary if gas is going to be introduced for the sole purpose of ignition of the gas to control the hazard. i.e. The lighting of a pipeline leak by a welder.

- C. The permit must be reviewed and signed by the person performing the work, the person authorizing the work, and the person approving the work to ensure his/her acknowledgment of the conditions set forth in the permit. If the hot work is being performed by contract personnel, a copy of the permit must be retained by the contractor's representative at the location where the hot work is being conducted.
- D. The person giving approval that the hot work may begin must ensure that the area is periodically surveyed to ensure the conditions remain suitable for hot work. The work area shall be re-surveyed following all breaks, meals, meetings or other interruptions in the work.
- E. Continuous monitoring should be provided in areas where changing conditions are likely or in high risk areas such as in tanks or in the process areas of plants.
- F. If conditions change so that hot work under a permit expires due to potential danger (i.e., hydrocarbon leak, wind change, lower explosive limit (LEL) reading above 10 percent), etc. no work will be resumed until additional testing is conducted. The source of gas must be determined and the area is again safe to resume work.
- G. Expired hot work permits will be kept on file at the facility for at least one month beyond their expiration date.
- H. Permits will not be valid for shifts other than the one in which the work stated.
- I. Each permit will be dated and will carry an expiration time.
- J. The checking and testing that precedes the issuing of a permit should be as close as practical to the time the work is to be done. The percent of the lower explosive limit will be recorded on the permit. The work area shall be rechecked after any extended break in the job such as meals, coffee breaks, or meetings.
- K. No hot work shall begin if a lower explosive limit (L.E.L.) greater than 10 percent is measured. No exceptions to this rule shall be made. Gas-Trac NGX units or other non-direct reading instruments are **NOT PERMITTED** for hot work or confined space entry jobs. They can only be used for testing of fire boxes prior to lighting.

- L. Combustible gas indicators will be calibrated prior to performing the gas test. If the meter is to be used multiple times throughout the shift it only needs to be calibrated at the beginning of the shift. The calibration results must be documented and filed appropriately at the location.
- M. NOTE: Special considerations must be given to tanks that are being purged with an inert gas. "Normal" combustible gas indicators will not accurately measure the combustible gas in a tank being purged as it drops from the UEL through the explosive range to the LEL. Special instruments, such as a MSA tankscope, must be used to accurately monitor combustible gas in an "inert" atmosphere very dangerous.
- N. When a fire watch is necessary, they must be on duty at all times during the performance of the work.
- O. In the event the hot work will extend past the permit's expiration time, a new permit must be obtained.
- P. Notify company representative responsible for operation of equipment or for supervising hot work when work is complete.
- Q. Hot oil units must be located 150 feet from any combustible or flammable vapor source. When this distance is not possible to maintain, the unit may be positioned closer; however, a hot work permit must be completed before work may begin. When the hot oil unit is within 35 feet of the vapor source, a fire watch must be assigned to the job.

III. FIRE WATCH

- A. The operating supervisors are responsible for assigning a fire watch when the welding, flame cutting, grinding, use of portable steamer equipment, etc. is within 35 feet of a potential combustible or vapor source. The fire watch must be trained in the proper use of a cartridge operated fire extinguisher. The supervisor shall review the duties of a fire watch which include:
1. Understanding the location and nature of the hot work.
 2. Survey the area to be sure the necessary fire protection equipment is in place and ready for use.
 3. Survey the area for combustible or flammable materials.
 4. Remain in the area while the work is being performed and remain in constant communication range with person(s) doing the hot work.
 5. Never leave the area for any reason without a replacement.
 6. When bulkheads or walls are involved in hot work, both sides require a fire watch.
- B. The fire watch must be in the ready position at all times when hot work is being performed. The ready position consists of being attentive and having the fire extinguisher in position prior to the start of work. The extinguisher nozzle must be at hand while the hot work is being performed. The extinguisher must be returned to its assigned location when the hot work is complete. The fire extinguisher cartridge must not be punctured unless a fire actually occurs.
- C. The fire watch must periodically survey the area with an explosimeter to ensure the area is suitable for hot work. The work will stop immediately if the combustible gas indicator registers 10 percent or greater of the lower explosive level (L.E.L.) in the atmosphere. Only direct reading instruments are permitted for this work.
- D. The fire watch is authorized to stop the work whenever he/she feels the conditions do not warrant such work. The fire watch is also authorized to stop the work if the work description on the permit is being exceeded.
- E. The fire watch shall be equipped with all needed personal protective equipment needed to perform the work safely, such as properly shaded goggles for working with welders.

IV. TAIL GATE SAFETY MEETING

- A. A tail gate safety meeting shall be conducted for non-routine hot work jobs and documented by the person supervising the hot work prior to starting work. The meeting will review the following topics:
1. Hot work permit and gas testing/monitoring requirements.
 2. Appropriate emergency procedures and notifications.
 3. Ensure area is free of non-essential personnel, equipment, and vehicles.
 4. Use of personal protective equipment.
 5. Authority and responsibility of fire watch.
 6. Blinding, isolation, and purging of equipment.
 7. Ensure at least two escape routes with easy access are provided if hot work is being conducted in a bell hole or ditch. A second escape route must also be provided, if possible, when conducting hot work in a tank or vessel.

References

1. Occupational Safety and Health Administration, Department of Labor; 29 CFR 1910.252.D.2
2. National Fire Protection Association, 1989 Supplement 51B.

10.7 LOCKOUT/TAGOUT PROCEDURES

I. PURPOSE

This procedure establishes minimum standards for controlling energy sources during repair and/or maintenance of machines and equipment. This procedure will be used to prevent injury to personnel, damage to property, and damage to the environment due to unexpected energization, start-up or release of stored energy.

II. SCOPE

The procedure specifies lockout/tagout requirements at all Taylor Energy Company locations.

These procedures shall be followed when performing repair and/or maintenance on equipment including, but not limited to, the following:

- A. Electrically driven machinery and equipment.
- B. Mechanical equipment: gas compressors, fire pumps, cranes, etc.
- C. Hydraulic equipment.
- D. Equipment operated by pneumatic, thermal or chemical energy sources.
- E. Pressurized equipment.

III. TRAINING

Training shall be provided for employees who are assigned to operations or projects where lockout/tagout procedures are utilized. This training will include the following:

- A. Purpose and function of the Lockout/Tagout Procedures.
- B. Type and magnitude of the energy source(s).
- C. Methods and means necessary for energy isolation and control.
- D. Application, usage, and removal of energy controls.
- E. Training shall be recorded indicating the name of persons trained and date of training.

IV. RESPONSIBILITIES

A. Employee

All employees shall be familiar with the requirements of this procedure for the performance of repair and/or maintenance activities where danger exists due to unplanned energizing, pressurizing or starting of machines or equipment.

B. Contractor

Contractor shall have a written Lockout/Tagout procedure in accordance with industry practices, 29 CFR 1910.147 and shall train all personnel assigned to operations or projects involving Lockout/Tagout activities. Documentation of this training shall be provided to Taylor Energy Company upon request.

V. LOCKOUT & TAGOUT DEVICES

The locks, tags and other hardware that are required by this procedure will be provided by Taylor Energy Company.

Note: Lockout/Tagout devices shall not be used for any other purpose.

VI. LOCKOUT & TAGOUT PROCEDURE

The work area and equipment shall be surveyed to ensure that all equipment can be locked out or secured.

Shut down or turn off the machine or equipment to be worked on.

Physically locate all valves, switches, etc. and close, or turn off; blind, etc., to isolate any energy source from the machine or equipment to be worked on. A review of the most current flow diagram of the production facility if applicable will assist in locating all isolation valves.

A lock and tag shall be placed on each energy isolating device by every employee associated with the Lockout/Tagout activity. Each tag shall give the name of the person applying the lockout device. Each tag shall indicate the hazardous condition if the machine or equipment is energized, i.e., Do Not Start, Do Not Open, Do Not Close, Do Not Energize, Do Not Operate, etc.

Any stored hazardous energy shall be relieved, disconnected, restrained, and otherwise rendered inoperable.

VII. LOCK AND TAG REMOVAL

Note: In situations where Lockout/Tagout devices must be temporarily removed in order to position the machine or equipment, ALL requirements of this procedure must be adhered to.

All guards are installed.

All exposed electrical wiring is returned to status satisfying electrical code requirements.

All blind flanges or skillets are removed and piping properly connected.

Tools, materials and other nonessential items are removed.

Machine or equipment components are inspected to verify they are to be removed.

All employees are safely positioned or removed from the area.

Each Lockout/Tagout device shall be removed from each energy isolating device by the person who applied the device. No one is permitted to remove another person's lock.

VIII. EQUIPMENT START-UP

Only qualified personnel are allowed to start-up machinery or equipment after it has been determined that no personnel are exposed to any hazards and all safety checks have been satisfied.

IX. SHIFT OR PERSONNEL CHANGES

In the event shift or personnel changes occur during maintenance and/or repair activities, the designated Taylor Energy Company representative in charge shall take the necessary steps to maintain the continuity of the Lockout/Tagout protection. This shall include that all provisions in this procedure are adhered to and transfer of Lockout/Tagout devices between affected employees is accomplished.

Note: The key to safe equipment repair and maintenance is good communication between all parties involved and adherence to approved Lockout/Tagout procedures.

10.8 HYDROGEN SULFIDE SAFETY PROGRAM

I. PROGRAM OVERVIEW

- A. Each operating location with hydrogen sulfide (H₂S) above 10 ppm in atmosphere or 100 ppm when measured level with the thief hatch of tanks shall have a written (H₂S) safety program to govern company activities that may expose personnel to H₂S. This program will satisfy that requirement if all provisions set forth below are met. Any site specific procedures developed for a location in addition to this program must be as stringent as those outlined herein and established in writing.
- B. Each operating location that is considered "sour" as described above shall comply with all aspects of governmental regulations (OSHA) regarding operations where H₂S may be present. The safety manager will coordinate this program. The Field Foreman are responsible for implementing and enforcing it.
- C. No person shall enter an area where H₂S concentrations are known or suspected to be ten (10) parts per million (ppm) by volume in air at the employees breathing zone without wearing proper supplied air respiratory protective equipment.
- D. All contract personnel working for Taylor Energy Company shall be required to comply with the same H₂S safety requirements as do company personnel.
- E. Appendix I provides background information regarding exposure levels, tank gauging, and various topics concerning H₂S.

II. TRAINING PROGRAM

- A. A safety training program shall be given to all personnel who may be required to work in a known or suspected H₂S environment. This training must be given prior to working in an H₂S environment. The following areas must be covered in the program.
 - 1. Hazards and characteristics of H₂S and sulfur dioxide (SO₂) gases.
 - 2. Toxicity and properties of H₂S and SO₂.
 - 3. Use of H₂S detection devices.
 - 4. Use and limitations of respiratory protection equipment.

6. First aid procedures and equipment.
 7. Use of the “buddy system” and emergency rescue procedures.
 8. H2S alarms and contingency plans.
 9. Taylor Energy Company policy and procedures for H2S locations.
- B. All personnel who work in or may be required to work in an H2S area (contractors) shall complete a refresher course in H2S safety annually.
- C. All training shall be documented.
- D. Contractors shall document and provide verification of such training of their employees upon request.

III. HYDROGEN SULFIDE RESPIRATORY PROTECTIVE EQUIPMENT

A. Type/Selection

1. Only positive pressure self-contained breathing apparatus (SCBA) or positive pressure airline units will be used in any known or suspected H2S environment of 10 ppm or greater in the breathing area. The use of canister type gas masks for protection against H2S is prohibited.
2. Only positive pressure SCBA (self-contained breathing apparatus) or positive pressure air line respirators with an emergency egress bottle shall be used when an employee is exposed to hydrogen sulfide (H2S), oxygen deficient atmospheres, or atmospheres designated as immediately dangerous to life and health. The Safety Manager shall be consulted if there are questions as to when or what type respiratory protective equipment is necessary.
3. All SCBA and supplied air facepieces shall be fitted with a nose cup where temperatures may drop below 32°F and operated in the positive pressure mode.

B. Personnel Requirements

1. Company personnel must be physically able to utilize a SCBA or air line unit if they are to be assigned to a work location where H₂S is present or suspected. Personnel who may be required to wear respiratory protection equipment on a routine basis will undergo an annual pulmonary function test. A company physician shall determine if an employee is physically able to wear a respirator. (A routine basis is defined as having to wear respiratory protection at least monthly).
2. Facial hair shall not come into contact with the sealing portion of the facepiece.

C. Maintenance, Cleaning, and Storage

1. Respirators shall be visually inspected prior to and after each use to ensure they are in proper operating condition. Visual inspections do not have to be documented. Respirators shall also be inspected monthly and documented on an inspection record.
2. The Field Foreman at each field location where respirators are made available is responsible for ensuring the monthly inspection and any necessary maintenance is performed on the units.
3. Respirators must be cleaned after each use in accordance with the procedures outlined in the Respiratory Protection Program.
4. Breathing equipment must be stored in its carrying case or other designated container in a convenient location to facilitate easy access in an emergency situation.
5. Respirators shall be kept in a full and ready state at all times. They shall be refilled if their air supply falls below 85 percent of the cylinder capacity.
6. Respirator storage areas must be clearly identified.
7. Compressed breathing air cylinders shall be hydrostatically tested in accordance with the manufacturer's recommendation.

IV. BREATHING AIR QUALITY

- A. All breathing air in SCBA's and air line respirators shall meet or exceed ANSI Z86-1-1973 specifications for Grade D breathing air. See Appendix II.

V. ATMOSPHERIC TESTING AND GENERAL SIGN REQUIREMENTS

- A. H₂S concentrations shall be measured level with the thief hatch opening on all manually-gauged sour crude and condensate tanks.
- B. All field locations, production facilities, and platforms that present potential H₂S exposures shall be so designated at their access points with danger signs that warn personnel of potential H₂S exposures.
- C. Fields with limited public road access may use one H₂S sign at each given access point to a group of well locations rather than placing a sign at each location. However, all tank battery access roads must have a sign in place. Sign wording should be: Danger: Poison Gas. Signs already in-place that convey the same meaning do not have to be replaced with signs that have this exact wording.

VI. SPECIFIC WORK PROCEDURES

- A. No tank, line, valve, flange, etc. which may create a H₂S concentration of 10 ppm or greater in the employees breathing zone shall be opened to the atmosphere unless proper respiratory protection is worn by personnel performing the job.
- B. When possible, the equipment should be depressured, isolated and purged/cleaned before opening.
- C. After opening equipment to atmosphere, the potential H₂S source area shall be sampled to determine the H₂S level. Respiratory protection must be worn when opening the equipment to atmosphere and during testing. If concentrations exceed 10 ppm in the breathing zone, respiratory protection must be worn for the duration of the job or until the H₂S level drops below 10 ppm in breathing zone.

- D. Personal monitoring equipment shall be used by personnel working without respiratory equipment where during the course of their work there is a reasonable possibility that the H₂S levels may rise above 10 ppm in the breathing zone, i.e. catwalks at sour tanks, header buildings or water stations. Personal monitoring devices must be set to alarm at 10 ppm so the employee is alerted to vacate the area to get respiratory equipment. If the area is equipped with a fixed detection system then personal monitoring devices are not required. These devices shall be calibrated prior to use in accordance with the manufacturers specifications.
- E. A standby person is required when an employee may be exposed to 300 ppm H₂S in their breathing zone during the course of his/her work. The standby person must be equipped with a SCBA. OSHA equates the breathing zone as being level with the thief hatch for tank gauging operations.
- F. Relief valves venting dangerous concentrations of (\geq 300 ppm) H₂S vapors must be vented to flare or where personnel will not be exposed.
- G. Personnel shall not leave wells being blown down unattended.

VII. H₂S EMERGENCIES

- A. Personnel responsibilities during an H₂S alarm or emergency shall be established in writing by each operating location. These responsibilities shall include personnel accounting, securing the area, isolating the leak, etc.
- B. Personnel will not respond to an H₂S alarm/leak alone. The buddy system must always be used in response to alarm situations. The supervisor initiating the call out must comply with this requirement unless extenuating circumstances justify sending one person.
- C. All personnel shall be trained in their responsibilities regarding H₂S alarms or emergencies. Training shall be documented. This training may coincide with annual H₂S training.
- D. Contractors and visitors shall be informed of their responsibilities during an H₂S alarms before they begin work on any potential H₂S location. Generally, their responsibilities shall be to evaluate the area and report to a safe briefing area.
- E. Safe briefing areas shall be established for all manned H₂S locations. Safe briefing areas shall be designated by conspicuous signs.

- F. The supervisor in charge or the ranking employee on-site has the authority to decide whether an H2S leak is to be ignited. However, some state law enforcement agencies may have jurisdiction whether to ignite an H2S leak.

VIII. H2S DETECTION EQUIPMENT

- A. Fixed H2S detection systems shall be considered for areas that may experience H2S leaks where personnel are present on a daily basis. The system shall activate distinctive audible and visual alarms.
- B. Sensors shall be set to annunciate at 10 ppm for a low alarm and a maximum of 300 ppm for a high alarm.
- C. The system shall be calibrated at least every 90 days.
- D. All H2S alarms shall be treated as an actual gas release.
- E. H2S alarms shall be distinctive from all other alarms and shall be consistent throughout the facility.
- F. Hand held detection instruments shall be utilized for spot checking areas. All electronic hand held instruments shall be calibrated before use. All calibrations shall be documented and retained on file.

IX. FIRST AID TREATMENT OF HYDROGEN SULFIDE VICTIMS

- A. Always don a SCBA before entering a potential H2S area, then remove victim to a safe area and begin artificial resuscitation.
- B. Activate your Emergency Action Plan.
- C. Request mechanical resuscitator (continue mouth to mouth resuscitation until it arrives). Resuscitators must be available at all H2S locations with employees trained in their proper use. This training can occur during the CPR training.
- D. Initiate CPR if circulation has stopped.
- E. Treat for shock (keep the victim warm).
- F. Ensure Taylor Energy Company personnel overcome by H2S are examined by a company area approving physician.

X. SAFE OPERATING PROCEDURES FOR TANK GAUGING OPERATIONS CONTAINING HYDROGEN SULFIDE GAS

A. Equipment Requirements and Testing

1. Respiratory protective equipment shall be worn by all employees during tank gauging operations when hydrogen sulfide concentrations measured level with the thief hatch are equal to or greater than 100 ppm. Local exhaust ventilation may be used in lieu of respiratory protective equipment if it is capable of reducing the hydrogen sulfide concentrations in the employees breathing zone to less than 10 ppm.
2. Positive pressure supplied air respiratory protective equipped with a five minute escape pack, or a positive self-contained breathing apparatus (SCBA), shall be used by personnel gauging tanks.
3. When concentrations measured level with the thief hatch exceed 300 ppm of hydrogen sulfide, the use of a standby person shall be required. This standby person is required at all times, including call outs, when an employee is gauging a tank that contains 300 ppm H₂S gas as measured level with the thief hatch. The standby person must have positive pressure SCBA immediately available on the worksite so they may perform as a rescuer.
4. H₂S measurements shall be made on the basis of Tutwiler test, gas chromatograph results, the use of colormetric detector tubes or by use of approved electronic detection devices taken at each respective tank. Preferably, sampling shall be taken during the warmer months to determine the worst-case worker exposure.
5. Testing shall be completed in accordance with Topic XI, D of this section.

B. Warning Sign Requirements

1. When thief hatch concentrations of hydrogen sulfide gas exceed 100 ppm, as measured level with the thief hatch, the following sign shall be posted at the base of the stairs. This sign will be required at those locations where the tank vents through the hatch.

Danger (red, black and white)
Hydrogen Sulfide
Positive Pressure Respiratory Protection Required When Tank Opened

2. At those locations where thief (level with) hatch concentrations exceed 300 ppm of hydrogen sulfide, warning signs indicating the need for a standby person shall be posted.

A sign shall be installed at the base of the stairs and shall consist of the following wording:

Danger (red, black and white)
Hydrogen Sulfide
Positive Pressure Respiratory Protection and
Standby Person Required When Tank(s) Opened

3. When thief hatch concentrations are less than 100 ppm when measured level with the thief hatch, no sign or respiratory protection is required for tank gauging operation.
4. Those central tank batteries (CTB) that have various hydrogen sulfide concentration levels in the tank must be properly identified on the individual tank or with the appropriate warning sign installed at the base of the stairs. Example: some tanks with less than 100 ppm, some greater than 100 ppm, some greater than 100 ppm but less 300 ppm and some greater than 300 ppm unless respiratory protection is required for all tanks at this CTB.

C. Additional Facility Guidelines - Sour Tank Batteries

1. At all tank battery locations where thief hatch concentrations of hydrogen sulfide gas exceed 100 ppm, a windsock or similar wind direction indicator shall be installed.
2. These wind indicators shall be installed at such at height as so they will give an accurate indication of wind direction at the height gauging operations will be performed.

XI. H2S TESTING REQUIREMENTS FOR PRODUCTION TANKS IN KNOWN OR SUSPECTED H2S LOCATIONS

- A. Production tanks are defined as all tanks that are used in storing, shipping, or holding produced fluids. Produced fluids are oil, condensate, and water, or any combination thereof. These tanks include but are not limited to production, shipping, slop, recycle or pop tanks. Production tanks do not include process vessels, towers, columns, or bullets.
- B. All production tanks in areas known or suspected to have H2S - contaminated production must be tested initially to determine the H2S levels. Documentation of previous tests will satisfy the initial testing requirement.
- C. Tests may be done using hand held pumps and detector tubes or equivalent approved electronic tester. Consult the Safety Manager for testing equipment requirements. All samples must be taken level with the thief hatch. Offshore platform tanks may be sampled at alternate test points that provide equivalent measurements.
- D. After the initial tests in areas known or suspected to have H2S contaminated production, the following schedule shall be followed as a minimum for retesting:

Initial H2S Concentration	Retest
Equal to or Less than 100 ppm level with the thief hatch	Every 5 Years

Concentrations above this are retested at the discretion of Field Foreman in consultation with Safety Manager. The primary justification to retest a tank having measurements above 100 ppm level with the thief hatch is to determine if a standby person is necessary.

References

1. Occupational Health and Safety Administration, Department of Labor; 29 CFR 1910.134, 1910.1000.

APPENDIX I

BACKGROUND - TANK GAUGING PROCEDURES

Manual tank measurements from the top of crude oil and produced water tanks are sometimes necessary for a variety of reasons. These reasons vary from the need to know the fluid change in a tank not equipped with a LACT (Lease Automatic Custody Transfer) unit to the actual sale and transfer measurement(s) of product from tanks not accessible by pipeline.

The most common measurement made from the tank top is that for fluid volume. This is made through the thief hatch using a gauge-tape and plumb bob. Other activities that require an employee to open and stand near a tank's thief hatch include measurement of oil temperature, gravity, and sample collection (thieving) for BS&W concentration. None of those measurements require more than approximately five minutes time at the thief hatch to complete.

Opening the thief hatch allows the release of gases and vapors that have accumulated in the vapor space of the storage tank. The rate of release of those gases changes with such variables as the rate of fluid influx into the tank, fluid level in the tank, fluid temperature, gas break-out rates, how long the fluid has weathered, etc.

Vapors and gases from petroleum tanks and produced water tanks do not normally present known or recognized health hazards requiring any special precautions unless they contain a toxic chemical such as hydrogen sulfide. This is because the majority of those vapors and gases are composed of simple asphyxiants must dilute the oxygen content of air before they become a serious health hazard. Dilution with outside air is rapid once the gas has escaped the thief hatch. The presence of hydrogen sulfide in the vapor space of a tank, however, presents a different problem. Hydrogen sulfide is a toxic gas that has little or no warning properties at lethal concentrations.

The following is a summary of H₂S exposure limits and appropriate precautions required by Taylor Energy Company.

10 ppm is the ACGIH eight-hour, time-weighted average exposure limit and Taylor Energy Company's ceiling exposure limit. Exposures equal to or above this limit require the donning and wearing of a positive pressure SCBA or supplied air with a five minute escape pack. Exposures below 10 ppm require no respiratory protection. 10 ppm is also the federal OSHA acceptable ceiling concentration.

300 ppm - requires the use of positive pressure type breathing apparatus and the presence of a standby man trained and equipped for rescue when breathing zone exposures are equal to or above this concentration. Wind socks are required when thief hatch concentrations exceed 100 ppm.

Based on the toxicity of H₂S as described in API Recommended Practices RP 55 and the ANSI Standard, the required practice that employees wear a full-face supplied-air pressure demand-type breathing apparatus when breathing zone exposures equal or exceed 10 ppm. A total catastrophic failure of the respiratory equipment during tank gauging operations should not impair an employee's ability to lower the thief hatch and move to a safe area when airborne concentrations of H₂S are below 300 ppm. Usually, lowering the thief hatch will be the only action necessary to lower the exposure concentration to a safe level.

H₂S HEALTH EFFECTS AND EXPOSURE STANDARDS

The American Conference of Governmental Industrial Hygienists (ACGIH) has adopted an eight-hour time-weighted average (TWA) exposure limit of 10 parts per million (ppm). The Occupational Safety and Health (OSHA) recommends a 15 parts per million short term exposure limit, meaning that the 15 ppm level should not be exceeded.

The National Institute for Occupational Safety and Health (NIOSH) lists 300 ppm (unprotected exposure) as its 30 minute Immediately Dangerous to Life or Health (IDLH) atmosphere. Concentrations of 1,000 ppm hydrogen sulfide gas may cause cessation of respiration and death if not properly resuscitated.

The API Recommended Practices for Conducting Oil and Gas Operations Involving Hydrogen Sulfide (API RP 55 October, 1981) indicates H₂S concentrations of 100 ppm cause "coughing, eye irritation, loss of sense of smell after 3 to 15 minutes." H₂S concentrations at 200 ppm "kills sense of smell rapidly, burns eyes and throat." H₂S concentrations of 500 ppm cause "dizziness, loss of sense or reasons and balance, breathing problems in a few minutes." API RP 55 goes on to state that H₂S concentrations at 700 ppm can cause "unconsciousness quickly." Similarly, the American National Standards Institute (ANSI) Standard No. 237.2-1972 regarding hydrogen sulfide indicates the H₂S exposures in the 500 to 700 ppm range cause "loss of consciousness and possibly death in 30 minutes to one hour."

10.9 TRANSPORTING OF HAZARDOUS MATERIALS

I. GENERAL REQUIREMENTS

- A. All company and governmental regulations shall be followed when transporting hazardous materials.
- B. The field foreman are responsible for the safe transport of hazardous materials and that it is done in compliance with the law. The regulatory specialist shall be consulted when questions arise concerning the safe transport of hazardous materials.
- C. The material in this section only provides a brief overview of the requirements regarding the transportation of hazardous materials. It must be used in conjunction with Title 49 of the Code of Federal Regulations.

II. DEFINITION OF HAZARDOUS MATERIALS

- A. A hazardous material is any substance determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety and property when transported in commerce. The Department of Transportation (DOT) has published a list of substances designated as being hazardous.
- B. **Classes of hazardous materials include:**
 - 1. Radioactive materials
 - 2. Poison A
 - 3. Flammable Gas
 - 4. Nonflammable Gas
 - 5. Flammable Liquid - flash point 100°F or less
 - 6. Oxidizers
 - 7. Flammable Solid
 - 8. Corrosive Material (solid)
 - 9. Corrosive Material (liquid)
 - 10. Poison B
 - 11. Irritating Materials
 - 12. Combustible Liquid (110 gallons or more) - flash point 100° - 200°F
 - 13. Other Regulated Materials (ORM) Groups A, B and E

- C. In addition to these classes, other materials have been classified as hazardous substances as well. Hazardous substances are assigned reportable quantity (RQ) limits. The RQ limit is the amount of that substance which if released requires the notification of federal agencies. The hazardous substance classification does not apply to petroleum products that are in the process of being used as lubricants or fuels. For example, the gasoline in a vehicle's fuel tank would not fall under these requirements.
- D. A hazardous waste is any material that is subject to the hazardous waste manifest requirements of the EPA. Consult the regulatory specialist to verify if a material is to be classified as a hazardous waste.

III. SHIPMENT OF HAZARDOUS MATERIAL

- A. Regulated materials must be packed to prevent spillage, leaks, or escape of product into the environment.
- B. Items for shipment must be properly identified, marked, and labeled in such a manner so that any person involved in the handling of such materials will be readily aware of the nature of the contents.
- C. Placarding requirements include:
 - 1. All four sides of a motor vehicle, rail car, or freight container must be placarded.
 - 2. Placards must have the proper name of the material and the United Nations (UN) number.
 - 3. Placards must be corrected and in place before the material is transported.
 - 4. It is the shippers' responsibility to ensure placards are correct and in place.

NOTE: No placarding is needed on a motor vehicle or freight container transported by highway only, if it contains less than 110 gallons or 1,000 pounds (aggregate gross weight) of a hazardous material and/or ORM-classed materials.

- D. A shipping paper accurately describing the hazardous material must accompany every shipment of such materials when it is transported on a state or federal road. However, shipping papers are not necessary when transporting products only on lease roads within a field.
- E. The shipper is responsible for preparing shipping papers.
- F. The requirements for shipping papers does not apply to ORM-A, B, or C materials unless they are a hazardous waste or a hazardous substance.

- G. Any tank, barrel/drum, cylinder, or other packaging not permanently attached to a motor vehicle which contains any flammable liquid, compressed or gas, corrosive material, poisonous material, or radioactive material must be secured against movement within the vehicle on which it is being transported.
- H. Compressed gas cylinders must be transported in one of the following ways to prevent them from overturning.
 - 1. Securely lashed/chained in an upright position.
 - 2. Loaded into racks securely attached to the motor vehicle.
 - 3. Loaded in a horizontal position and securely braced.
- I. Sample bombs filled with hazardous materials are subject to these rules for compressed gas cylinders as stated in H above, and must be transported in accordance with these procedures.
- J. No smoking is allowed when loading or unloading any explosive, flammable liquid, flammable solid or flammable compressed gas.
- K. Motor vehicles operated by private carriers, such as Taylor Energy Company, must be specially marked if transporting over 110 gallons or 1,000 pounds of hazardous material. Markings must display the name of the carrier and the city in which the carrier maintains its principal office, they must be displayed on both sides of the vehicle, and be readily legible in daylight at 50 feet.
- L. Vehicles transporting a properly marked portable (not secured to vehicle) tank containing less than 110 gallons or 1,000 pounds of hazardous material do not have to be marked. However, the portable tank must be marked with the proper shipping name of the contents on two opposing sides and the hazardous materials identification number specified for that material in 49 CFR 172.101
- M. If a cargo tank (a tank secured to the inside of the pickup's bed) containing hazardous materials, other than fuel for the vehicle, is being transported the vehicle must be placarded.
- N. Rigorous driver qualification requirements must be met by employees who transport hazardous materials. However, these requirements do not apply to drivers transporting less than 110 gallons or 1,000 pounds of hazardous materials. Contact the regulatory specialist if these quantities of hazardous materials must be transported.

O. Commercial Driver's License Requirements:

1. A single vehicle with a gross rating (GVWR) of more than 26,000 pounds.
2. A trailer with a GVWR of more than 10,000 pounds if the gross combination weigh rating is more than 26,000.
3. A vehicle designated to transport more than 16 persons (including the driver).
4. Any size vehicle which requires hazardous material placards. Any vehicle that transports ≥ 110 gallons of hazardous material.
5. A simple vehicle weighing less than 26,001 pounds (GVWR) but more than 8,000 pounds (GVWR) if used commercially or to transport persons for hire.

References

1. Department of Transportation; 49 CFR various sections including but not limited to parts 100-179, 391-397.

10.10 ASBESTOS OPERATIONS AND MAINTENANCE PROGRAM

I. GENERAL REQUIREMENTS

- A. All company and regulatory requirements governing the use, removal, or disposal of asbestos containing materials (ACM) shall be followed in all operations.
- B. The Safety Manager is responsible for coordinating and managing the asbestos program. The Field Foreman are responsible for implementing and enforcing the requirements of the program.
- C. The Safety Manager shall be contacted at least 30 days in advance of any asbestos work that involves 260 linear feet on pipes or 160 square feet on other components. The Safety Manager should be notified 7 days in advance of jobs involving smaller quantities of ACM unless an emergency repair of an ACM line is required.
- D. All material that is suspected of being an ACM shall be sampled and analyzed to determine its composition.
- E. All ACM will be included in the written asbestos operations and maintenance (O&M) program.
- F. Those locations that have nonfriable asbestos bound within mastic do not require an O & M Program or subsequent training.
- G. No ACM shall be used when suitable substitutes are available.
- H. When ACM is removed non-asbestos material shall be used in its place.
- I. The Safety Manager shall be contacted if any Taylor Energy Company employee or contractors are not following the provisions of the program.
- J. OSHA-Permissible Exposure Limit (PEL) - The present PEL for an 8-hour time-weighted average (TWA) airborne concentration of asbestos fibers to which any employee may be exposed is 0.2 fibers per cubic centimeter (cc) of air. The action level which triggers certain environmental and medical surveillance requirements is 0.1 fibers per cubic centimeter of air (f/cc) calculated as an eight (8) hour time-weighted average exposure. The excursion limit for asbestos exposure is 1.0 f/cc as averaged over a sampling period of 30 minutes.

II. HAZARD ASSESSMENT - IDENTIFYING ASBESTOS CONTAINING MATERIALS

- A. Operating areas shall be evaluated to locate known or suspected ACM and to identify areas of potential asbestos exposure. The most obvious places to locate ACM are process insulation, boiler rooms/equipment, pipe chases in walls, structural members, ceilings, decorative or acoustical materials, and general insulation.
- B. Samples of these materials shall be collected and analyzed for asbestos content unless it can be verified and documented that these materials do not contain asbestos. Appendix I should be referenced to identify common trade name products that contain asbestos. The Safety Manager will coordinate sampling activities.

NOTE: If a facility has reason to believe that the majority of pipe and vessel insulation contains ACM, then management may decide to treat all insulation as ACM rather than conducting bulk sampling. This approach must be designated in writing so that all material designated as containing asbestos is handled as asbestos. Only when sampling and analysis proves that material is not asbestos, can it be treated otherwise. All employees must be instructed to treat these designated materials as asbestos.

- C. If airborne fibers of ACM are suspected to be present, the Safety Manager will coordinate air monitoring activities to define if, and at what level, airborne concentration of ACM exist.
- D. All materials which have been sampled and determined to not contain ACM shall be labeled with the following legend: "ASBESTOS FREE." If an entire facility has been sampled and found to be free of ACM then labeling is not required. However, backup documentation must be available to verify the sample results.

III. CONTROL/ABATEMENT OF ACM

- A. Areas containing ACM shall be scheduled for control action. Control action shall consist of one of the following:
 - 1. Removal
 - 2. Encapsulation
 - 3. Enclosure
- B. Areas where ACM exists, but warrants no immediate need for control based on the hazard assessment, can be designated for deferred action.

- C. Definitions of control/abatement options are:
1. Deferred Action - no immediate control action is taken but a written control plan with provisions for future inspections, maintenance, etc., shall be required.
 2. Encapsulation - application of a sealant to ACM to penetrate and bind the fibers together.
 3. Enclosure - constructing physical barriers to enclose and isolate the ACM.
 4. Removal - only permanent solution of eliminating the ACM from the location.
- D. Removal is the preferred method for handling ACM. No option of removal or deferred action shall be pursued until the Safety Manager and Operations Manager have been notified and approved the course of action.

IV. DEFERRED ACTION PRACTICES

- A. The exact location of ACM shall be recorded on process facility documents (plans, specifications, drawings, etc.).
- B. All personnel who may come into contact with ACM shall be informed of its location by the posting of signs and through the used of the operations and maintenance plan and appropriate training.
- C. All employees who handle ACM shall be trained in the proper handling procedures, use of appropriate personal protective equipment, and the health effects of asbestos. The Safety Manager will conduct or coordinate this training.
- D. All identified ACM shall be inspected for damage or deterioration at least annually. Findings shall be documented.
- E. Personnel who find ACM in a damaged or deteriorated state shall inform their supervisor immediately. The supervisor shall inform the Safety Manager.
- F. Identified ACM that is damaged or material that may present an exposure hazard to personnel shall be repaired or replaced.

V. ASBESTOS REMOVAL

- A. The most desirable control procedure for friable ACM is removal.
- B. Control procedures must be applied to all friable ACM. Friable means any material containing more than one percent asbestos by weight that can be crumbled, pulverized or reduced to powder by hand pressure alone.
- C. Prior to the start of handling or removing ACM, the work area is to be roped/barricaded off to prevent inadvertent entry. A minimum distance of 25 feet is suggested.
- D. Signs shall be posted at all entrances, exits, and at intervals along the barricaded work area. Wording of signs shall be:

DANGER - ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE CLOTHING
ARE REQUIRED IN THIS AREA

- E. Access to the work area shall be controlled. Only those employees with proper personal protective equipment and training shall be allowed to enter.
- F. Protective outer clothing along with head and foot coverings, gloves, and eye protection shall be worn when working inside the roped off area. Tape shall be used to secure sleeves to gloves, and leg cuffs to foot covers.
- G. Protective clothing shall be removed whenever an employee exits the barricaded area. Reusable equipment must also be decontaminated before being removed from the barricaded area.
- H. Personnel engaged in handling, demolition, or removal of friable ACM shall wear approved respiratory protection. Single use, disposable respirators (such as dust/fiber masks) are not acceptable for ACM handling.
- I. Depending on the airborne asbestos concentration expected, the respirator selected must meet the requirements outlined in Appendix II. The Safety Manager shall be consulted when determining the proper respiratory equipment needed for the job.

- J. All employees assigned to asbestos work who must wear an air purifying respirator (APR) shall undergo a respirator fit test every 6 months. Fit testing shall follow the procedures defined in the Respiratory Protection Program.
- K. Air monitoring during removal of ACM will be performed when required, such as during large indoor jobs where regulated areas have been established. The Safety Manager shall coordinate air monitoring activities.

VI. ASBESTOS HANDLING CLASSIFICATIONS AND PROCEDURES

- A. Asbestos handling operations shall be divided into three classifications.
 - 1. Incidental Contact
 - 2. Routine Outdoor Insulation Removal
 - 3. Special Situations
- B. The Safety Manager shall be consulted prior to any asbestos handling to determine the classification of the job and the proper precautions necessary to complete the job. Strict regulations apply to each classification and vary between the three.
- C. ACM shall be adequately wetted when they are being handled during removal from facility components. Wetting shall be done prior to disturbing the ACM and throughout the job.
- D. Use of a wetting agent, such as a liquid detergent or surfactant shall be used during the wetting of the ACM.
- E. No visible asbestos emissions shall be released during the wetting or removal procedure.
- F. The component from which the asbestos was removed, and the exterior of the disposable bag, shall be free from visible asbestos contamination.

- G. All asbestos waste, scrap (including disposable clothing) and debris is to be collected in the wet state and disposed of in sealed impermeable bags that are at least 6 mils in thickness.

Bags shall have a label with the wording:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

- H. Double bagging is required if the initial bag suffers any tear, rip or puncture. Bags shall not be overfilled.
- I. These bags shall not be used for purposes other than asbestos waste.
- J. The work area must be cleaned up from any visible asbestos dust. Surfaces contaminated with asbestos shall not be cleaned with compressed air.
- K. Bags may be held at a centralized holding area prior to disposal. Consult the Safety Manager regarding approved areas.
- L. ACM shall be disposed of in accordance with environmental regulations governing asbestos disposal. Consult the Safety Manager or environmental or asbestos coordinator for proper disposal procedures.
- M. No eating, drinking, or tobacco use shall be allowed in asbestos contaminated work areas.
- N. Employees required to handle asbestos as part of their routine duties or who may be exposed above level (0.1 fibers/cc) must be trained prior to their initial assignment and annually thereafter. The Safety Manager will conduct or coordinate this training.
- O. A competent person, as defined by OSHA, shall be available to perform or manage certain ACM activities. Consult the Safety Manager for competent person requirements.

Reference

- 1. Occupational Safety and Health Administration, Department of Labor, 29 CFR 1910.134, 1910.1001.

APPENDIX I

Insulation Materials Asbestos Content

(Based on information contained in Environmental Health Services reports)

<u>Brand Name</u>	<u>Manufacturer</u>	<u>Weight % Asbestos</u>
Spongefelt	Johns-Manville	100
Cellucell	Unknown	100
Asbestocel	Johns-Manville	95+
Corrugated Paper	International Insulation Co.	95+
Unibestos	Pittsburgh-Corning	27-64**
JM-302 Cement	Johns-Manville	53
Thermobestos (before 1957)	Johns-Manville	25
(1957-1969)		15
(after 1969)		7
JM-450 Cement	Johns-Manville	15-17
Hi-Temp Superex	Johns-Manville	10-15
Insulkote ST	Johns-Manville	15
Mag 85	Johns-Manville	10-15
85% Magnesia***	Baldwin Hill	9
Kaylo (before 1973)	Owens-Corning	8
(after 1973)		0
Insulkote ET	Johns-Manville	7
Superex M Block	Johns-Manville	6
Ceramosprey	Asbestospray Co.	0
Thurane Foam	Dow Chemical Co.	0
Thermon Heat	Thermon Mfg. Co.	0
Forty-Eight Super "48"	Forty-Eight Insulation, Inc.	0
Quik Set Cement	Forty-Eight Insulation, Inc.	0
#10 Insulation	Forty-Eight Insulation, Inc.	0
Foamglass	Pittsburgh-Corning	0
Thermo 12	Johns-Manville	0
Cerafelt	Johns-Manville	0
Super Caltemp, Type MA	Pabco	0
Super Powerhouse Cement	Keene Industrial Insulation	0
Mortar	Eagle-Picher	0
Super 66	Eagle-Picher	0
Eagle-Picher One Coat	Eagle-Picher	0
No. 200 Mineral Wood Filler	Eagle-Picher	0
JM-375 Cement	Johns-Manville	0
JM-460	Johns-Manville	0

** Varies with date and location on manufacturing plants

*** Same identification used by other manufacturers

APPENDIX II

RESPIRATORY PROTECTION FOR ASBESTOS, TREMOLITE, ANTHOPHYLLITE, AND ACTINOLITE FIBERS

Airborne concentration of asbestos, tremolite, anthophyllite, actinolite, or a combination of these minerals	Required Respirator
Not in excess of 2 f/cc (10 X PEL)	1. Half-masks air-purifying respirator equipped with high-efficiency filters.
Not in excess of 10 f/cc (50 X PEL)	1. Full-face piece air-purifying respirator equipped with high-efficiency filters.
Not in excess of 20 f/cc (100 X PEL)	1. Any powered air-purifying respirator equipped with high-efficiency filters. 2. Any supplied-air respirator operated in continuous flow mode.
Not in excess of 200 f/cc (1000 X PEL)	1. Full facepiece supplied-air respirator operated in pressure demand mode.
Greater than 200 f/cc (>1000 X PEL) or unknown concentration	1. Full facepiece supplied air respirator operated in pressure demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus.

- NOTE:
- a) Respirators assigned for higher environmental concentrations may be used at lower concentrations.
 - b) A high-efficiency filter means a filter that is at least 99.97 percent efficient against mono-dispersed particles of 0.3 micrometers or larger.

11. OPERATIONS PROCEDURES

11. OPERATIONS PROCEDURES

11.1 CALIBRATION SCHEDULES FOR MONITORING INSTRUMENTS/EQUIPMENT

I. GENERAL REQUIREMENTS

- A. Outlined herein are the calibration schedules for various safety related instruments or equipment. The operating supervisors are responsible for ensuring equipment is calibrated, with the corresponding documentation, per this procedure.
- B. As a general rule, the manufacturer's recommendations for equipment calibration shall be the minimum requirements that must be met.

II. SPECIFIC EQUIPMENT

- A. The following schedule shall be followed.

NOTE: These records can be maintained either in the office file or in the carrying case of the portable equipment. The fixed equipment's records need to be maintained in the office file.

Equipment Type	Calibration Frequency	Set Points	Documentation
Portable Combustible Gas Indicators	Daily or Before Use (MSA 2A requires an 18-month service check)	Per Manufacturer	Yes Yes
Fixed Combustible Gas Monitors	Quarterly	Low-10% LEL High-15% LEL	Yes
Portable (Personal) H2S Monitors	Daily or Before Use	Low-10 ppm High-Max. of 300 ppm	Yes
Fixed H2S Monitors	Quarterly	Low-10 ppm High-Max of 300 ppm	Yes

Equipment Type	Calibration Frequency	Set Points	Documentation
Portable Oxygen Indicators	Daily or Before Use (Operational check)	Low-19.5% High-22	Yes
NORM Meter	Prior to and After Use (Verification Check) Factory Check, Semi-Annual	Pre and Post Reading are within 10% of each other	Yes
Portable Combination Monitors	Daily or Before Use	H2S Low-10 ppm High-15 ppm LEL-Low-10% LEL LEL-High-50% LEL O2-Low-19.5% High-22.0% CO-35 ppm	Yes Yes
Fixed Oxygen Monitors	Quarterly	Low-19.5%	Yes
Fixed Ammonia Monitors	Quarterly	Low-25 ppm High-35 ppm	Yes
Fixed Chlorine Monitors	Quarterly	Low-.5 ppm High-1ppm	Yes

References

1. Occupational Safety and Health Administration. Department of Labor: 29 CFR 1910.1000.
2. American Conference of Governmental Industrial Hygienists Threshold Limit Values: 1988-1989.

11.2 CRANES

I. CRANE OPERATIONS

- A. Cranes will be operated only by designated crane operators, crane operator trainees (under the direct supervision of a designated crane operator), or maintenance personnel when it is necessary in the performance of their duties.
- B. The crane operator should have vision correctable to 20/20 and normal depth perception.
- C. The operator will never engage in any activity which will divert his attention while actually engaged in operating the crane.
- D. The crane operator is responsible for those operations under his direct control. Whenever there is any doubt as to safety, it is his responsibility to stop and refuse to handle loads until safety has been assured.
- E. The crane will not be left unattended without setting the swing brake, boom brake, boom hoist brake, and other locking devices, disengaging the master clutch, landing the attached load, stopping the prime mover, and if prolonged absence or idleness is anticipated, cradling the boom.
- F. The crane controls will be tested at the start of each work shift, or following adjustments or repairs that have been made prior to putting the crane into operation. Crane booms, rigging, and cable should be inspected for safety at least once a day.
- G. **No crane will be operated beyond its rated load limits. The operator must know the weight of the load, and use his load chart to ensure that the crane has the capacity to safely lift the load. If in doubt, do not make the lift.**
- H. A load will not be lifted until all sling hooks or shackles are properly secured.
- I. Attempts will not be made to slide or snake equipment by pulling sideways with crane boom.
- J. The safety latches on the load hooks will be closed each time slings are placed in the hooks and the safety devices will not be removed except for replacement.
- K. The crane load blocks will not be lowered to a point where less than five wraps of cable are left on the drum.
- L. Neither the crane's load blocks, suspended loads, or boom will be ridden at any time.
- M. The crane blocks and headache ball will be painted safety yellow or high visibility orange to increase their visibility.

- N. Care must be taken not to stand in the vicinity of a cable or slings supporting heavy loads.
- O. Adequate clearance will be present between a crane's counterweight balance and another structure, equipment, handrails, etc., to remove the possibility of close quarter injuries when the crane is in motion.
- P. Personnel will not stand beneath loads suspended from the crane; nor will a load be swung over the heads of anyone working below.
- Q. A signal man or an alternate safe means of communication will be used when the crane operator's vision is blocked.
- R. Routine signals will come from one man only. However, anyone can give the emergency signal.
- S. The API signal system should be used for all crane operations. Appendix 1 illustrates these standard signals.
- T. Use the proper rigging method when slinging all loads.
- U. **Tag lines for controlling loads will be used at all times.**
- V. No part of a crane or its load will be permitted to work in close proximity of high voltage equipment.
- W. No one will be permitted to ride on loads or hooks suspended from the cranes.
- X. All cranes will be equipped with an all-purpose fire extinguisher of at least 20 lbs., which will be within easy reach of the operator.
- Y. Welding on the crane boom, roller bearing or load bearing components will be done only by a certified crane repair person or under his supervision and control.
- Z. The crane boom will be stored or positioned safely away from the helicopter landing area during helicopter take off or landing.
- AA. When transferring personnel or material from or onto a boat, the crane operator shall raise the load only high enough off the deck to clear all obstructions, swing the load out over the water then raise or lower the landing deck level, swing the load over the landing area and gently lower it to the deck.

II. CRANE SAFETY MAINTENANCE

Proper maintenance of cranes is an essential factor in the safe use of cranes. The following items of crane maintenance pertaining directly to crane safety, will be done daily:

- A. Ensure that all control mechanisms are operating correctly.
- B. Inspect all safety devices for malfunction.
- C. Make a visual inspection of the boom to make sure it has not been accidentally damaged.
- D. Determine that the correct load rating chart for the boom length, and the correct revving diagram for the load rating, and the boom angle indicator are within easy view of the operator.
- E. Check the condition and operation of drum locking pawls.
- F. Inspect wire rope and pendant lines for any evidence of damage due to wear or corrosion.
- G. Check crane hooks for deformation or cracks.
- H. Ensure that all lubrication points are being lubed in accordance with daily and weekly instructions.

III. CRANE INSPECTIONS

- A. The mechanical condition of each crane is vital to the successful operations of each offshore platform. In order to ensure that each crane is maintained in safe working order, thorough inspections will be conducted monthly and quarterly by qualified field personnel and annually by third part personnel.
- B. Complete records will be maintained on the facility for each crane and will be made available to inspectors.

FIGURE 11.2-1

STANDARD HAND SIGNALS FOR CRANE OPERATIONS

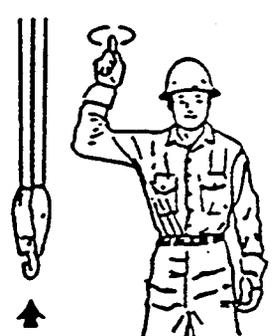
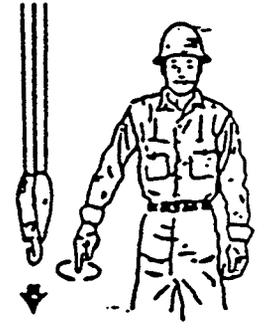
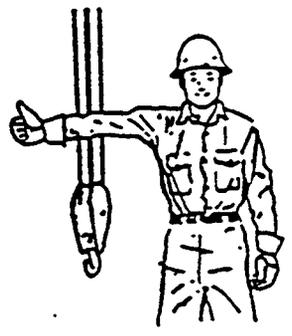
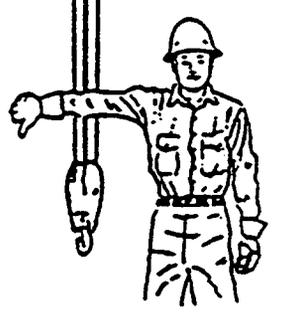
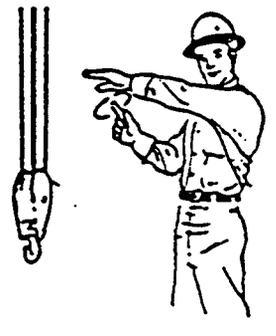
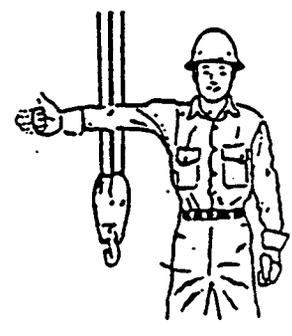
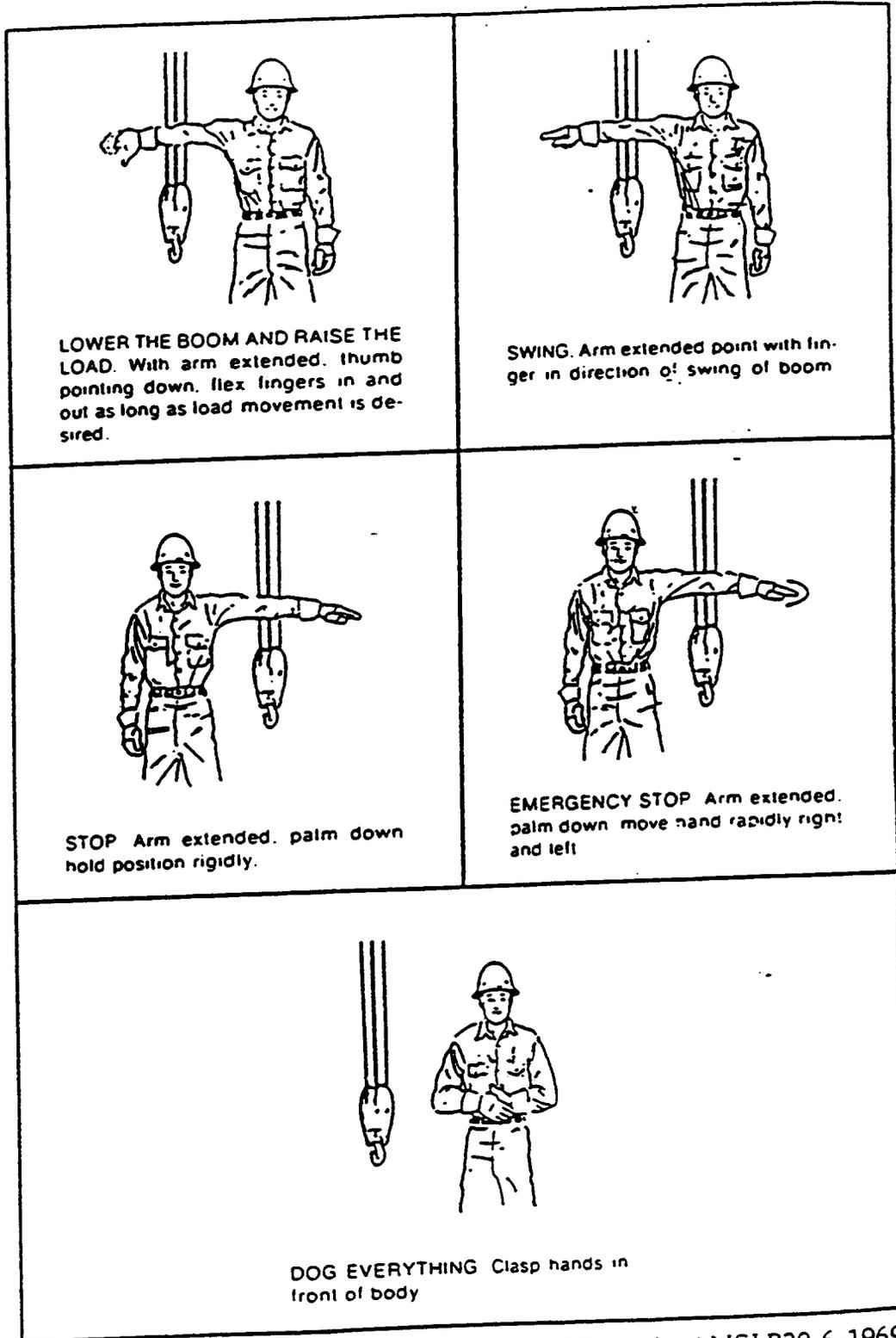
 <p>HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</p>	 <p>LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circles.</p>
 <p>RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.</p>	 <p>LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.</p>
 <p>MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)</p>	 <p>RAISE THE BOOM AND LOWER THE LOAD. With arm extended thumb pointing up, flex fingers in and out as long as load movement is desired.</p>

FIGURE 11.2-1 (Continued)



Adapted from American National Standard Derricks ANSI B30.6-1969

11.3 ELECTRICAL SAFETY

- A. Only a qualified electrician will perform electrical work or repairs.
- B. Electrical components will be locked and tagged out while they are being worked on except when necessary to locate a definite problem.
- C. Live electrical equipment and components will not be worked on without proper non-conductive tools.
- D. AC light plants will be grounded immediately when set on location. All other skids with electrical power will have properly sized grounding conductors connected to the generator skid.
- E. Switches will never be thrown "in" or "out" under loaded circuit. All lighting fixtures shall be kept in good repair. Broken or burned out bulbs will be replaced as soon as possible, and vapor proof globes and guards will be kept in place over lights.
- F. Drop cords and lights will have a metal guard surrounding them.
- G. All electrical cables will be protected from physical damage. Damaged or cut cables will be repaired, spliced, or replaced as soon as possible, broken or defective portable cables, such as bug blower or extension cords will be cut to a shorter length or replaced.
- H. Electrically powered hand tools will not be equipped with a trigger locking device for continuous running and all should be properly grounded, or of the double insulated U.L. approved case design.
- I. Fuse pullers will be available at all times for changing electrical fuses.
- J. Periodic checks for proper circuit grounds of all electric outlets will be performed.
- K. All high voltage panels (above 440 volts) will be clearly marked **"DANGER - HIGH VOLTAGE."**
- L. Electrical apparatus and areas near electrical equipment will not be washed down with water.
- M. Electrical hand tools will not be used while standing in water or outside during foul weather conditions.
- N. Personnel rescuing a victim of electrical shock will first switch off the power causing the shock. If this is not possible, attempt to pull the victim away from contact with the live conductor using a dry stick, a dry rope, or other non-conducting material.

11.4 EQUIPMENT ABANDONMENT

1. Electrical circuits which are obsolete and no longer being used shall be permanently de-energized and/or removed. Abandoned conduit shall be capped.
2. Engines, compressors, pumps, etc. shall be "pickled" with approved preservative methods and oils. Special care will be taken to prevent future rusting and corrosion. Fuels and fuel systems shall be completely drained and depressured. Cooling jackets/radiators shall be cleaned and a fresh solution of water/glycol, with rust inhibitor, installed. Schedules shall be posted and maintained for regular hand rotation (barring) to re-spread the lubricants.
3. Piping shall be completely depressured and drained. Long-lasting labeling shall be applied to indicate abandonment. If preservative is required, it shall be an inhibited water/glycol mix, and noted on the labeling.
4. Abandoned vessels and tanks shall be completely depressured and drained. The abandonment should be noted preferably by prominent stenciling. Any preservative actions taken should be so noted by additional stenciling or tagging.
5. Abandoned pumps shall be fully depressured and drained. An inhibited water/glycol mix, or refined or preservative oil shall be added and labeled accordingly.
6. Abandoned equipment will periodically be inspected for bird and rat nests. Equipment containing electrical components shall have wire screening installed to prevent gnawing and nesting.
7. Abandoned drums shall be disposed of in an approved manner. They shall not be allowed to accumulate on location.

11.5 GAS AND GASEOUS CONDITIONS

1. Immediate action *must* be taken to protect the public and property and to maintain the serviceability of the line when personnel discover a damaged or leaking gas line. Permanent repairs *must* be made as soon as possible.
2. Trucks, cars, and boats should be kept a safe distance from a crude oil or gas leak. The person in charge should determine that distance. *Always* approach a leak from the upwind side.
3. Warning signs, appropriate barricades, and traffic detours should be set out when gas leaks in public places are being repaired.
4. Unnecessary exposure to gas fumes should be avoided. When entering an area containing gas fumes, these precautions should be followed:
 - a. Person entering the danger area *must* use proper respirator equipment.
 - b. Safety lines should be attached to all persons entering the danger area.
 - c. At least one person equipped with respiratory protection should remain outside the danger area.
 - d. Personnel likely to use this equipment should be properly trained in its use.
5. Digging while alone is *prohibited* in an area that has experienced leaking gas or highly volatile liquids.
6. In a gaseous area or in an area where gas is known to be escaping, avoid any hammering, chipping, or striking of metal against metal. If you need to hammer or pound on a piece of equipment, remove it from the gaseous area.
7. Persons working in vessels, cellars, or excavations should be alerted to possible hazards from gas vapors, and adequate protection should be provided for them. In accordance with the section entitled "Confined Space Entry" a gas test using a combustible gas indicator *must* be made before entering, and frequently while working in the area. All possible sources of gas accumulation should be eliminated before work starts and adequate ventilation ensured. *Never* test for gas with a flame or spark.
8. *Never* backfill repaired gas lines until the area is free of all gas, gasoline or gasoline vapors.

9. When it is necessary to release gas to the atmosphere, extreme caution should be taken to ensure that there is no source of ignition nearby. Weather conditions should be considered when blowing wells or lines to the atmosphere. A hazardous condition may exist if the wind is not strong enough to carry away material blown to the atmosphere.
10. When relieving pressures and/or blowing down lines, protection should be taken against the release of sand or line scale. *Never* unscrew a connection to bleed off pressure through the threads.
11. When gas manifolds are frozen or a gas line develops an ice plug, the up stream pressure should be bled off until it is the same as the downstream pressure. Simultaneously reduce both pressures until each reaches atmospheric pressure.
12. Open flames should not be permitted near gas odorant containers. All non-returnable gas odorant cans should be destroyed or properly disposed of immediately after they have been emptied.
13. Natural gas that is furnished for Company or employee buildings from a Company gas system *must* be regulated to a pressure not to exceed eight ounces. The same criterion applies for liquefied gases such as butane or propane.

11.6 GROUNDING AND BONDING PROCEDURES -PREVENTION OF STATIC ELECTRICITY IGNITION SOURCES

I. GENERAL REQUIREMENTS

- A. Specific procedures as outlined herein are to be followed to ensure equipment is properly grounded and static electricity is minimized.
- B. The Field Foreman are responsible for the implementation and enforcement of this policy.
- C. Key terms used in this policy are defined as:

Static Electricity - electrification of materials through physical contact and separation and the various effects resulting from the positive and negative charges so formed. Static is also generated when liquids move in contact with other materials, such as in pouring, mixing, pumping, filtering, or agitating.

Static Spark - an impulsive discharge of electricity across a gap between two points not in contact.

Bonding - The process of connecting two or more conductive objects together by means of a conductor to minimize potential differences between conductive objects. Bonding "equalizes" the potential between objects.

Grounding - The process of connecting one or more conductive objects to the ground to minimize potential differences between objects and the ground. Grounding "dissipates" and electric charge to ground.

- D. Following in the Appendices are reference diagrams that support the information below.

II. STATIC ELECTRICITY CONTROLS - BONDING AND GROUNDING

- A. Tank Vehicles:
 - 1. Bonding facilities must be used during the loading of tank vehicles through open domes where liquids having a flash point of 100°F or below are present or if vapors from these liquids may be present in the tank.
 - 2. Bond connections should be made before the dome cover is opened and should remain in place until the dome cover has been closed and secured after loading is completed.

3. Bonding shall consist of a metallic bond wire permanently electrically connected to the fill stem or to some part of the rack structure that is in electrical contact with the fill stem.
4. The free end of the bond wire shall have a clamp or similar device for convenient attachment.
5. Bond wires may be insulated or noninsulated.
6. Insulated wires shall be electrically tested for continuity annually. Tests shall include the entire bond circuit and shall be documented.
7. All metallic parts of the fill pipe assembly for open dome loading should form a continuous electrically conductive path downstream of the bond connection. For example, inserting a nonconductive hose equipped with a metal coupling on the outlet must be avoided unless the coupling is bonded to the fill line.
8. During open-dome top loading the fill pipe must reach as near as possible to the bottom of the tank being loaded, preferably in contact with the tank. However, the fill pipe should not rest "full circle" on the bottom.
9. Bonding for static control purposes is not required where vehicles are loaded or unloaded through closed connections, because there is no point where a spark could occur, regardless of whether the hose or pipe is conducting or nonconducting. A closed connection is one in which contact is made before flow starts and is broken afterwards.

B. Bottom Loading:

1. During bottom loading care should be taken during the initial stages to prevent upward spraying of the product. Reducing filling velocity or using spray deflectors are acceptable.
2. It is important with bottom loading that spark promoters, such as fixed gauging rods or other internal metallic conductors, be extended to the tank bottom.

C. Drums and Cans:

1. When filling metal drums and cans, with liquids having a flash point of 100°F or below or other liquids heated above their conductive flash points, fill spouts, nozzles or fill pipes must be kept continuously in contact with the edge of the fill opening. If this is not possible, the dispersing and receiving container shall be bonded together with a wire to equal the electrical potential.
2. Bonding is not required where a container is filled through a closed system (See A9 above).

D. Storage Tanks:

1. Avoid overshoot "splash filling." The outlet of the fill pipe should discharge near the bottom of the tank with minimum agitation of the water and sediment on the tank bottom.
2. Where the outlet of the fill line is attached to a "downcomer," siphon breakers that permit air or vapor to enter the downcomer should not be used. Avoid discharging product from a swing line elevated above the liquid level. Limit the velocity of the incoming liquid stream to 3 feet per second until the fill outlet is well submerged.
3. Ungrounded objects, such as loose gauge floats should be eliminated.
4. Avoid pumping substantial amounts of air or other entrained gas into the tank through the liquid.
5. Metallic or conductive hand gauging tapes and sample cans or bottles on chains can act as spark promoters and shall not be lowered into tanks that may contain flammable atmospheres during tank loading.
6. Personnel must wait at least five minutes after loading is completed before conductive gauging or sampling materials are used in the tank.
7. Metallic tanks that are in contact with the ground are sufficiently grounded.

E. Purging and Cleaning of Tanks and Vessels:

1. If steam is to be used for either purging or cleaning a tank or other equipment, all conductive insulated objects subject to impingement or condensation, as well as the discharging pipe, shall be bonded to the tank or equipment or be grounded. Use of steam is discouraged when suitable alternatives are available.
2. Equipment grounding applies to motor frames, enclosures for controls, transformer cases, transformer back fences, metallic houses, etc.

III. GROUNDING

A. Equipment Grounding:

1. The grounding of equipment is primarily for personnel protection and is required for all metallic housings, enclosures, and structures which contain electric conductors. The equipment should be grounded and interconnected to the extent that a low potential difference is maintained between nearby metallic objects.
2. Equipment grounding applies to motor frames, enclosures for controls, transformer cases, transformer back fences, metallic houses, etc.
3. Stationary motors are usually supplied by wiring enclosed in metal raceways (rigid metal conduit, intermediate metal conduit, EMT, flexible metal conduit, etc.) or by cables with metal sheaths (Types AC, MC). Upon being effectively attached to the motor junction box or frame, the metal raceway or cable armor serves as the equipment grounding conductor.
4. Where served from a continuous underground metal-sheathed cable system, the sheath or armor of underground service cable metallically connected to the underground system, or underground service conduit containing a metal-sheathed cable bonded to the underground system, shall not be required to be grounded at the building and shall be permitted to be insulated from the interior conduit or piping.
5. The National Electric Code and National Electric Safety Code should be referenced for additional information concerning equipment grounding requirements.

B. Lightning Arrestor Grounding:

1. Arrestors must be connected to a low resistance in order to provide effective surge protection.
2. It is recommended that ground resistance for arrestors be no more than five ohms, and where practical, nor more than two ohms.
3. Metallic tanks and structures that are in contact with the ground are sufficiently grounded to provide for safe dissipation of lightning strikes.

C. Grounding At Oil Well Motor Installation:

1. It is recommended that a copper ground wire (minimum size #4) be connected to the well casing and extended to the top of the service pole and connected to the service pole arrestors. Refer to A. 3, 4 of this section.

NOTE: The casing of an oil well generally has ground resistance of less than one ohm.

2. The ground wire connection at the well casing should be located where it will not be disturbed during well servicing operations and should be mechanically secure.

D. Ground Rods:

1. Driven ground rods are not generally recommended where a low resistance to ground is desired.
2. Ground rods are acceptable if they can be driven to a depth where water is permanently present.
3. Multiple rods provide a reduction in resistance but may not provide adequate performance.
4. Grounding electrodes (ground rods, etc.) connected to equipment are not permitted to be used in lieu of the equipment grounding conductor but may be used for supplementary protection. For example, they may be used for lightning protection or to equalized potentials in the area of the equipment.

E. Ground Wires:

1. Ground wires must have sufficient capacity to carry a fault current until short circuit protection opens the circuit.

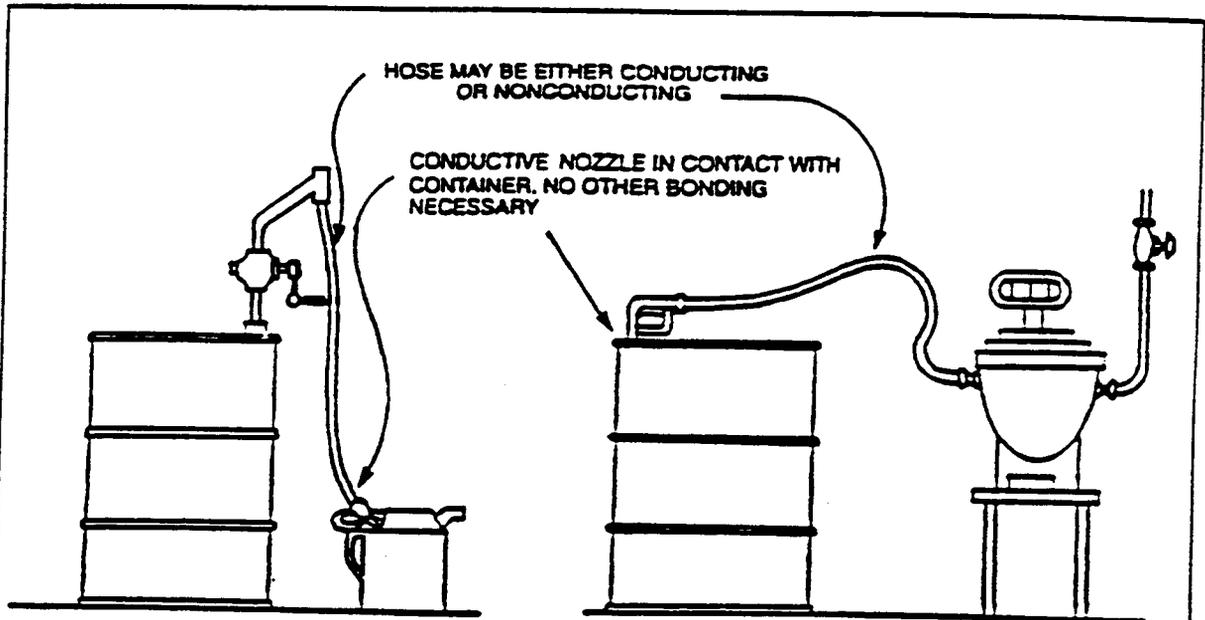
IV. INSPECTION AND RECORDKEEPING

- A. Visually inspect the metal conduit connections to ensure they are effectively attached to the motor frame/junction box during routine maintenance activities.
- B. No documentation is required of these visual inspections.

References

1. National Fire Protection Association; NFPA 30, NFPA 77.
2. American Petroleum Institute; API 2003.
3. National Electrical Code - 1990 Handbook; Articles 250 and 430.

APPENDIX I



NOZZLE NOT IN CONTACT. A BOND WIRE IS NECESSARY EXCEPT WHERE CONTAINERS ARE INHERENTLY BONDED TOGETHER. IF RESISTANCE BETWEEN CONTAINER AND FILL PIPE OR OTHER SOURCE EXCEEDS 10^6 OHMS, PROVIDE BOND BETWEEN THEM.

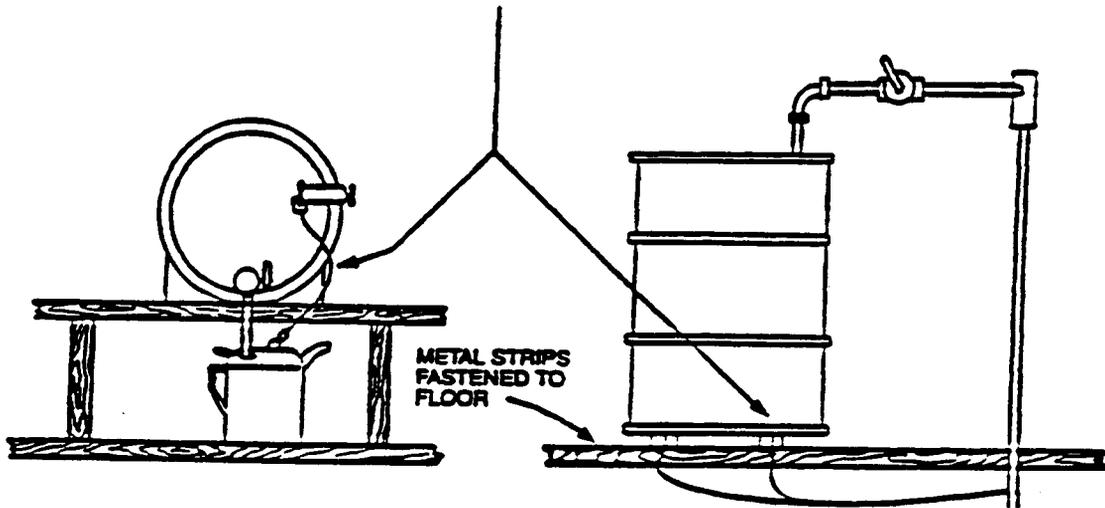


FIGURE 1: BONDING DURING CONTAINER FILLING

APPENDIX II

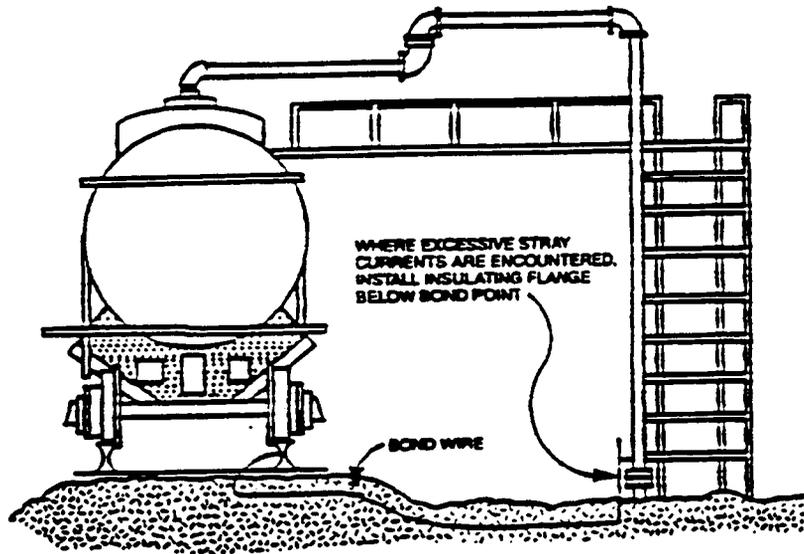
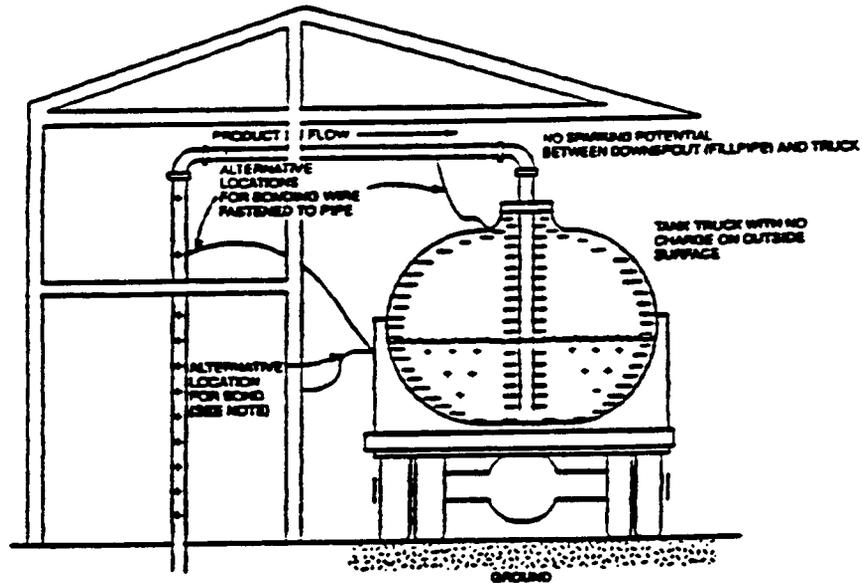


FIGURE 2: BOND RAILS OF TANK CAR LOADING SPUR TO PIPING



Note: The alternative bond location to the steel rack is permissible if it is inherently connected with the loading piping.

FIGURE 3: BONDS FOR TOP LOADING OF A TANK TRUCK

APPENDIX III

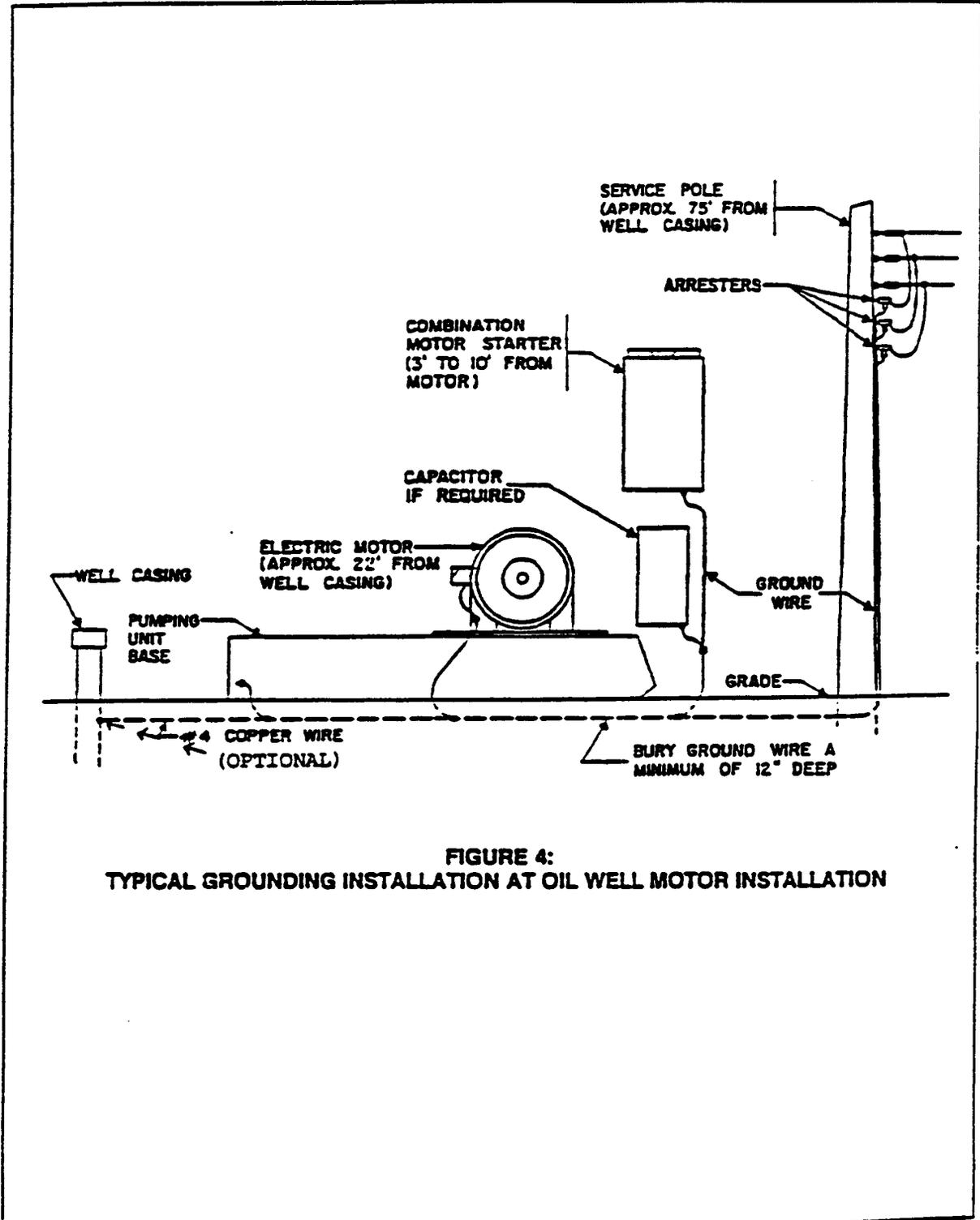
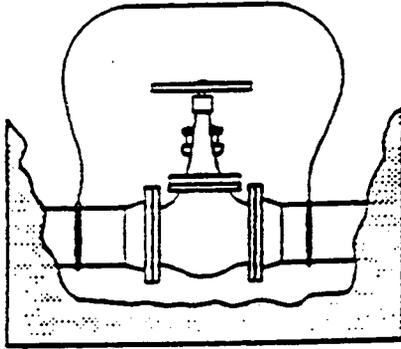


FIGURE 4:
TYPICAL GROUNDING INSTALLATION AT OIL WELL MOTOR INSTALLATION

APPENDIX IV

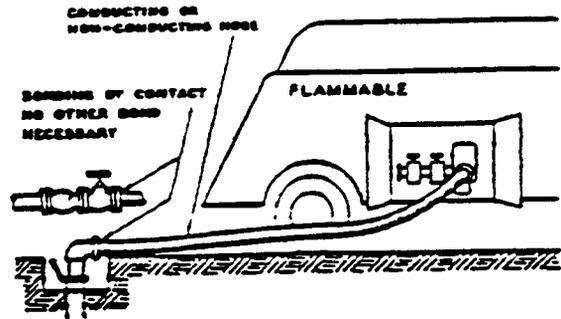


**FIGURE 5:
STRAY CURRENT PROTECTION**

Procedure:

To remove or replace a valve or spool when hydrocarbons and stray currents may be present, proceed as follows:

1. Attach bonding cables.
2. Remove the valve or spool (or open the line).
3. Reverse the procedure during installation of connection of the line.
4. Remove the bonding cable during the time the line is open, provided that the bypass connection is broken at a location where flammable mixtures are not present.



**FIGURE 6:
FILLING OR EMPTYING TANK TRUCK
THROUGH BOTTOM CONNECTION**

Filling or emptying tank truck through a closed connection.

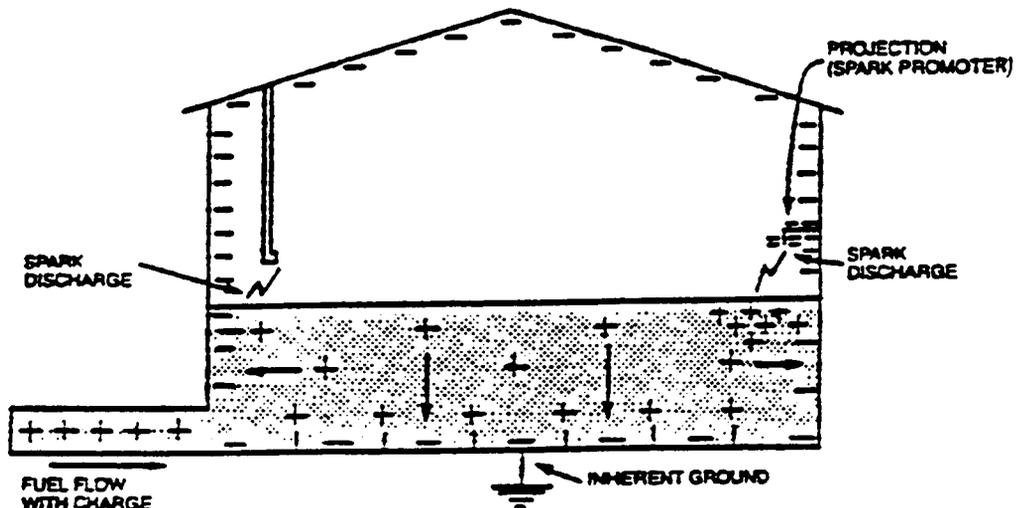


FIGURE 7: FIXED SPARK PROMOTERS

11.7 LADDERS

1. Safety climbs that are installed on ladders attached to vessels or other equipment must be used. Safety climbs have safety belt attachments that allow personnel to climb without detaching their safety belts after each step.
2. Ladders must be maintained in good condition. When portable ladders are used on hard surfaces, they must be equipped with nonskid footing or securely fastened to prevent slipping. The top of the ladder should be secured, or the ladder should be held by another person. The base of the ladder should be placed away from the wall by a distance of about one-fourth of the working length of the ladder.
3. All permanent ladders must be securely fastened at both top and bottom. Long ladders should also be secured at intermediate points.
4. Ladders should be closely inspected when purchased or installed and reinspected at least twice a year. Check the condition of the ladder before it is used and correct any defects. The combined weight of the employee and load should not exceed the load limit of the ladder. Remove any oil, grease, or slippery material from the ladder and from the shoes.
5. Wooden and fiberglass ladders must not be painted. Wooden ladders should be coated with clear varnish or shellac or treated with boiled linseed oil.
6. Ladders must not be placed in front of doors that open toward the ladder unless the door is locked or guarded.
7. When climbing or descending a ladder, a person should face the ladder and hold the side rails, not the rungs. Climbers should not carry tools or other encumbrances in their hands. A tool belt or pouch should be used for holding small tools, and a hand line should be used to raise or lower heavy or bulky objects. When a climbing belt is supplied, it must be used by the person ascending or descending the ladder.
8. When working from a ladder, never extend farther than the arm's length to reach work. When working on a portable ladder, move the ladder to avoid the possibility of an accident.
9. No more than one person should be on a ladder at the same time where possible. If a job requires more than one person, a second ladder or a scaffold should be considered.
10. Never work on an unsecured ladder in windy conditions.

11. A person should not stand on the top two steps or the spreader of a step ladder.
12. A step ladder should not be used as a straight ladder; i.e., used while still folded.
13. It is a good safety practice for someone to hold or steady a step ladder for a person working near its top.
14. When performing electrical work that requires the use of a ladder, use a wooden or approved fiberglass ladder. Metal (aluminum) ladders must not be used.
15. When raising a ladder, make sure it will not contact an electrical line.
16. Extension ladders should properly overlap between sections.
17. Ladders must not be used as scaffold members or for any purpose for which they are not intended.
18. Unsecured portable ladders should not be left standing unattended.
19. Always use an approved ladder or stool to reach articles high above the floor. Never use a swivel chair or other makeshift device to reach high places.
20. Unless a ground-level oil and greasing system is provided, ladders must be used for oiling or greasing walking beam bearings and tail bearings. Employees shall not try to hang on to the structure with one arm and grease or oil with the other.
21. Because of the irregularity of most pulling-unit derrick ladders, workers should use extreme caution when ascending or descending the ladders. They must also use a safety belt or harness at those times, and for all derrick work. The attached ladder must be used for ascending and descending the derrick.
22. An effort should be made to rent test tanks that have fixed ladders and a landing platform or spiral staircase.

11.8 LEAK CHECKING

1. If leak is discharging flammable or toxic vapors, no attempt will be made to pinpoint the leak. Stay upwind, clear the area, and shut in the leaking vessel or lines at the nearest safe cutoff.
2. After allowing sufficient time for the area to clear, attempt to visually identify the point of the leak. If unable to do so, completely purge the system and pressure with air, nitrogen, or water.
3. For lines containing air or non-toxic, non-flammable vapors, use soap solution or commercial leak checkers. Wear protective goggles in order to avoid getting the solution or particles in the eyes.
4. Never stand in front of a leak or hold a hand in the stream to test for fluid or other material.
5. When pressuring a vessel or line for leak checking, be careful to not exceed the maximum working pressure.
6. Do not beat on a leaking pressurized system in an attempt to enlarge the leak, and do not peen a leak. Depressure the system and repair it correctly.
7. Use external welding and leak clamps only when relatively certain the leak is an isolated or pinhole type leak. Make sure the pressure rating of the leak clamp is not exceeded and do not use leak clamps above 150 psig unless designed for higher working pressure and approved by a Generic supervisor.
8. Trucks, cars, and boats must be kept a safe distance from the leak area, upwind, and out of low lying areas.
9. If it becomes necessary to enter a leak area to close a valve, two people must be present. Personnel entering the leak area must wear a respirator and safety line while in the leak area.

10. Digging in a leak area while alone is prohibited.
11. Never test for flammable or explosive leaks with a flame, spark, or torch.
12. Never backfill a leaking line until pressure testing is complete and the area is cleared of vapors.
13. If escaping vapors cover a large area, do not hesitate to immediately evacuate all persons and livestock, even before attempting to identify the source.
14. Gas odorants (Mercaptans) are to be used for extensive leak checking only with the concurrence and presence of Generic supervision. The odorants are not to be transported in glass containers.
15. Spilled oil or gasoline from leaks is not to be burned unless approved by appropriate authorities.

11.9 LIFTING AND MOVING

1. Before you start:
 - a. Study the object to be lifted and moved. Decide where and how to hold it. Check for grease, oil, moisture, or sharp edges.
 - b. Clear the intended path of obstructions and tripping hazards.
 - c. Know where and how to let the object down.
 - d. Get help if there are any doubts about lifting the objects.
 - e. Avoid carrying loads that extend above eye level or otherwise obstruct the vision.
2. Stand close to the object with firm footing and the feet spread comfortably.
3. Squat down - straddle the load somewhat. Keep the back straight and bend at the knees.
4. Grasp the object firmly. Be certain the grip will not slip.
5. Breathe in - inflated lungs help support the spine.
6. Lift with the legs - slowly straighten them. After legs are straight, bring the back to the vertical position.
7. Hold the object firmly, close to the body.
8. When lifting overhead, less can be lifted because legs can't be used. Use extra care. Spread feet, with one foot slightly forward. Use a firm platform or a sturdy ladder for extra-high lifts - not a chair or box.
9. If an object is too heavy, large, or hard to handle:
 - a. Get others to help.
 - b. Use a mechanical aid - forklift, winch, jack, cranes, etc.
 - c. Do it in pieces, one step at a time.

11.10 MOTOR VEHICLES

I. GENERAL SAFETY PRACTICES

- A. All operators of company motor vehicles must have valid, appropriate driver's licenses.
- B. The certificate of registration must be carried in all company-owned vehicles.
- C. The insurance certificate must be carried in all company-owned vehicles.
- D. All drivers of company motor vehicles shall be familiar with and abide by State, Federal and local traffic regulations.
- E. Equipment on all company motor vehicles must conform to State, Federal and where applicable, to Department of Transportation (DOT) regulations.
- F. Picking up hitchhikers is absolutely forbidden as this increases the company's liability in the event of an accident.
- G. All employees who drive motor vehicles on Company business should keep in the glove compartment a kit containing appropriate forms to be filed in case of accident and should carefully follow the instructions provided if an accident occurs.
- H. **Any job-related automotive accident, major or minor must be reported as soon as possible to the supervisor. Drivers of company vehicles should be familiar with instructions concerning the procedures to be followed in the event of an accident.**
- I. At least one rear wheel should be blocked before raising a car with a bumper jack. Follow manufacturer's instructions usually posted to underside of trunk lid in passenger cars, and keep hands, feet and body in the clear as much as possible to avoid injury in case the jack falls. Never crawl under a vehicle raised by a bumper jack or any other kind of support that could fall and allow the vehicle to fall.
- J. **Lap belts, shoulder belts, or combinations of the two as required by law must be installed in all company vehicles. All drivers of company vehicles and personal cars used on company business must use lap belts and require passengers to use them also.**
- K. Unsafe and discourteous driving practices such as road hogging, disregarding the rights of pedestrians, violating traffic regulations, and deliberate recklessness of any kind will not be tolerated. Such conduct on the part of drivers operating company vehicles provokes ill will toward the company and invites accidents.

- L. Drivers of automotive equipment operating on company property will adhere to all traffic regulations effective therein.
- M. Getting on or off a vehicle while it is in motion is strictly forbidden, as is riding on the running board, fenders, or anywhere on the vehicle not designed for passengers.
- N. Driving at a maximum posted speed limit can be too fast for safety in some situations; therefore, drivers of company vehicles should use good judgment and proceed at a pace suitable to conditions of the vehicle itself, the road, the traffic and the weather.
- O. Great care should be taken when vehicles are being towed, and the speed of the vehicles involved should be under control at all times.
- P. No gasoline or diesel fuel should be supplied to the fuel tank of a motor vehicle while the engine is running. If a servicing unit equipped with an engine is used to fuel the vehicles, the engine of the servicing unit should also be shut off if its power is not needed to deliver the fuel.
- Q. Flammable liquids are not to be carried in trunks or luggage compartments of vehicles equipped with two-way radios. However, sample containers handled by gas testers and other authorized persons may be carried in such vehicles provided the valves are plugged to prevent leaking.
- R. Precautions must be taken to insure that aerosol-type containers, including engine starting fluids and deicers, are not exposed to solar heat long enough to cause them to explode. Aerosol containers should not be carried in the same compartment with two-way radio transmitters.
- S. Except in emergencies, gasoline must not be carried inside passenger cars or cabs of trucks. When an emergency requires that this be done, the container must be sealed absolutely tight to prevent leakage of gas or gas vapors.
- T. To prevent the accumulation of poisonous carbon monoxide fumes, garage doors must be opened for ventilation whenever a truck or passenger car motor is running. Remember that these deadly fumes are odorless and invisible.
- U. Motor vehicles must not be driven or gas engines used within gaseous areas such as around tank batteries, gassing wells, emergency burning pits, and low points where gas may have accumulated.
- V. In areas where the weather becomes extremely cold, employees sometimes are compelled to seek warmth from a heater inside a standing motor vehicle with its engine running. To avoid carbon monoxide poisoning in such instances, one should leave a vent or window open enough to insure ample fresh air and should open a door wide at intervals to expel monoxide fumes.
- W. All company vehicles will be equipped with fire extinguishers and first aid kits.

II. TRUCKS

- A. Riding on trucks not equipped with adequate facilities for transporting passengers is prohibited except in an emergency. In this case, great caution must be taken to prevent injury to riders.
- B. Flammable liquids must not be carried except in metal containers fitted with a screwed or spring cover. This does not apply to paints, which may be handled in the customary shipper's carton.
- C. Wheels of trucks should be checked at least once a week to see that all lug bolts and axle flange nuts are tight.
- D. A truck driver should make it a habit to look around his truck before entering it and starting it in motion.
- E. When a truck is to be maneuvered in confined areas, precautions should be taken to insure that the way is clear and visibility at all times will include the area to be traversed. When necessary, the driver should obtain aid from someone reliable who has an unobstructed point of vantage.
- F. The driver should never back the truck when an object may be cleared by driving forward.
- G. All fittings, tools, supplies, equipment, and loose objects hauled on trucks must be firmly secured to the bed of the truck to prevent them from falling off into the path of other vehicles.
- H. Personnel must not act as counterweight on truck bumpers or hoods for loads that may cause the front end of the truck to tilt upward.
- I. The driver of a winch truck is responsible for the condition of the winch lines.
- J. The winch on a truck must be equipped with the approved winch guard as a protection to the driver against flying winch lines and shifting pipe.
- K. Truck beds must be kept free of oil and grease.
- L. Trucks will be equipped with fire extinguishers and first-aid kits.
- M. No load should extend directly over a truck cab unless the truck is properly equipped for such hauling.
- N. Workers must not stand between the end of the truck and a load being pulled with a winch while the truck motor is running.
- O. The tail chain on the winch line of a crane truck must never be pulled against the pulley on a gin pole as it might become fouled or otherwise create a hazard.

- P. Never use the winch line for assistance in climbing up on the truck bed.
- Q. The hooks on the end of any truck winch line should be secured or controlled when not in use.
- R. Rolling tailboards should have a positive locking device.
- S. When heavy equipment is moved with a crane, a tag line will be attached to the load to enable the helper to stand in the clear and still control the load.
- T. Workers should not stand directly over the bumper handle when releasing bumper chains.
- U. If the load on a truck starts to tumble or fall off, workers should not try to stop it.
- V. Workmen should not get between unloading skids unless necessary. If the work necessitates a worker getting between skids, other workmen should be alerted so that they will not release the pipe.
- W. Before pipe is unboomed on a truck preparatory to being unloaded, it should be examined closely to see that stakes on both sides of the truck bed are securely set to prevent pipe from rolling when the boomers are released.
- X. A truck from which pipe is to be unloaded should be in a direct line with the pipe rack to insure an even roll of pipe down the skids to the pipe rack.

III. FORKLIFTS

- A. The forklift operator, operator trainees, and mechanic will be the only persons permitted to drive the vehicle.
- B. The forklift will not be driven forward when carrying a load so high or wide as to obstruct the view of the driver.
- C. The forklift will not be driven forward while the lift prongs are raised higher than 12 inches off the deck surface.
- D. The forklift will be parked and secured when weather conditions become too rough for the vehicle to operate safely.
- E. All personnel working around the forklift will remain alert to the vehicle's presence and remain out of its regular path of travel.
- F. Surfaces where the vehicle is to travel will be kept as dry as possible or the vehicle will be parked when the surface becomes too slick for safe operation.

- G. The forklift will not haul high loads when the headache rack is off the vehicle. Headache racks will remain attached to the vehicle at all times, except for repairs.
- H. Each time the forklift is left unattended for a lengthy period of time, the brake will be set and the switch turned off.
- I. Holes will not be burned or drilled in the ends of the lift forks to attach chains, wire rope, or other devices for lifting purposes.
- J. The forklift operator will remain alert and aware of the presence of pressure vessels, pressure and fuel lines, and fuel compartments, and will exercise caution while maneuvering the vehicle in such areas.
- K. The forklift will travel with loads lowered as close to the driving surface as possible.
- L. When driving backward and rounding corners, the forklift will be slowed down and the horn sounded as a warning. The reverse alarm will not be removed from the vehicle.
- M. At no time while cleaning, painting, or performing maintenance work will anyone sit on the vehicle and straddle the steering wheel with their back to the hydraulic lift and start the engine.
- N. The forklift will not be used to pull or drag equipment, material, etc. Its primary function is to lift loads.
- O. The forklift will not be driven fast. Care will be exercised while carrying a load, or when turning corners.
- P. The forklift will not be parked in an enclosed room, or confined area with the engine running.

11.11 OXYGEN AND ACETYLENE SAFETY AND HOT TAPS

I. GENERAL INFORMATION

- A. Oxygen and acetylene cylinders must have a metal wall separating them when they are stored closer than 20 feet apart.
- B. Never use compressed gas to blow off one's clothing or to clean any work area.
- C. Under normal cutting procedures, oxygen gauges should not surpass 40 pounds of regulated pressure.

Acetylene gauges should not exceed 15 pounds of pressure. Gauges should not be operated with the gauge registering on the red line.

- D. Before cutting a line by any method, the line must be punctured first by a small air drill, punch, or hacksaw. This precaution is to ensure that all pressure has been removed. There is no exception to this rule.
- E. Cylinder valves should be checked for leakage when they arrive. Torches, valves, check valves, O-rings, regulators, and hoses should be inspected regularly. Check valves should be installed on a hose at the torch end and the regulator end.
- F. Leaks and bruises in hoses should be repaired immediately. A few inches of that part of the hose near the torch, which is subjected to the hardest use, should be cut off regularly and the hose reattached.
- G. No attempt should be made to transfer any gas from one cylinder to another.
- H. Should a hose catch fire, close the valve at the cylinder if it is safe to do so. No attempt should be made to extinguish the fire by pinching the hose.
- I. When not in use, the hose on oxy-acetylene welding units should be racked. Master valves on oxygen and acetylene cylinders should be closed and pressure should be bled from regulators and hoses after they have been used. Regulators should be backed off to prevent damage to the regulator because of pressure build up.
- J. Compressed gas cylinders should be handled carefully even when they are empty. Rough handling may damage cylinders or cause leakage, with consequent danger of fire and explosion.

- K. Dented or damaged cylinders should not be used. They should be vented, tagged, and returned to the owner.
- L. Except when in use, cylinder valves should be closed with caps in place. Do not lift the cylinders by the caps and do not use them for rollers or any other purpose.
- M. Cylinders should be securely fastened in an upright position with valve ends up.
- N. At elevated pressures, oil or grease combined with oxygen can be explosive. Keep oil and grease off regulators, valves, hoses, and gauge connections.
- O. Oxygen should not be used to inflate tires or blow debris from clothing or skin.
- P. A job-specific written procedure must be prepared and approved before any work is started that requires welding together of connections or additions to piping, vessels, and tanks containing flammable liquids, gas, or combustible materials under pressure.
- Q. A hot work permit is not a substitute for an approved hot tap procedure. However, all hot taps require a hot work permit.
- R. Refer to API publication 2201: **Procedures for Welding or Hot Tapping on Equipment Containing Flammables** for a more detailed discussion of hot taps.
- S. A hot work permit is required for any of the following situations in plant or field operations where there are or have been hydrocarbons or other flammables: arc welding, acetylene cutting, torching, flaming, soldering, grinding, and painting around spark-producing equipment. It is the welder's responsibility to have a hot work permit filled out and have a copy at the work location.
- T. Do not move or transport an oxygen or acetylene cylinder with the gauges attached to the cylinder. Valves must be turned off, gauges removed, and safety caps put on the cylinders.

11.12 ROPE AND SLINGS

I. WIRE ROPE

All users of equipment utilizing wire rope will conduct daily inspections of the wire rope prior to its use to ensure that it is serviceable and safe. This includes cranes, air hoist lines, winch lines and slings. The use of wire rope, chain or rope will be in accordance with safe usage as recommended by the manufacturer. Whenever a systematic service life optimization program is appropriate, i.e., slipping and cutting, etc. it will be followed. However, regardless of the expected service life of any wire rope, it will be immediately removed from load-carrying service when damage or corrosion of the wire rope has made it unsafe for further use. The following conditions could indicate an unsafe wire rope:

- A. Broken wires--a judgment call is usually necessary to determine how many broken wires render a rope unsafe. This depends largely on the type and use of the wire rope. If in doubt, do not use the wire.
- B. Crushing of the wire rope.
- C. Birdcaging of the wire rope.
- D. Kinks in the wire rope.
- E. Weather or chemical corrosion.
- F. Damage to ferrules, eyes and other fittings.

Wire rope removed from service must be clearly marked as being unsafe for further load-carrying use.

If wire rope is being used to fabricate slings, all socketing, splicing and seizing of the rope should be performed by qualified personnel. Tips for the safe use of slings include:

- (1) Store slings in a clean, dry area, preferably a rack.
- (2) Keep slings clean and well lubricated to prevent corrosion. Corrosion is the biggest enemy of slings. To check for corrosion, pry the sling apart with two pipe wrenches (pad sling with rags). If the inside is dry, the sling is bad and should be discarded.
- (3) Pad sharp objects on a float which can crush or break the wire rope.
- (4) Do not use fiber ropes or load chains as slings. Manila slings may be used for hoses or empty drums. To check manila slings, open them up. If the inside is weathered, they should be replaced.
- (5) Use the proper rigging method when rigging slings to loads.

II. APPLYING WIRE ROPE CLIPS

1. The U-Bolts of all clips should always be on the short (dead) end of the rope.
2. Tighten nuts evenly to manufacturers recommended torque.
3. Before lifting be sure that all clips have been torqued.
4. After several lifts, retorque all clips.
5. For wire sizes not shown, follow clip manufacturers recommendations.

NUMBER AND SPACING OF U-BOLT WIRE ROPE CLIPS

Improved plow steel, rope diameter inches	Number of clips		Minimum spacing (inches)
	Drop forged	Other material	
1/2	3	4	3
5/8	3	4	3-3/4
3/4	4	5	4-1/2
7/8	4	5	5-1/4
1	5	6	6
1-1/8	6	6	6-3/4
1-1/4	6	7	7-1/2
1-3/8	7	7	8-1/4
1-1/2	7	8	9

III. MANILA ROPE

The table below lists the safe working loads (in pounds) for standard manila rope (3 stand) based on safety factor of five on the minimum breaking strength.

Diam. In.	MANILA ROPE			
	When used Straight	When used Angle from Path of Load Travel	When used Angle from Path of Load Travel	When used Angle from Path of Load Travel
1/2	530	460	370	270
3/4	1,080	940	760	540
7/8	1,540	1,340	1,090	770
1	1,800	1,560	1,270	900
1-1/4	2,700	2,340	1,910	1,340
1-1/3	3,700	3,200	2,610	1,850
1-3/4	5,300	4,590	3,740	2,650
2	6,200	5,370	4,380	3,100

IV. NYLON ROPE

Nylon rope stretches appreciably when loaded and has high elastic recovery when the load is released. It has a much higher working elasticity on repeated loading than any other synthetic fiber rope or than Manila, Sisal, or cotton ropes. When first loaded, it increases in length permanently to a degree depending on and increasing with the load applied. Much of the permanent elongation at any given load occurs on the first loading and practically all of it during the first few loadings. The elastic recovery also depends on the load and, after a few loadings, there is no change unless a higher load is subsequently applied.

It is important to keep in mind the factors of permanent stretch and working elasticity of nylon ropes. In some instances stretch and working elasticity might be desirable, and in other instances, these characteristics might be undesirable or hazardous.

Because of the high energy absorption of nylon rope, somewhat higher working loads can be used as compared with hard fiber rope. However, the customary and conservative safety factor of about 5 to 1 is recommended in actual practice.

MINIMUM TENSILE STRENGTH (in lbs.) OF NYLON ROPE

1/4"	1,220	7/16"	3,650	5/8"	7,450
5/16"	1,900	1/2"	4,800	3/4"	10,600
3/8"	2,700	9/16"	6,000		

Load applied to rope	Permanent Elongation Over original Length after Several loadings	Working Elasticity after Several loadings
5% of min. strength	5.7%	10%
10% of min. strength	6.5%	15%
20% of min. strength	10.0%	20%
30% of min. strength	11.0%	20%
40% of min. strength	12.0%	22%
50% of min. strength	13.0%	23%

11.13 SMALL TOOLS SAFETY

I. HAND TOOLS

- A. All crew members will be shown the proper functions and operation of hand tools. Supervisors will make sure that crew members use the right tool for the job.
- B. Hand tools will be kept clean and in good repair. They will be inspected for serviceability prior to use.
- C. Driving faces of hammers, chisels, drift pins, bars and similar tools will be kept free of mushroom heads, breaks and other defects.
- D. Cracked or broken hammer and axe handles will be immediately replaced. Sledge handles will be shortened as necessary to perform more safely in close quarters.
- E. Heel and jaw sections of pipe wrenches will be inspected regularly and replaced as necessary.
- F. Tools will be returned to their proper places after use, and will not be left lying around the facility in a hazardous manner.
- G. Before repairing, servicing or changing components on any power tool, the power source must be disconnected. If the tool is driven by a gasoline engine, the ignition wire should be disconnected from the spark plug, or other precautions must be taken to prevent the accidental firing of the engine.

II. GRINDERS

- A. Nonportable grinders will have a protective shield and an adjustable tool rest that is adjustable to maintain a clearance of no greater than 1/8".
- B. Never grind on the side of a grinding wheel as this can break the wheel.
- C. The rpm of the grinder should not be more than the recommended speed of the wheel printed on the label.
- D. Cup-type goggles or a full shield will be kept near the grinder and will be used whenever the grinder or buffer is being operated.
- E. When using a portable grinder, ensure that the power switch is turned off before plugging in the grinder.

III. PNEUMATIC TOOLS

- A. When using pneumatic (air-powered) tools, care should be taken not to point compressed air at personnel, as relatively low-pressure air is capable of causing serious injury.
- B. Pneumatic tools are not to be rigged with a trigger locking device. They must operate so that if released the power stops.
- C. Before disconnecting air-powered tools, be sure to bleed off the pressure in the air hose.
- D. When there is danger of explosion or fire, air-operated tools must be used. Electrical tools must be used on tanks, lines or stills until tanks, lines and surrounding area are free of combustible gas. Combustible gas must not be used to operate air-operated tools. Persons using air-operated tools must be sure that the source of air supply cannot exceed the working pressure of the tool.

IV. OUTDOOR POWER EQUIPMENT

The following conditions must be observed when using power mowers and edgers:

- A. Before beginning work, carefully inspect area and remove all wire, rocks, glass, or other objects that could become missiles if struck by the blade.
- B. Before starting the mower, it should be inspected for loose parts and defective or loose guards. Disconnect the spark plug wire before attempting inspection or repair of the mower blade.
- C. Do not fuel the engine while it is running or while it is hot.
- D. Do not allow anyone to loiter in immediate vicinity of operations as the hazard from flying objects is greater at sides and front than behind the machine.
- E. The operator of a rotary power mower should wear safety goggles.
- F. Fuel for power mowers must be carried and stored in approved containers.

V. ENGINES/MOVING MACHINERY

- A. All revolving parts of engines and machinery such as fans, belts, chain drives, clutches, and other moving parts will be fitted with machinery guards to protect personnel working around the machinery.
- B. Personnel will not remove safety guards from machinery or equipment except for the purpose of inspecting, making repairs, lubricating or making adjustments and then only after the power has been shut off, locked out and red tagged.
- C. All machinery guards will be replaced immediately after completion of service, repair, adjustments, etc.
- D. Machinery and equipment will be lubricated regularly to prevent it from overheating, wearing excessively and possibly coming apart while in operation.
- E. Machinery and related components will not be greased while they are in motion.
- F. Machinery will be capable of immediate shut down in order to avoid or minimize personnel injury or equipment damage.

11.14 STAIRWAYS AND WALKWAYS

1. When walkways and steps are provided, they must be used. Do not take shortcuts, and never run on walkways or stairs.
2. When carrying tools or materials, always keep one hand free to use the handrails on stairways.
3. Keep stairways well illuminated.
4. Keep railings tight and sturdy. Smooth any areas that start to splinter.
5. All steps, walkways, and stairs must be kept free of obstructions and slippery materials such as oil and grease.
6. Tools, equipment, and materials must not be left on walkways.
7. Use the handrails when walking up or down stairways or steps.
8. Secure hoses and electrical cords to the floor or ground whenever they are laid across walkways.
9. During winter, be extra careful of icy walkways. Keep hands free and out of pockets while traversing them.
10. Broken or unserviceable stairways and walkways shall not be used. They shall be well marked and made serviceable as soon as possible following detection. Loose boards or carpeting shall be repaired immediately.
11. Anytime railing is not provided, employees must have supplemental protection against falling or must wear a safety belt.
12. Nonskid surface material shall be applied and maintained on any surface that is likely to be continuously or frequently slippery.

11.15 STORAGE AND HANDLING OF COMPRESSED GAS CYLINDERS

- A. Compressed gas cylinders must be clearly marked with the identification of the gas, and are to be stored apart from other gases, when possible.
- B. Full and empty cylinders must be clearly distinguished and stored apart.
- C. Cylinders will not be stored near flammable materials. They must be kept away from any heat source, such as heaters or exhausts. If stored outside, they should be protected from direct sunlight and weather corrosion.
- D. Cylinders will be stored in such a manner that they can be quickly removed in case of fire.
- E. Compressed gas cylinders will be stored in an upright position, well-secured to prevent them from tipping over.
- F. When being handled, stored, or not in use, cylinders must always have valve protection caps in place.
- G. Compressed gas cylinders will not be subjected to rough usage, excessive shock, or used as rollers, or supports.
- H. Cylinders must never be dropped from a height. A cylinder rack or basket should be used for moving cylinders, whether full or empty.
- I. Oxygen cylinders and their fittings must not be stored or handled where they can come into contact with oil or grease, including greasy hands, gloves, or rags. Oils and greases ignite spontaneously in the presence of oxygen.
- J. Never use oxygen for compressed air or cleaning purposes, or as an air supply to start any kind of engine.
- K. Cylinders with faulty or leaky valves will never be used. They will be clearly marked, stating whether full or empty, and the nature of the fault and sent back to the yard. Facility personnel will never try to repair compressed gas cylinders.
- L. Leaks will be tested for with soapy water, never with flame.
- M. Pressure reducing regulators set at the proper pressures must be used for oxygen/acetylene cutting. Acetylene pressure downstream from the regulator must never be more than 15 psi.

- N. Reverse flow check valves must be installed in both the acetylene line and the oxygen line to prevent backflow of one gas into the other gas regulator. Such a condition can cause an explosion of the regulator, resulting in serious injury or death.
- O. Never allow oxygen pressure to go below acetylene pressure, which should always be less than 15 psi. Change oxygen bottles when oxygen pressure reaches 300 psi. When changing to a new oxygen bottle, always purge the regulator before connecting it by cracking the cylinder slightly and letting the oxygen pressure force the trapped gas out of the regulator.
- P. All fittings must be free of oil and grease when connecting regulators to cylinders. When oxygen under pressure comes into contact with oil or grease, it is potentially dangerous.
- Q. Oxygen and acetylene cylinders used together for cutting must be racked securely in an upright position. If allowed to tip over, the regulators could easily be broken off.

11.16 TANK CLEANING PROCEDURES

I. GENERAL REQUIREMENTS

- A. The Field Foreman are directly responsible for the safety of employees during tank entry/cleaning operations and the enforcement of this program.
- B. The requirements of the Confined Space Entry, Blinding (isolation), Hot Work, and Lockout/Tagout programs must be followed for oil tank cleaning jobs that require personnel to enter the tank.

II. TANK PREPARATION

- A. Tanks scheduled for cleaning must be prepared so they are rendered as safe as possible for personnel. This may include, but should not be limited to:
 - 1. Draining the contents of the tank to another tank or other acceptable location
 - 2. Washing the tank with water
 - 3. Purging the tank with an inert gas

NOTE: Special considerations must be given to tanks that are being purged with an inert gas. "Normal" combustible gas indicators will not accurately measure the combustible gas in a tank being purged as it drops from the UEL through the explosive range to the LEL. Special instruments, such as a MSA tankscope, must be used to accurately monitor combustible gas in an "inert" atmosphere. Consult the safety engineer for use of the tankscope instrument. Inert gases will also displace the oxygen content making the atmosphere very dangerous.

- B. Liquids or gases shall not be evacuated from a tank unless they can be flushed or vented to a safe location.
- C. The tank shall be isolated from all other vessels, or tanks by disconnecting incoming/outgoing lines and/or blinding these same lines. This includes equalizer lines.

III. PERSONAL PROTECTIVE EQUIPMENT

- A. Personnel must wear the proper protective equipment dictated by the nature of the job and as required by the Confined Space Entry Permit.
- B. Required equipment may include:
 - 1. Respiratory protective equipment
 - 2. Eye and/or face protection
 - 3. Full body coveralls
 - 4. Hand protection
 - 5. Foot protection
 - 6. Hearing protection
 - 7. Fire protection equipment
 - 8. Combustible gas detectors, toxic gas detectors, oxygen content and Norm meters

IV. SPECIAL PRECAUTIONS - PYROPHORIC MATERIALS

- A. Tanks must be considered to contain pyrophoric materials, such as iron sulfide, unless proven otherwise. Pyrophoric materials are substances that will spontaneously ignite when they contact air.
- B. The preferred method of removing pyrophoric materials from a tank is by keeping them in a water slurry state and pumping them out for safe disposal. Maintaining a water blanket on the pyrophoric materials will be necessary for the duration of the job.
- C. Pyrophoric materials must be kept wet to prevent ignition. Each situation must be evaluated individually; however, procedures for cleaning tanks containing pyrophoric materials may include:
 - 1. Gas Freeing Methods
 - a) Blinding/isolating the tank from other equipment. Disconnected lines must be sealed closed immediately after opening to prevent air entering the tank.
 - b) The pyrophoric material must be wetted down immediately upon opening the tank.
 - c) Once the material is wet, purging the tank of any combustible gas may begin. Natural ventilation may be used by opening the roof thief hatch and the side manway. Use of an explosion proof air mover at the thief hatch may speed the process.
 - d) During the entire ventilation phase of the job the pyrophoric material must be wetted down.
 - e) When gas tests at the thief hatch indicate 10 percent or less LEL, high pressure water may be introduced from the side manway or top hatch to break up sediment, rust, scale, and other deposits.
 - f) The interior surfaces of the tank should not be allowed to dry until all scale and other deposits have been removed from them.

2. Gas Testing Procedures

- a) Once gas tests indicate that combustible vapors inside the tank are below 10 percent LEL, the ventilation equipment and water spray should be shut down for 15 minutes, and the tests should be run again. The pyrophoric material must be saturated before stopping the water spray so it will remain wet during the gas testing.
 - b) All tank openings should be tested. If the test results show above 10 percent LEL, ventilation purging and flushing must be resumed.
 - c) Respiratory protection, either positive pressure SCBA or air line unit, must be used during gas testing if H₂S levels are unknown or may reach 10 ppm in the breathing zone.
3. Entry by anyone shall be allowed only after a Confined Space Entry Permit has been properly issued. All provisions of the permit must be strictly followed.

V. TANK DISASSEMBLY

- A. Tanks may have to be disassembled for cleaning if manways are covered up and a closed loop cleaning procedure cannot be done. Safety must be the primary consideration in tank disassembly.
- B. Personnel must wear the proper personal protective equipment, including respiratory protection.
- C. The tank must be vented/purged before disassembly may begin. Internal combustible gas levels must be 10 percent LEL or below BEFORE work can start.
- D. Pyrophoric materials must be kept wet for the duration of the project.
- E. Ignition sources must be controlled. If hot work must be performed, all provisions of the hot work permit program must be strictly followed. Lubricated cold cutting is the preferred method for cutting into the tank.
- F. Scaffolding used must be in compliance with company and government standards.

VI. NORM SURVEY

- A. Before any tank is entered, a NORM Survey must be completed to ensure the level of activity is below 2 milliRems/hr as measured by a calibrated Ludlum Model 3 or 3-97 meter.

References

1. American Petroleum Institute; API 2015, Cleaning Petroleum Storage Tanks.

11.17 TAGGING AND FLAGGING

I. PURPOSE

This standard establishes requirements to minimize incident or injury by ensuring that all personnel are aware of unsafe situations or of valves or equipment in abnormal position or mode.

II. SCOPE

Danger tags indicate that a hazard exists. Using tagged equipment could result in bodily injury, serious and costly mechanical damage, fire or disruption of operations.

Realizing that the purpose of such tagging is to communicate with other personnel working on the system, and to serve as a check before recommissioning the equipment, the following list is representative of situations where tagging is warranted:

- A. Valves not in normal operating mode.
- B. Valves which should not be used under normal operating conditions.
- C. Switches and valves used to isolate control lines or equipment undergoing maintenance as outlined in Lockout/Tagout Program.
- D. Defective and leaking valves.
- E. Equipment, tools, etc., which are unsafe for use.
- F. Safety or emergency equipment which will not function properly and is unsafe to use.

III. DEFINITIONS

Tag: A "DANGER DO NOT OPERATE" weatherproof tag that is marked with the name of the equipment, the name of the person affixing the tag and the date, time and reason for tagging the equipment.

Flag: A piece of bright orange or red ribbon attached to a tag only when the tag is not readily visible, such as tags on overhead valves. Flags should never be used without a tag.

IV. PROCEDURES

- A. The operator must properly relieve the pressure on the equipment to be repaired, position valves and control switches or breaker switches for safe maintenance, and danger tags on all related valves and control switches. These valves shall not be repositioned without prior approval of the operator signing the danger tag.

Manual valves must be used whenever possible as isolation valves. Valve handles must be chained and locked in the desired position or removed. Automatic valves should not be used as isolation valves unless they are made inoperable.

- B. The items listed in the above Scope shall be tagged in the following manner to ensure that proper attention is given to needed repairs. Prior to placing the danger tag on the equipment, shutdown devices, valves, control switches, or defective equipment:
 - 1. NOTE the equipment name, identification, and the condition or fault or other reason for tagging.
 - 2. Date, time, sign and attach the tag. If the tag is not readily visible, a flag should also be attached.
 - 3. Notify your immediate supervisors.
- C. Tags and flags shall be removed immediately after conditions change so as not to be left on by mistake. They are not substitutes for careful checking of each device prior to recommissioning equipment or to an operational change.

V. RESPONSIBILITIES

- A. The responsibility for using tags where necessary belongs to the person repairing equipment, isolating equipment, shutting valves or switches or discovering an unsafe piece of equipment. This would usually be the operational change.
- B. The responsibility for acquiring the necessary repairs to tagged-out items rests with the supervisor.
- C. Upon completion of the job, all danger tags shall be removed after thoroughly checking to be sure that no person will be jeopardized and that the equipment is completely ready. Areas should be checked to be sure they are free of any unnecessary materials. This should be done by the person that signed the danger tag: but due to shift changes, etc., it can be removed by the supervisor as outlined in the Lockout/Tagout Procedures.

11.18 WELDING AND CUTTING

I. GENERAL INFORMATION

- A. Welding is one of the most critical operations offshore due to the danger of fire and explosion, the other operations occurring simultaneously and the limited area in which the work can be performed. The following is a Minerals Management Services (MMS) approved plan.
1. Welders are responsible for the maintenance of their equipment and for the protection of passersby.
 2. Electric welders should place protective screens around the arc whenever practicable. When electrical arc welding is used in the shop, signs must be displayed warning of the danger to unprotected eyes.
 3. Plastic case lighters must not be carried around welding operations.
 4. Never use barrels or drums, empty or full, for a welding platform.
 5. Always shut-off welding machines if they are not being used and left unattended.
 6. Each welder must have a very clear line of communication with customer supervisors before beginning any job. He must also fill out a hot work permit and entry form.
 7. Welding operations must not begin before a hot work permit is issued by the customer's supervisor in charge of the platform. All operating and maintenance personnel as well as contract personnel on the platform must be informed of the welding operation and their activities must be coordinated with the welding.
 8. A firewatch, consisting of one or more persons, must be assigned when welding is being conducted. The firewatch must have no other duties during welding activities and must check the welding area with a portable gas detector immediately before and periodically during the welding operations.

9. A designated properly marked fire watch extinguisher must be positioned at the welding location. The extinguisher should be a pressurized, dry chemical extinguisher. Cartridge extinguishers must not be used for fire watch duty. Never move a platform fire system extinguisher from its station for this purpose. A carbon dioxide or Halon extinguisher may be used inside rooms where dry chemical will damage the equipment.
10. Welding performed outside of an approved welding area must be authorized by the Operations Manager and may require approval by the MMS or applicable government agency. If welding or burning operations are to be conducted in the well bay or production area, all producing wells must be shut in at the surface safety valve unless a departure has been obtained from the MMS or applicable government agency.
11. Welding operations in other than approved welding areas are prohibited if drilling, workover, or wireline operations are in progress on the platform, unless the particular well contains noncombustible fluids and is in a condition which does not allow the entry of formation hydrocarbons into the wellbore.
12. A floor area within thirty five (35) feet of, but not isolated from, the welding location must receive special attention unless it is constructed of solid steel plate or concrete or is located on a bridge or walkway above open water. Wood decks must be wetted and covered with fire resistant tarpaulins. Steel grating in the area must also be covered.
13. A platform water pump must be running and the water hose charged and ready for immediate use while cutting or welding is in progress when available.
14. The welding area must be free of drums or other portable containers that contain or have contained combustible materials. Drums must not be used for welding stands.
15. The welding area should be protected with wind breaks in cold or windy weather to help prevent weld embrittlement and subsequent failure. Tarpaulins used as wind breaks must be well wetted and as minimum of three feet from the operator.