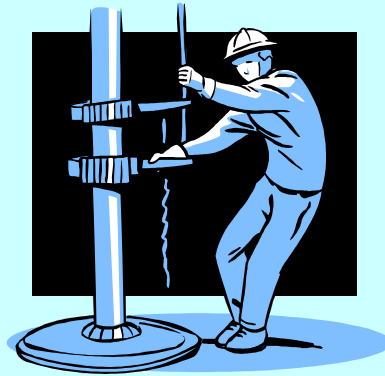


YEMEN DRILLING



A division of H.T.C YEMEN INTERNATIONAL LIMITED



SAFETY MANUAL & PROCEDURES


QUALITY MANUAL & QUALITY ASSURANCE PROCEDURES

YEMEN DRILLING

A division of H.T.C YEMEN INTERNATIONAL LIMITED



SAFETY MANUAL AND PROCEDURES

	Subject: SAFETY MANUAL & PROCEDURES	Rev . 2 Pages. 1 of 132
REVISION	AMENDMENT DETAIL	DATE
2	SECOND REVISION since initial release	23 / 04 / 06

Approved by,

Mr . BARRY Russell,
DRILLING MANAGER,
YEMEN DRILLING.

Mr. HUSSEIN Al-hashedi
CHIEF EXECUTIVE OFFICER,
YEMEN DRILLING.

TABLE OF CONTENTS

	<u>DESCRIPTION</u>	<u>PAGE</u>
	INTRODUCTION	1
	SAFETY HEALTH & ENVIRONMENT POLICY	3
I	GENERAL SAFETY	4
	A. Training	4
	B. Safety meetings and material	4
	C. Single concept sessions (Toolbox talks)	4
	D. Safety responsibility	5
	E. Safety enforcement	5
	F. New employee orientation	5
	G. Orientation checklist	6
	H. Good housekeeping and work habits	7
	I. Facility safety	7
	J. Warehouse safety	8
	K. Office safety	9
	L. Site security	9
	M. Accident investigations, Reports and statistics	10
	N. Work permits	10
	O. Sub contractors	10
II	PERSONAL SAFETY AND EQUIPMENT	12
	A. Lifting	12
	B. Protective equipment	13
	C. Eye protection	13
	D. Head protection	14
	E. Safety boots / shoes	14
	F. Gloves	14
	G. Ear protection	14
III	FIRST AID	15
	A. Basic steps	15
	B. Bleeding – arterial	15
	C. Pressure points	15
	D. Tourniquet	16
	E. Bleeding – venous	16
	F. Mouth to mouth resuscitation (CPR)	16
	G. Shock	16
	H. Fractures	17
	I. Thermal burns	17
	J. Clothing fire	18
	K. Chemical burns	18
	L. Heat prostration	18
	M. Heat exhaustion	19
	N. Foreign body in eyes	19
	O. Choking	19

TABLE OF CONTENTS

	<u>DESCRIPTION</u>	<u>PAGE</u>
IV	DRIVING SAFETY	20
	A. General	20
	B. Drivers	20
	C. Driving safety	20
	D. Drivers training	20
	E. Journey management	21
	F. Lost-man procedure	21
	G. General safety	22
	H. Alcohol and drugs	22
V	HYDROGEN SULPHIDE (H₂S) HAZARDS AND SAFEGUARDS	23
	A. Physical properties	23
	B. Harmful amounts	23
	C. Symptoms	24
	D. First aid for H ₂ S poisoning	24
VI	WORK EQUIPMENT	25
	A. Hand tools	25
	B. Portable electric tools and equipment	26
	C. Grinders and buffers	26
	D. Air hoses and nozzles	27
	E. Scaffolds, ladders and working at heights	27
VII	FIRE PREVENTION AND SUPPRESSION	29
	A. Types of fire	29
	B. Extinguisher inspection and maintenance	30
	C. General precautions	31
VIII	IN PLANT WELDING	32
IX	LOCK-OUT AND TAG-OUT PROCEDURES	33
	A. Policy	33
	B. General information on locks	33
	C. Electrical lock-out procedures	33
	D. Restoring equipment to normal production operation	35
X	CONFINED SPACE ENTRY	36
	A. Definition	36
	B. Policy	36
	C. Entry tags	37
	D. Safety watch	38
	E. Gas testing criteria	38

TABLE OF CONTENTS

	<u>DESCRIPTION</u>	<u>PAGE</u>
XI	PRESURE TESTING SAFETY PROCEDURE	39
	A. Tests, general	39
	B. Test fluid	39
	C. Safety measures	40
XII	EXCAVATION	41
	A. Introduction	41
	B. Underground obstructions	41
	C. Safety measures	42
XIII	RADIOGRAPHY	44
	A. General	44
	B. Radiological workers: classification and requirements	44
	C. Safety measures	45
	D. Control and transport of radioactive sources	45
	E. Storage of radioactive sources	47
	F. Emergency procedures	47
	G. Waste handling and disposal	47
XIV	CRANES AND LIFTING EQUIPMENT	48
	A. Cranes	48
	B. Lifting gears	49
	C. Colour coding procedure	50
XV	SITE STORAGE AND HANDLING OF GASES	51
	A. General	51
	B. LPG properties and hazards	52
XVI	HAZARD COMMUNICATION PROGRAMME	53
	A. Policy	53
	B. Purpose	53
	C. Material Safety Data Sheets (MSDS)	53
	D. Container labelling	53
	E. Employee training information	54
	F. Employee orientation of OSHNS Standard 29 CFR 1910.2 1 00	55
	G. Employee orientation of OSHA standard 29 CFR 1910.2 1 00	55
XVII	OCCUPATIONAL HEALTH POLICY	58
	A. Statement	58
	B. Health hazardous tasks	58
	C. Hygiene standards at field locations	59
	D. Training	59
	E. Inspections and audits	59

TABLE OF CONTENTS

	<u>DESCRIPTION</u>	<u>PAGE</u>
XVIII	ENVIRONMENTAL PROTECTION POLICY	60
	A. Statement	60
	B. Actions to be taken in the event of an environmental incident	60
	C. Clean-up procedures	61
XIX	DRUG AND ALCHOHOL POLICY	61
	A. Statement	61
	B. Health risks	61
XX.	CONTRACTOR SAFETY POLICY	62
	A. Scope / objectives	62
	B. Policies/ Procedures	62
XXI	EMERGENCY PROCEDURES	63
	A. Purpose	63
	B. Definition	63
	C. Procedure	63
	D. Emergency telephone numbers	67
	E. Emergency response plan –flowchart	68
XXII	SAFETY RULES	69
	A. Purpose	69
	B. Responsibilities	69
	C. Procedure	69
	D. References	69
	APPENDICIES	
	Appendix I Organisation chart and responsibilities	73
	Appendix II Security procedure	76
	Appendix III Accident reports and records procedure	79
	Appendix IV Work permit procedure	84
	Appendix V H2S safety and training course	89
	Appendix VI Offsite safety	97
	Appendix VII Inspection report-Generator installation	101
	Appendix VIII List of hazardous chemicals	103
	Appendix IX HSE Forms	107

TABLE OF CONTENTS

	<u>DESCRIPTION</u>	<u>PAGE</u>
	DRILLING ADDENDUM	D1
XXIII	DRILLING SAFETY GUIDELINES	D1
XXIV	GENERAL RESPONSIBILITIES	D6
XXV	WELL-SITE HEALTH AND SAFETY	D7
XXVI	YOUR SAFETY AT THE RIG	D7
XXVII	SPECIFIC HAZARDS	D8
	a) Rig floor	D8
	b) Derrick	D8
	c) Mud room and shaker house	D9
	d) Pipe deck	D9
	e) Pump rooms	D10
	f) Working at heights	D11
	g) Personal protective equipment	D11
XXVIII	AVIATION SAFETY	D11
XXIX	EMERGENCY RESPONSE	D12
XXX	AUDITS AND INSPECTIONS	D13
XXXI	DRILLING OPERATIONS SAFETY – GENERAL FLOOR OPERATIONS	D14
XXXII	DRILLING OPERATIONS SAFETY – COMMON DRILLING SUB-PROCESSES	D15
XXXIII	DRILLING OPERATIONS SAFETY – DERRICK OPERATIONS	D15
XXXIV	DRILLING OPERATIONS SAFETY – BOP's & WELLHEADS	D16
XXXV	DRILLING OPERATIONS SAFETY – MUD PUMPS & TANKS	D16
XXXVI	DRILLING OPERATIONS SAFETY – CASING & CEMENTING	D16
XXXVII	DRILLING OPERATIONS SAFETY – GENERAL RIG-SITE SAFETY	D17
XXXVIII	RISK ASSESSMENT	D18
XXXIX.	ENVIRONMENTAL CONSIDERATIONS	D20

INTRODUCTION

This safety manual encompasses H. T. C. YEMEN INTERNATIONAL, LTD's rules, procedures and views on the safety of its operations and sets the basic guidelines for developing a project safety plan and program.

The client's safety rules and regulations as well as those of the local authorities shall be fully complied with and shall be considered as the minimum basis of any such safety plan.

I. TRAINING

The main objective of a safety plan is to instil in all employees an awareness of potential hazards in their operating areas or activities and to instruct them on how to eliminate the hazards or cope with these in a safe manner. Safety awareness is best achieved through a properly planned training effort which is implemented by competent personnel and that takes into consideration the particular requirements of a project and the people involved in it.

II. SAFETY PERFORMANCE

In order to evaluate the effectiveness of a safety plan, a proper accident reporting and investigation system along with periodic feedback on safety statistics shall be implemented. This will enable management to detect deficiencies in the system and to take corrective measures.

III. SAFETY RESPONSIBILITY

Safety on any project is a line management function, with every employee being responsible to act safely and to contribute to the safety of others. Safety rules will be enforced through disciplinary action against violators and through an incentive program rewarding better safety performers.

The following general responsibilities are a part of each person's job.

III.A Management:

1. Develop procedures that define responsibilities, establish policies and provide for the communication and control of hazards that are in compliance with relevant standards and requirements.
2. Ensure that all supervisory personnel are given appropriate training in all matters concerning

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

Introduction
Page 2 of 132

Safety, health and environmental.

3. Instruct employees in the proper techniques for tasks to be performed, make them aware of inherent safety and health problems associated with each task, and ensure the tasks are performed in accordance with H.T.C Yemen international ltd's safety, health and Environmental standards and statutory and other requirements.
4. Provide the means, equipment and resources to fulfill H.T.C Yemen international ltd's Operations health, safety and environmental responsibilities.
5. Ensure that all incidents which result or could result in injury or damage are reported immediately. Ensure that all incidents are investigated and as appropriate followed by Corrective action.
6. Ensure that the proper administrative systems are in place to promote, monitor, document Communicate and improve our health, safety and environmental programs.

III.B Employees:

1. Become familiar and comply with all company, contractor and customer rules, signs and Work procedures.
2. Report accidents, illnesses, incidents or hazardous conditions and behaviour immediately to Supervisor.
3. Use personal protective equipment when required.
4. Perform all tasks in a safe and environmentally unharmed manner.
5. Keep work areas neat and orderly.

IV. SAFETY AUDITS

It is H.T.C.'s management policy to carry out safety audits through unscheduled site visits where safety standards are assessed and safety awareness among employees can be observed on a first hand basis.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

Safety Policy
Page 3 of 132

SAFETY, HEALTH AND ENVIRONMENTAL POLICY

HTC Yemen International Limited recognizes the importance of meeting society's needs for safety health and protection of the environment. It is our intention to proactively work with employees, customers, the public, governments and others to use natural resources in an environmentally sound manner while protecting the health and safety of employees and the public. We are dedicated to a continuous improvement of our international safety, health and environmental programs while supplying high quality products and services to customers. To meet these responsibilities, we will manage our business according to the following Safety, Health and Environmental ("SHE") Principles.

Safety, Health and Environmental Principles

- To make safety, health and environmental considerations a priority in our planning and our development of products, services and processes.
- To operate our facilities and to supply our products and services in a manner consistent with the safety and health of our employees and the public while protecting the environment.
- To promptly advise employees, customers, appropriate officials and the public of information on significant industry-related safety, health and environmental hazards, and to recommend protective measures.
- To extend knowledge by conducting or supporting research, when appropriate, on the safety, health and environmental effects of our operations, processes, services and waste materials.
- To inform, educate and counsel employees, customers, transporters and others in the safe handling, use, transportation and disposal of our products and waste materials.
- To develop and implement procedures to reduce drilling and workover operations wastes.
- To participate with governments and others creating responsible laws, regulations and standards to help safeguard the workplace, community and environment.
- To recognize and to respond to community concerns about our services and operations.

Hussein AL-HASHEDI
Chief Executive Officer

HTC YEMEN INTERNATIONAL, LIMITED

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 4 of 132

I. GENERAL SAFETY

A. TRAINING

The objective of a safety training program is to:

1. Stress the importance of safety.
2. Enable accident prevention.
3. Contribute to developing a project's safety.
4. To guide workers into exercising safe working practices.

The focal point of this program is the Safety/Training Manager who will supplement it with any specific client training requirements. The training should emphasize the different subjects as applicable to the specific project activities and should be tailored for the separate categories of employees on the job. A training facility (at least one room) should be provided on site which will contain training material such as video tapes, posters, and items from previous accidents used for demonstration purposes..

Short single concept sessions will be conducted for the different crews by their supervisors on an every other day basis to cover their activities of work while supervisors monthly safety meetings will be co-ordinated by Safety/Training Manager to discuss the overall safety aspects of the project. Records for these meetings will be recorded and kept by the Safety/Training Manager.

Documentation of all training must be maintained at each location (see sample in Appendix IX, form HSE-YD-021)

B. SAFETY MEETINGS AND MATERIAL

The backbone of any safety program is a formal monthly safety meeting. Generally, safety meetings should include areas of general safety and environmental issues, as well as discussions of specific hazards, recent accidents/incidents and any other topics which are of particular concern at the location of the meeting.

Material for monthly safety meetings is available from a variety of sources, such as safety films, videos, and pamphlets, dealing with specific safety hazards and safety procedures. The Safety/Training Manager, Superintendent, Supervisors, will also be utilized to give some variety to the monthly safety meetings. Specific Safety situations that occur on a project are always good topics for safety meetings. Site specific weekly meetings will also be held, discussing safety concerns for the week.

C. SINGLE CONCEPT SESSIONS (Also referred to as Toolbox Talks)

An important ingredient of an effective safety program is the single concept session, which is conducted prior to start of days work. These sessions should be short in duration. They should be conducted by the Supervisor to ensure that all of the company and contract personnel involved, as well as any others who may be involved in the activity are completely aware of the hazards involved and of the safe procedures to be followed.

Pre-job safety meetings shall be conducted prior to performing any maintenance or operating activity which is not routinely done and in which certain hazards exist. JSA's will be reviewed in these safety meetings and concerns and comments from the crews would also be discussed.

Each safety meeting should be documented and kept on location(see sample ,HSE-YD-007 in Appendix IX)

D. SAFETY RESPONSIBILITY

The effectiveness of any safety program is dependent upon the observance of safety rules by all employees and the enforcement of these safety rules by the Safety Manager and Supervisors. The violation of any procedure or safe practice called for in this manual is a violation of Company policy. As in any other aspect of work a clear definition of responsibilities is required so that each person knows what he should be doing.

The specific responsibilities towards safety of individual designations, along with the company organisation chart are shown under Appendix I attached.

E. SAFETY ENFORCEMENT

Safety enforcement will be administered by the Safety Manager, Superintendant, Supervisors, and each employee. Everybody in the organisation has a role to play in safety Performance

Disciplinary Actions:- Personnel disobeying a safety regulation will receive a written notice. The written notice describes the time and date the safety regulation was violated/disobeyed. Also, written notices will state a description of the regulation and the number of the written notice being issued. Safety regulation enforcement shall be executed as stipulated in safety rules and regulations.

After one year from the date the written notice was issued, it will no longer be considered for disciplinary purposes.

The written notices will become a part of the employee's personnel file. These notices will be considered on the annual review date and can offset or cancel any prospective wage increase.

Safety awards will be made to employees who have a clean safety record, i.e. if no notices or recordable accident forms are in personnel files.

F. NEW EMPLOYEE ORIENTATION

The following employees shall be given a formal safety orientation before being assigned to their work area-

1. Every permanent new employee.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H. T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 6 of 132

2. Temporary employees who are utilised as relief for permanent plant and field personnel in an operating or maintenance position.
3. Employees who have transferred from a field project to a plant project who have not had safety training applicable to that used at the plant project.

The following new employees should not be required to have a formal safety orientation. However, they should be instructed in the specific hazards and precautions to be taken regarding their particular duty:

1. Secretarial and clerical employees.
2. Temporary employees utilised in office work or in a capacity or area of low exposure to accidents.
3. Temporary employees who have been employed for specific maintenance work of short duration.

The Safety Manager and/or Safety officer will conduct the safety orientation of each new employee. When a new employee reports to work, the employee shall be issued the General Safety Policy and Procedures, OSHA's Communication Standard "Right-To-Know", as well as other pertinent instructions and procedures pertaining to safety. The new employee should read these documents and note any areas or items about which questions arise. The new employee's safety orientation should be completed before he/she begins work.

G. ORIENTATION CHECKLIST

A checklist shall be utilised and the formal safety orientation shall cover the following items:

1. A discussion of the General Safety Policy and Procedures, and OSHA's Communication Standard "Right-To-Know" to establish the new employee's general comprehension of the information in these documents.
2. A discussion with the new employee regarding specific hazards within the plant, field, and in the new employee's specific job.
3. Instruction in the use of protective equipment such as proper clothing, hard hats, safety glasses, and ear plugs, etc.
4. The availability of this safety equipment through our Safety Department should be pointed out. Upon leaving employment personnel will be required to return all safety equipment to the Safety Manager.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 7 of 132

5. Instruction in the use of emergency equipment such as fire extinguishers, first aid equipment, and fresh air equipment. If fresh air equipment is to be used within the operations, the new employee shall put on the equipment and become familiar with the use of the equipment.
6. A tour of the new employee's work area, pointing out the specific potential hazards or precautions to be taken on the job.

Upon conclusion of the orientation, the new employee and the Safety officer performing the orientation shall sign the orientation sheet. Any questions which the new employee may have should be resolved at this time. New employees shall be advised of the Company's philosophy, policy, standards, and enforcement of safety regulations. At this time the potential consequences of safety violations shall be pointed out to the new employee. The completed and signed copy of the orientation sheet shall be filed (see sample,HSE-YD-001 form in Appendix IX).

H. GOOD HOUSEKEEPING AND WORK HABITS

A high standard of housekeeping shall be maintained at H.T.C.'s facilities at all times. Good housekeeping is not something that can be accomplished by periodic inspection. It is a day-to-day activity that must not give way to convenience or the pressure of other work.

One of the most important factors in housekeeping is good work habits. If poor work habits prevail, they will influence the job performance. Good housekeeping will quickly become a habit if tools and work equipment are returned to their proper storage location.

Large and prolonged accumulation of waste and junk material shall be avoided. Junk material should be disposed of at intervals frequent enough to prevent such accumulations, and maintain good housekeeping.

Poor housekeeping accounts for a large portion of reported industrial accidents. It is every employee's responsibility to maintain a clean and organized work area.

I. FACILITY SAFETY

Each location shall develop a site specific routine inspection checklist. This inspection shall be conducted monthly or as required. Follow up on problem areas shall be addressed as soon as possible. Any area or operation deemed to be unsafe shall be immediately discontinued until the problem is corrected. Any equipment found to be faulty shall be properly marked and taken out of service until repaired.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H. T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 8 of 132

1. Aisles ,Walkaways, Floors - Aisles, walkaways, floors shall be clean and free of debris. Materials are not to be stored or left in aisles or walkaways. Drains shall be covered properly and shall be kept free of debris. If drain cover is removed for any reason, the drain shall be barricaded. Spills shall be cleaned up immediately.
2. Storage of materials - Clean ,orderly storage areas shall be maintained. Drums shall be cleaned and properly disposed of after use. Stored material shall be organised(i.e. fire,class,reactivity) .
3. Lights and Ventilation - Proper levels of light shall be maintained at all locations Lights are to be shielded and mounted to prevent damage. Proper ventilation shall be maintained. Exhaust fans shall be kept clean and in good working order.
4. Yards and parking areas - All debris, paper, wood etc is to be picked up and disposed of in the proper container. All vehicles are to be parked in the designated parking areas.
5. Tools and equipment - All tools and equipment shall be kept clean and put away immediately after use. A job is not complete until everything is cleaned up and properly stored. Damaged or defective tools must be repaired or discarded. Temporary electrical cords with splices are not allowed. Be sure if service is in an electrically hazardous area proper coded cords and connections must be utilised. Do not lean tools against walls, columns or machines. Clean tools are to be kept in designated areas and kept available for use.

J. WAREHOUSE SAFETY

All chemicals and flammable liquids should be stored away from heat sources.

These shall be neatly stored away from direct sunlight, electrical apparatus or other sources of ignition.

The leading cause of injury in the warehouse is from lifting. Four important things to remember when lifting are:

1. Lift comfortably, with legs bent at the knees. And back straight. Keep your chin tucked in. Lift with your legs, not your back.
2. Avoid unnecessary bending, twisting and reaching out
3. Lift gradually and slowly
4. Keep in good shape physically

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H. T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 9 of 132

Equipment yard and grounds should be carefully maintained. Areas around tanks, pipe, buildings, etc., and throughout the yard and within three feet (3') of the fence should be free of weeds, trash, etc.

Items on shelves shall be stocked in a neat, orderly fashion. Avoid stacking heavy items on top shelves wherever possible and avoid over stacking.

K. OFFICE SAFETY

The office environment has its potential hazards as any other place of work. Complacency is the greatest cause of accidents. Most office workers are lulled into believing that serious accidents just do not happen in offices.

The following precautions shall be observed at all times:

1. Floors - Floor finishes shall have anti-slip qualities. Loose carpet, defective tiles or boards, warped and worn floor mats under chairs, and plastic floor mats shall be repaired or replaced to eliminate tripping hazards
2. Aisles - Passages shall be unobstructed. Waste baskets, telephone and electrical cords and outlets, low tables, and office equipment should be placed against walls, under desks or in some other suitable place to prevent tripping. File drawers, pencil sharpeners, or other objects should not jut into aisles.
3. Filing Cabinets - As one of the major causes of office injuries, file cabinets deserve extra attention. File drawers are to be closed with the handle only. Only one file drawer should be open at one time. Climbing on open file drawers is prohibited. Small stools used in filing areas are to be kept out of the aisles when not in use.
4. Material Storage - Boxes, paper, and other heavy objects must be stacked in such a way as to prevent an avalanche-type spill. The accumulation of trash and unused material shall be kept to a minimum and removed on a regular basis.

L. SITE SECURITY

A security procedure on the job site will prevent the loss and misuse of the companies assets and will help eliminate injuries caused by having unauthorised personnel intruding into hazardous work areas or causing unsafe acts.

A general security procedure as shown in Appendix II shall be implemented on all work sites and projects, however special emphasis should be given to the client's requirement particularly when dealing with work inside existing or operational facilities.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H. T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 10 of 132

M. ACCIDENT INVESTIGATIONS, REPORTS AND STATISTICS

Every accident consists of a cause and a result. An accident involving a slight injury may reveal as many constructive conclusions as the investigation of any accident involving a fatality. Accidents will generally have several contributory factors, but to ensure that the full lessons can be learned, the root cause must be established and dealt with.

To learn from accidents however means that a system for retrieval of information must be set up and records must be kept of injury and damage experience,

In addition to our own needs our clients require information for their purposes. The procedure under Appendix III (attached) covers reporting requirements and the principles of accident investigation and analysis which are sound basis for any client requirement as well as for the improvement of safety programs.

N. WORK PERMITS

Work permits authorise the execution of an operation once certain specific or general protective measures have been taken, and at the same time they enforce the use of safety equipment. The implementation of work permit procedures is of vital importance when working inside existing or live plants and/or work sites.

Such permits must be written and issued by competent personnel and their aim will be to:

1. Provide timely information to all those people who are directly or indirectly involved in the work.
2. Define the conditions required for the workplace and the operators in the interests of safety.
3. Prescribe the observance of safety regulations, which are required by the Client's Safety Department, Operating Authority, Project Safety Engineer, etc. Upon the completion of work they certify that the equipment, plant or area which has been worked on is suitable for use.

The procedure in Appendix IV describes the types and the implementation of work permits.

O. SUB-CONTRACTORS

All personnel involved in H. T. C. projects, irrespective of their background, will abide by this Health, Safety, and Environment (HSE) Plan.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H. T. C. Yemen International, Ltd.
Safety Manual and Procedures
Date: April 2006 (revision 2)

General Safety
Page 11 of 132

Therefore all procedures, requirements, audits and plans mentioned shall apply in full for all subcontractors. To realise this objective the number of subcontractors will be limited as much as possible. In addition every effort shall be made to limit the presence of third party personnel on site.

Obviously in the selection process of a subcontractors past HSE performance and its current HSE plan shall be reviewed and the outcome shall play an important role to allow the overall project organisation to target zero: no negative impact on people and environment during project execution.

Once a subcontract has been awarded, the subcontractor shall be issued complete or abbreviated sets of the Project Safety Regulations depending on the number and duration of the site visits by the subcontractor's staff.

II. PERSONAL SAFETY AND EQUIPMENT

Accidents are frequently caused by not thinking about the job or by taking short cuts to save time or reduce the amount of work. The safe procedure for accomplishing each job should be known. If in doubt, ask your supervisor.

A. LIFTING

Listed below are seven principles, which should be observed when lifting, setting the object down is essentially the reverse of lifting.

1. Consider the size, weight, and shape of the object to be carried. If the object is unduly heavy or cannot be handled easily, Obtain assistance.
2. Set feet solidly. Usually, more effective effort can be applied if one foot is slightly ahead of the other. Position feet far enough apart for good balance and stability (but not too far apart).
3. Get as close to the load as possible. Bend the legs about 90° at the knee and tuck your chin in.
4. Keep the back as straight as possible. It may be far from vertical, but it should not be arched. Bend at the hips and not at the middle of the back.
5. Get a firm grip on the object and be sure that grip is maintained while lifting and carrying.
6. Straighten legs to lift the object and at the same time swing back into a vertical position.
7. Never carry a load that cannot be seen over or around.

Listed below are four principles that should be observed while carrying:

1. When carrying, change grip only after setting object down on a support.
2. When changing direction is necessary, turn the whole body, including the feet. Twisting the body must be avoided.
3. When two or more persons are handling the same object, one person shall be designated to call signals. All the persons on the lift should know who this designated person is and should warn the person of any change in grip.
4. Heavy or bulky material to be carried a considerable distance should be handled mechanically.

B PROTECTIVE EQUIPMENT

All plant and field personnel are required, as a condition of employment with Al-Hashedi, to utilise approved personal safety equipment at all times while on the job.

Baggy or loose clothing shall not be worn while working in the vicinity of moving machinery.

When special protective equipment is provided by the Company and designated for a given job, it must be worn.

C. EYE PROTECTION

Flying objects, such as metal and abrasive grits, cause most eye injuries. Corrosive substances and poisonous gas or fumes also constitute an eye hazard.

The Company furnishes safety glasses and face shields, which are required. safety glasses shall be worn at all times within the plant area. Face shields shall be worn at all times when there is a possibility of foreign objects entering the eyes.

Such activities may be as follows:-

1. Chipping, cutting or breaking stone, brick, and concrete.
2. Using chisels or other handled steel tools.
3. Using a wire brush to clean threads, fittings or metal surfaces.
4. Handling or using chemicals.
5. Grinding on abrasive wheels even though a glass guard is provided.
6. Using compressed air for cleaning purposes.

Welding hoods or glasses with coloured lenses are to be worn when employees are exposed to the glare of electric welding operations.

The use of prescription safety glasses is encouraged; they can be purchased locally.

D **HEAD PROTECTION**

All personnel at all times within the plant and field locations shall wear safety hats.

E. **SAFETY BOOTS/SHOES**

It is required that safety boots/shoes be worn by all personnel at all times within the plant and field locations.

The wearing of tennis shoes, sandals, etc. which do not afford safety protection to feet is prohibited on the job.

F. **GLOVES**

Gloves should be worn at all times when performing operations that expose the fingers and hands to cuts, scrapes, and burns. Protective gloves will be provided by the Company.

G. **EAR PROTECTION**

Ear protection shall be worn in those areas where signs of warning of sound levels exceed the maximum decibel level. Ear protection will be provided by the Company.

III. FIRST AID

First aid is the immediate, primary care given to a victim of an accident or sudden illness until the services of a physician can be obtained. First aid should be limited to only that treatment which is necessary to prevent death or further injury, relieve pain, and prevent or reduce shock.

All field supervisors should be trained in emergency first aid. All injuries must be reported to the Superintendent, supervisors or Safety Manager. Nobody should ever attempt to treat another person if it compromises their own safety. Always check if the injured person has suffered an electric shock, and if so make sure that the power is isolated before approaching the victim.

A. BASIC STEPS

Treat the most serious conditions first-. stoppage of heart, stoppage of breathing, bleeding, and shock. Remember the **ABC** of First Aid, **A**irway, **B**reathing and **C**irculation

- Send for ambulance or doctor.
- Keep victim comfortable.
- Try to locate all injuries.
- Move victim only to get him out of danger.
- Do not give liquids to a semi-conscious or unconscious victim.
- Remove dentures, if any, from the mouth of an unconscious victim.
- If poisonous or suffocating gases are suspected, do not attempt a rescue without breathing equipment.

B. BLEEDING - ARTERIAL

Symptoms - Bright red blood spurting from the wound.

Treatment - Apply pressure directly over wound with as clean a dressing as available and maintain pressure until professional assistance is available. If the dressing becomes saturated ,do not remove it. Cover the dressing with additional clean dressings .In most cases, bleeding can be controlled by this method .If bleeding is very severe or continues, apply hand pressure at the correct pressure point . As a last resort only , apply a tourniquet .Treat for shock.

C. PRESSURE POINTS

The four pressure points to remember are one on the inner side of each upper arm and one on the inner side of each thigh. Pressure is to be applied to the brachial artery of the arm and femoral artery of the thigh.

D. **TOURNIOUET**

A tourniquet is dangerous and should not be used if bleeding can be checked otherwise. Amputation is usually the only justification for a tourniquet. If necessary to use a tourniquet, mark TK on the victim's forehead. Do not release the tourniquet until the victim is in a hospital or doctor's care. Only a doctor should remove a tourniquet.

E. **BLEEDING - VENOUS**

Symptoms - Dark red blood is flowing steadily from a wound.

Treatment - Place a compress, sterile if available, over the wound and apply direct pressure. Elevate the bleeding part except in the case of a fractured limb. Loosen tight clothing. Treat for shock.

F **MOUTH-TO-MOUTH RESUSCITATION (CPR)**

You may be able to save a life by the prompt administration of mouth-to-mouth resuscitation. Immediate Action is Essential. Do not wait for a doctor or try to transport a victim to the hospital. Only certified personnel shall attempt mouth-to-mouth resuscitation.

G. **SHOCK**

Shock is the normal reaction of the body to loss of blood or any serious injury. Shock should be suspected and treated even if all symptoms are not obvious. Shock can kill.

Symptoms - Face may be pale, dull, and anxious. Expression may be vacant, pupils are dilated, person is vague and eyelids are drooped. Cold perspiration is on forehead and palms of hands. Skin is cold and clammy. Pulse is weak and shallow; person is sighing, yawning or gasping. Chills, nausea, and vomiting may be present.

Treatment - The victim should be laid down with legs elevated. Of the utmost importance in the prevention of and treatment for shock is to keep the victim warm. Wrap in blankets or warm clothing. In cold weather, external heat may be applied by using hot-water bottles, warm bags of salt or sand, and similar items. It is more important to prevent heat loss than it is to add heat.

Foreign objects should be removed from the victim's mouth; tight clothing should be loosened. The victim should have plenty of air. If he is unconscious, no liquids should be administered. If the victim is conscious, he may be given water, tea or coffee as hot as he can comfortably take it. Keep the victim calm and quiet and reassure the victim.

H. FRACTURES

Symptoms - There is a loss of motion in adjacent joints, swelling, protruding bone-i.e., pain or tenderness. Compare with the corresponding part for deformity.

Treatment - If a fracture is even suspected, treat as such. First treat for arterial bleeding if present. Immobilise the limb and apply splints. An adjacent sound limb (leg, finger, toe) will serve as a splint in many cases. Splint them as they lay.

Note: Any straight stick or rolled paper and magazine may be used if long enough to immobilise the entire limb. A belt or belts, ties or strips of clothing may be used to tie the splint in place. Do not affix ties within six inches (6") above or below the break. Do not move a person with suspected fracture of the back except in an extreme emergency, and then only with extreme care. If the patient must be moved, slip a straight board under him and keep him in the same position as when the break occurred.

I. THERMAL BURNS

Symptoms - There is reddening of skin and blistering or charring of tissues caused by heat (dry or moist) or electricity. If electrical burns, ensure power is isolated before approaching the casualty.

Treatment - Treatment of the burned patient consists of immersing the burned area in cold water as soon as possible after the injury. The temperature of the water should be comfortably cold for the patient. This is usually slightly under 20° C. Ice cubes may be added frequently to maintain a low temperature. Heat from the burned area raises the water temperature. Patients with burns over large parts of the body should be covered with a clean dry sheet or blanket and transported to a hospital immediately. Best results follow the earliest treatment after the burn. Always treat for shock.

Do not insist on placing a sensitive burn under a cold water tap or shower. . The pain caused by water pressure may offset the relief sought by the cold water and induce shock.

If burned surfaces is raw, cover with a loose, light, dry dressing after the water treatment is completed.

Severe or extensive burns will need the skilled services of a team of doctors in a hospital.

J. CLOTHING FIRE

The following procedures should be followed in the event of a clothing fire

- 1 Do Not Run. Running fans the flames.
- 2 If possible, wrap yourself in a fire blanket or woollen coat. Wrap it around the neck first. Drop to the floor and roll over slowly.
3. If there is nothing to wrap in, drop to the floor and roll over slowly.
4. Try not to inhale flame. Put your hands on opposite shoulders and pull your arms against your face for protection.
5. If water is near, douse yourself, and roll in the spilled water. If clothing of another person is on fire, use similar measures. It may be necessary to physically force the victim to lie down so you can roll him. Then, if water is handy, apply at once.

K. CHEMICAL BURNS

Treatment - If exposed to any chemical, flush the affected areas immediately and continuously with large amounts of water. Continue treatment for at least fifteen minutes to remove the chemical completely. Then treat as any other burn. The cold water treatment is effective for chemical burns as well.

Treat chemical burns of the eye immediately by washing the chemical out with a continuous, gentle stream of water from a faucet or a drinking fountain. Continue treatment for at least fifteen minutes. Cover the eyes with a sterile compress and get the injured person to a doctor as soon as possible.

L. HEAT PROSTRATION

(HEAT STROKE OR SUNSTROKE)

Do not confuse with heat exhaustion.

Symptoms - The face is red with no perspiration. The skin is hot and dry. The pulse is strong and rapid. Breathing is like snoring with possible unconsciousness and high temperature. This usually begins with a headache, dizziness, depressed feeling, and dryness of mouth and skin.

Treatment - Remove the patient to a cool place and remove clothing. Lay the patient on his back. Apply cold packs to the head. When the victim is conscious, give him cool sips of water. Rub the limbs, but on no account give any stimulants.

M. HEAT EXHAUSTION

Not to be confused with Heat Prostration

Symptoms - The victim's face is pale. There is sweating and the skin is moist and cool. The pulse beat is weak and shallow. The temperature is low. Symptoms usually begin with dizziness and nausea.

Treatment - Have the victim lie down and keep him cool. If the victim is conscious, give him stimulants and salt (half a teaspoon at a time with water at frequent intervals until a tablespoon in a quart of water is given).

N. FOREIGN BODY IN EYE

A foreign body in the eye must be removed immediately, preferably by a doctor. The eye must not be rubbed. This may drive particle deeper into tissues. If medical attention is required, place a light compress over the eye to protect it until the victim is taken to a doctor. Do not use an eye cup to wash the eye unless the cup is sterile. The use of a magnet to remove foreign bodies is prohibited.

O. CHOKING

Symptoms - Suspect food obstruction with every case of respiratory distress or loss of consciousness while eating.

Treatment - With the victim standing, wrap your arms around his waist from the back. Make a fist with one hand and grasp your fist with the other. Place the thumb side of your fist below the rib cage slightly above the navel. Then press your fist into the abdomen with a quick upward thrust and repeat several times if necessary. This can also be done with the victim sitting, if you include the chair back in your wrap.

If the victim is unconscious or extremely tall or heavy, kneel astride his hips, facing him, and with one hand on top of the other, place the heel of your bottom hand on the abdomen below the rib cage and slightly above the navel. Proceed with quick upward thrusts as described, repeating if necessary.

If victim vomits, turn him quickly on his side, face down, using index finger to sweep out mouth to prevent sucking back into throat.

IV. DRIVING SAFETY

A. GENERAL

Company vehicles will only be provided when there is a normal, ongoing, requirement for Company transportation to accomplish an assigned responsibility. While using a Company vehicle, employees will comply with all country and local laws pertaining to vehicles, roads and also the possession and use of alcoholic beverages and drugs (e.g., narcotics, barbiturates, amphetamines, etc.).

B. DRIVERS

Company vehicles will only be operated by Company employees with valid driving licenses.

Drivers will normally be full time employees on either the permanent or temporary payroll. The use of casual employees or contract personnel as drivers should be avoided whenever possible. Where a unit is assigned to a specific individual, that individual will be responsible for the upkeep of the vehicle and will ensure the use of the vehicle complies with Company policy. The vehicles will be operated in compliance with all appropriate country and local laws at all times.

C. DRIVING SAFETY

The basic goal is to minimise automotive accidents of all types to ensure the safety of Company employees and the general public and to avoid the expenses associated with accidents including vehicle repair, medical costs, litigation, lost productivity and poor public image through adverse publicity.

Special emphasis shall be put on the hazards of long distance and night driving in desert locations and remote areas through driver training and journey management/man lost procedures implementation.

D. DRIVERS TRAINING

Drivers will be selected initially and assessed periodically on the basis of physical fitness, experience, attitude, behaviour and safety consciousness. Every driver after completing an initial one day training/induction and familiarisation program at the safety department will be monitored carefully for a probation period of two weeks by the Safety Manager. Practical training while accompanied by an experienced driver or Transport Officer might be necessary if the driver has had no previous experience in that particular type of roads or terrain. This will be followed by an assessment report by the trainer advising suitability of the driver for the job. Subsequent driver's induction and training seminars will be conducted using demonstration material as and when required as determined by the Safety Manager.

E. **JOURNEY MANAGEMENT**

For projects in remote or desert areas and while commuting between the different work locations (camps, sites, fabrication and store yards, offices, etc.) drivers should follow a journey procedure involving a written plan communicated to the Transport Officers at the locations concerned covering:

1. Name of driver, number and type of vehicle, passengers names or load details.
2. Time of departure.
3. Estimated time of arrival.
4. Any intermediate station the driver might call upon, and the roads he will follow.

Reports on arrival, breakdowns, incidents, or delays beyond certain time shall be communicated among the designated personnel who will agree on the necessary action to be taken.

A notice board where the drivers record their journey particulars will be maintained at the site office.

F. **MAN LOST PROCEDURE**

The failure of a driver/vehicle to reach its destination by three (3) hours after its estimated time of arrival will initiate a man lost procedure by the officer at the arrival point which involves-

1. Report via telephone or radio link to starting point about non-arrival.
2. Report by similar means to Superintendent, Drilling Manager, Safety Manager consulting on further action, and keep them posted.
3. Arrange to send a utility crew in one or more search vehicles equipped with first aid kits and necessary mechanics tools. The crew will be instructed on the possible roads that the missing driver might have taken beside the one in the journey plan, as well as on the reporting procedure during emergencies.
4. At a certain stage, if the search efforts were not fruitful and at the discretion of the Superintendent, Drilling Manager the matter will be brought to the attention of the Client and or the local authorities for any possible help.

G. GENERAL SAFETY

1. Extreme care should be taken while overtaking other vehicles when driving over dusty roads.
2. The designated speed limits shall not be exceeded at any time.
3. Break a long journey with rest stops e.g., 20 minutes every two hours driving and avoid whenever possible driving at night in remote areas.
4. Seat belts shall be utilised at all times when a vehicle is in motion.
5. No vehicle shall be driven which has an obvious mechanical problem affecting the safety of the vehicle. Periodic mechanical inspection reports for each vehicle will be maintained by the transport section.
6. All country and local traffic laws shall be followed explicitly.
7. Vehicles will be equipped to meet Client's requirements e.g. roll over bars, fire extinguisher, additional spare tyre, etc.

H. ALCOHOL AND DRUGS

Alcohol is a drug and when taken by itself or in combination with other drugs, a driver's ability will be impaired.

Any person proven to be under the influence of alcohol or drugs while driving a Company unit will have his employment terminated.

When in the opinion of the driver, conditions for driving are unsafe for him, it shall be the driver's responsibility to stop driving.

V. HYDROGEN SULPHIDE (H₂S) HAZARDS AND SAFEGUARDS

H₂S is a flammable material that is highly toxic. It can and does kill. Training and certification in general H₂S safety is available from the Client's Safety Department.

A. PHYSICAL PROPERTIES

Physical properties of H₂S are highly explosive, highly corrosive, irritant to respiratory system and eyes; low concentration smells like rotten eggs; high concentrations may be undetectable by a victim since it paralyses the sense of smell. It is heavier than air; highly reactive in the presence of acids or strong oxidising agents; colourless; soluble in water and oil; and is deadly.

H₂S vapours are given off from gas (high sulphur content), sour crude, and sour condensate. Gas containing H₂S is being processed in some NGP plants. H₂S can be found in such places as control buildings, gas scrubbers, sewers, amine units, compressor buildings, meter houses, manifold areas, flare systems, pumps, scraper traps, tanks, etc. Never stand on the side of an opening that would enable escaping H₂S gas to blow into your face.

B. HARMFUL AMOUNTS

Amount of H₂S shown in parts per million (ppm) and percentage:

H₂S Concentration	Feature and Effect
10ppm (1/1000 of 1%)	Pungent smell of "rotten eggs". Safe for up to 8 hours exposure
100ppm (1/100 of 1%)	Destroys sense of smell in 3-5 minutes. May cause eyes and throat to sting
200ppm (1/100 of 1%)	Destroys sense of smell within seconds and will cause eyes and throat to sting
500ppm (5/100 of 1%)	30 minutes of exposure will cause loss of reasoning ability, loss of balance and respiratory paralysis. Requires prompt artificial resuscitation.
700ppm (7/100 of 1%)	Unconsciousness results after a maximum of 15 minutes exposure. Breathing will stop and death will result if not resuscitated promptly. Requires immediate artificial resuscitation.
1000ppm (1/10 of 1%)	Immediate unconsciousness. Death or permanent brain damage will result unless rescued and resuscitated promptly.

C. SYMPTOMS

Symptoms of H₂S are burning pain in eyes, inflammation of eye tissues, pains in nose and throat, coughing, shortness of breath, inflammation of stomach, headache, numbness, slow pulse, contracted pupils, convulsions, paralysis, and immediate death.

D. FIRST AID FOR H₂S POISONING

Rescuers shall wear fresh air equipment. No rescue attempt shall be made without fresh air equipment.

- I. Remove the victim to fresh pure air immediately, upwind of the leak if possible, and keep victim as warm and comfortable as possible.
2. If victim is not breathing, begin applying mouth-to-mouth resuscitation at once.
3. If H₂S gets in victim's eyes, wash with clean, cool water or a weak solution of boric acid; spread eyelids so solution will contact the whole eye surface.
4. Placing a wet towel or ice pack over victim's eyes will give temporary relief. Keep eyes covered and protected from the weather and sunlight.
5. Call a doctor and have victim taken to nearest hospital as quickly as possible.

Training and certification in general H₂S safety is available from the Safety Department.

VI. WORK EQUIPMENT

A. HAND TOOLS

1. GENERAL

Use the right tool for the job. Use a pry bar, not a file; a hammer, not a wrench; a proper size wrench, not a pair of pliers. If possible, pull rather than push when using a wrench.

Keep tools in good condition. Chisels with mushroomed heads, dull saws, hammers with cracked handles or end wrenches that have spread jaws should be repaired or discarded. Use tools properly. For example, it is not safe to use a screwdriver on an object held in your hand or to pull a knife toward your body or arm.

Keep tools in a safe place and not on overhead areas or on ladders. Screwdrivers or other sharp objects shall not be carried in a trouser pocket.

Using an adjustable wrench, the open jaw should face the user. Hammering on a wrench is poor practice unless it is designed for this purpose.

2. CUTTINGS TOOLS - SHARP IS SAFE

To prevent cuts on hands, metal, fibre or heavy cardboard, guards should be made to fit over sharp edges of tools when not in use. Chisels, axes, and similar tools shall be kept sharp for safety and efficiency.

3. STRIKING TOOLS

Frequently inspect driving faces of hammers chisels, drift pins, bars, and similar tools to eliminate mushroom heads, broken faces, and other defects. A tool holder shall be used when driving tools are being used.

4. PROPER USE

Use the proper tool for the work involved to ensure safety and efficiency. Obtain instruction or training before using a tool (hand or power) with which you are unfamiliar. Cheaters shall not be used on tools except on particular jobs which, in the opinion of the operating supervisor, a cheater is absolutely necessary.

When using a hammer and chisel, a face shield shall be worn.

B. PORTABLE ELECTRIC TOOLS AND EQUIPMENT

1. Manufacture's instructions shall be followed.
2. Goggles or face shields shall be worn where chips or dust may fly. No ties, jewellery or loose clothing should be worn by persons using drills, saws or grinders.
3. Electric shock is the hazard most common in the use of electric power tools.
4. Connect and disconnect portable electric tool accessories with the power switch on the tool in the off position.
5. Frequent inspection should be made to spot worn or broken external wiring.
6. When portable tools are used in wet locations, special precautions shall be taken to prevent electrical shock.
7. Most portable electric tools in use today have a three-wire (grounded) power cord. The ground is built-in. It does no good if the plug is not inserted into a grounded receptacle.
8. Special attention shall be given to the use of extension cords. Cords should not be dragged over the floor or ground. They should be placed where they will not be run over by equipment, and where they will not pose a trip hazard. Frequent inspection of their condition is required.

C. GRINDERS AND BUFFERS

To avoid an accident while using a grinder or buffer, follow these rules:

1. Protect your eyes, face, and neck by wearing a face shield.
2. Securely clamp the work rest in position so that it is not more than 1/8" from the wheel. Check this distance frequently, but never adjust while the wheel is turning.
3. Turn off grinder while you are adjusting or gauging your work or when you are not using it.
4. Hold your work properly so that the angle of cut is in the same direction as the wheel's motion.
5. Do not side grind or take too heavy a cut.
6. Do not apply work too quickly to a cold wheel.
7. The wheel should be true, balanced and dressed whenever necessary.
8. Grinding wheels should not be used for wood or soft metals as this will cause localised hot spots and can cause the wheel to overheat and explode.
9. Do not wear loose fitting cloth gloves when using a grinder.
10. Install new wheels properly, and where possible they should only be changed by a competent and authorised person
11. Proper guarding is to be utilised at all times.

D. AIR HOSES AND NOZZLES

Air hoses present a tripping or stumbling hazard. Where possible, elevate hoses over aisles and work area. When using an air gun for cleaning, protect your eyes with goggles. Always check the area in which the air hose is used for possible hazards. Notify personnel in the area that the air hose is being used. Keep hoses clean and reeled or hung when not in use. If an air nozzle is to be used for cleaning (dust, etc.), it shall be regulated so that no more than 30 psi is available at the nozzle, and goggles or a face shield must be worn.

E. SCAFFOLDS, LADDERS, AND WORKING AT HEIGHTS

Personnel working at heights should use proper and safe scaffold material and access ways and should wear full harness type safety belts (if not walking or climbing) tied to a suitable rigid part of the structure or the scaffold they are working on. Preferably metal tube scaffold will be used, only competent workmen shall carry out the erection, alteration and dismantling work. Only parts free from distortion or excessive corrosion will be used. They will be fixed and secured to prevent accidental displacement, and be rigidly connected to the equipment or structures where possible. Erected scaffolds should be inspected prior to any use. Metal scaffolds and ladders should be inspected frequently to determine that there are no buffs, loose rivets, splits, or excessive corrosion. Repairs to defects must be made immediately or the ladder or scaffolding material removed from service until repairs or replacements can be made. Personnel who use scaffolds and ladders shall visually inspect them prior to use.

1. SCAFFOLDS

Scaffold planks must be free of all defects, which would reduce functional strength. Scaffolding must be securely fastened and supported. Wooden scaffold should not have a span longer than eight feet between supports. Scaffolds (including staging) elevated to a height of six feet or more must have guard-rails and toe boards whenever practical. A safe access should be provided for climbing onto scaffold. Keep small tools, bolts or other loose material in containers when working on scaffold or on overhead platform,

2. LADDERS

Place a ladder so that the horizontal distance from the base to the vertical plane of the support is approximately one fourth the ladder length between supports. (For example: Place a 12-foot ladder so that the bottom is three feet away from the object against which the top is leaning.) If at all possible, the ladder should be long enough to extend 3-1/2 feet above the top support. A ladder should never be used in a horizontal position as a walkway or in lieu of a scaffold plank.

Always carry a ladder with safety shoes to rear, and front end elevated. Be extra careful when approaching doorways and corners. Never place a ladder in front of a door without first locking the door or placing someone on guard. When working on ladders, scaffolds or staging above surfaces exposed to traffic, the area below must be properly barricaded. Ladders should be secured at top with safety chain or rope whenever practical.

If your shoes are slippery, clean them before you climb. Face the ladder and use both hands while ascending or descending. Do not carry tools or equipment in your hands. Keep eyes on rung while climbing because there might be a broken rung. Don't reach out more than an easy arm's length from side of ladder. Do not leave tools on ladder. Do not permit more than one person on a ladder at one time. When you use a stepladder, be sure the legs are extended before climbing. Ladders constructed of metal or with metal side rails should not be used in areas where they may come into contact with electrical wires or electrical equipment. Make adjustments of extension ladders only when the user is standing at the base of the ladder so he can see when the locks are properly engaged.

Ensure at all times that the base of the ladder is resting on even ground. If, for any reason, it cannot be, use shims at the base to ensure it is level.

VII. FIRE PREVENTION AND SUPPRESSION

Fire prevention and control is of utmost importance in the workplace. It is every employees responsibility to utilize good practises and sound decisions when concerned with fire prevention and safety. Only properly trainees, equipped and designated employees should respond to fire related emergencies. Keeping fire useful instead of destructive depends upon one word "Control". It takes three things to start a fire. There are four ways to stop a fire.

In order to start a fire there must be:

- Fuel - a combustible material.
- Heat - enough to raise the material to its ignition temperature.
- Oxygen - (usually air) as the normal atmosphere contains 21% oxygen).

One of the following must be done to extinguish a fire:

1. Eliminate the Air
Replace the air with an inert gas. Exclude air with a non-combustible cover or use a chemical which will dilute the oxygen in the air below the point required to support combustion.
2. Remove or shut off the fuel supply

Divert or shut off the flow in liquid or gas fuel supply lines.
3. Reduce the temperature below the ignition point cool the burning materials with water or chemicals.
4. Break up the chemical chain reaction

Dry chemical extinguishers attack a fire this way.

Although in fire fighting, all four of these methods may be used to extinguish a fire, it is important to select the most effective method and use it first.

A. TYPE OF FIRES

1. "CLASS A" FIRES

Ordinary combustible materials, including wood, paper, textiles, and plastics.
Extinguishing agents are water, water-fog, soda, and solutions.

2. "CLASS B" FIRES

Fires in flammable materials where a smothering or blanketing effect is essential. LPG, gasoline, oils, greases, paints, thinners, and petroleum plastics are among "Class B" flammables. Extinguishing agents are steam, water-fog, dry chemical, and CO₂.

3. "CLASS C" FIRES

Fires in LIVE electrical equipment, requiring the use of an extinguishing agent, which will not conduct electricity. Electric motors, controls, etc., are examples of a Class C fire. Extinguishing agents are CO₂ and dry chemical powder. NEVER USE WATER to extinguish this type of fire because of potential electrical shock hazards.

4. "CLASS D" FIRES

Combustible metals such as magnesium, titanium and sodium. Special dry chemical powder agents are used to extinguish these fires.

B. EXTINGUISHER INSPECTION AND MAINTENANCE

History has proven that nearly every fire extinguisher failure can be traced to human negligence. The importance of properly charged extinguishers cannot be over emphasised. DO NOT tamper with fire extinguishers.

Keep fire extinguishing equipment unobstructed and in good condition. Recharge or have repaired, all fire extinguishing equipment that has been used or is in poor condition.

Inspection is a "quick check" intended to give reasonable assurance that the extinguisher is fully charged and operable. The value of an inspection lies in the frequency, regularity, and thoroughness with which it is conducted. Inspections should always be conducted at regular intervals and should be recorded (see sample in Appendix IX form HSE-YD-018)

An inspection should ensure that the extinguisher:

- Is at its designated place.
- Is properly tagged and the tag shows the extinguisher has been maintained within one year and has not been discharged.
- Has not been tampered with. Make sure seal is in place and has not been broken.
- Has no obvious physical damage.

- Has no external corrosion.
- Has no other impairments that might render the unit inoperative.

If the extinguisher fails any of the above, a 'breakdown inspection' must be performed.

C. GENERAL PRECAUTIONS :

1. All accidental fires and/or explosion hazards on the premises or in association with company operations are to be reported immediately to the supervisor.
2. The prevention of fires is very important. Good housekeeping practises and Scheduled equipment maintenance programs must be followed to keep fire hazards at the minimum.
3. Inspection and maintenance of all fire protection systems and equipments must be performed routinely. Records of all inspections and maintenance must be maintained at each facility.
4. All employees must be trained in the proper use of available fire fighting equipment.
5. Fire protection equipment must be located in designated areas that are clearly identified with appropriate markings. Fire protection equipment is to be located in the vicinity of likely fire hazards and must be accessible at all times to operating personnel.
6. Fire extinguishers which have been used must be recharged or replaced immediately. Report any used, missing or empty fire extinguishers to the supervisor. All extinguisher hose nozzles must be kept free of obstruction at all times.
7. Fire drills must be held at regular intervals to familiarize personnel with location and operation of fire extinguishing equipment. Fire escapes and exit paths must be identified.
8. Fire water pumps must be run regularly.
9. Exits must remain unblocked at all times and must be clearly labelled "EXIT".

VIII. IN PLANT WELDING

1. Use of welding equipment is restricted to employees who have been assigned to this work by a Supervisor. Permission to cut, weld or the use of other ignition sources will not be granted in hazardous locations where the necessary results can be obtained by less hazardous means.
2. Approval of the Supervisor must be granted before any welding or cutting is started and where appropriate, a work permit will be issued.
3. When welding or cutting is done in a potentially hazardous area, the Supervisor shall verify that the area is safe for welding or cutting; and a fire extinguisher must be immediately available. In those cases where a change in ambient conditions, i.e. wind direction or velocity, could result in a hazardous situation, a fire watch shall be present.
4. Before any welding is started on a vessel that has contained flammable products, the vessel must be cleaned, ventilated, certified as "gas-free", and all lines blinded. The testing of the gas content should be done with an approved gas indicator in good condition.
5. When welding in a process area, the ground or cement slab should be kept continuously wet to control weld slag.
- 6- Welders and fire watches must be on the alert for hydrocarbon gas leaks or oil vapour conditions, which may start after welding has begun.
7. Welders and helpers at all times while welding and chipping, no matter how small the job must wear approved goggles. It is the responsibility of the welder to see that his helper wears proper type goggles.
8. If welding is going on in open air or in areas close to other workers, a shield must be erected around welding job. This is absolutely essential in case of electric welding. Other workers must be warned to keep away from welding flame or arc and avoid looking at it.
9. Handle both oxygen and acetylene cylinders with care, even when empty. Rough handling damages cylinders and may cause a leak, with resultant fire or explosion. Cylinders must be tied or chained securely at all times in an upright position. Valves of cylinders should be turned off when not in use. The protective caps for valves should always be in place when cylinders are being moved or not in use. Protective caps are not designed to be used as lifting devices. This practice is prohibited. Oxygen cylinders must be stored separately from acetylene cylinders, where possible a distance of 3m should exist.

10. Oxygen under pressure forms an explosive mixture with oil, grease, and other hydrocarbon materials. Regulators, valves, gauges or fittings must not have any oil, grease or lubricant used on them, nor should they be handled with greasy hands or gloves.

IX. LOCKOUT AND TAG-OUT PROCEDURE

A. POLICY

Any equipment which could cause bodily injury by contact with electrically energised parts, by accidental start-up, by release of pressure (air, steam or hydraulic) or by contact with hydrocarbons or other hazardous materials, shall be de-energised, de-pressured, purged, rinsed, and drained and properly locked-out and tagged before any work is performed on that equipment. This policy/procedure applies to all employees who are involved with or affected by the servicing and/or maintenance of equipment in which the unexpected energization, start-up or release of stored energy that could cause injury to employees. A work permit would be required, to carry out work on energized equipments where lockout /tag out procedure has to be followed.

B. GENERAL INFORMATION ON LOCKS

Each maintenance employee who may need a lock will be issued a unique lock and key and should not exchange locks or give the key to another person. If an employee forgets to remove his/her lock from an electrical disconnect, his/her Supervisor must first attempt to contact the employee to arrange for removal of the lock. If the employee is out of the plant or otherwise unavailable, a master key for maintenance locks can be obtained from the Safety Manager. Cutting a lock off an electrical disconnect should be considered only in an emergency.

C. ELECTRICAL/MECHANICAL LOCKOUT PROCEDURES

An initial evaluation of each piece of machinery or process shall be performed to identify potential exposures which must be isolated before maintenance or adjustment activities can be performed safely. Consideration should be given to all exposures, including but not limited to:

1. Electrical hazards – direct contact with energised circuits or the unexpected electrical activation of machinery or processes.
2. Mechanical hazards – exposure to moving machinery or processes components, such as conveyers, fan blades, presses, pump shafts, couplings etc. The power sources for the machine or process may be electric motors, gasoline or diesel engines; gas, steam or water turbines etc.

3. Pressure hazards – direct contact with pressurized gases or liquids that may be released from tanks, pipes, valves etc.
4. Thermal energy hazards – contact with steam systems, furnaces, open flames, burners, heaters etc.
5. Radiation hazards – exposure to various instruments, etc utilizing radiation sources
6. Stored energy hazards – contact with electrical batteries or capacitors, pressurised Gas or liquid in tanks or pipes (pneumatic, hydraulic etc); heat storage devices etc.
7. Hazardous agents – exposure to flammable, toxic or oxygen deficient atmospheres as a result of accidental release of hazardous agents.

An adequate supply of lockout/tagout equipments such as those described below should be distributed or made available as necessary at each facility.

a. Locks –

1. Locks used for the isolation of energy sources should be standardised for the company and should be used solely for lockout/tagout purposes as described herein.
2. Generally, each lock should be keyed differently to preclude the possibility of injury due to the accidental removal of the wrong lock. Each employee 's key should fit only his lock. Selected supervisory employees may be assigned a master key to open the safety locks .
3. Each employee engaged in a work activity which requires isolation of energy Sources should place his lock, tag etc on the isolating device to ensure start Up cannot be accomplished without their knowledge.
4. A procedure requiring a thorough investigation and signed approval should be established for those situations where it becomes necessary to remove another employees lockout/tagout equipment.
5. Locks may be colour coded or stamped with an identifying letter or number or have a metal tag attached to signify the specific shift, department or employee.

b. Tags –

1. Locks are the preferred mechanisms for the positive isolation of the potential exposures. When an isolating device is locked out, a tag should be used as a supplement to warn against accidental or unauthorized operation. Where locks cannot be applied or are not feasible, tags alone may be fixed to isolating devices. In these cases additional precautions should be employed, such as removing fuses, blocking moving parts of machinery, inserting line blinds, disconnecting piping etc.
2. Tags should be standardized with a “ Danger, Do not Operate” or other appropriate terminology and should prohibit the unauthorized removal of the tag or operation of the isolated device.

Lockout/tagout equipment should be placed on the primary source of energy or exposure, not on the control system or devices. For example, electrical disconnects should be locked and tagged rather than start/stop switches. All appropriate personnel should be notified prior to isolating or re-energizing a process or a piece of machinery. Before work is begun on a process or piece of machinery, the effectiveness of lockout/tagout devices should be tested. All employees should be educated and trained regarding the purpose and the operation of the lockout/tagout procedure.

CAUTION: Return operating controls to "neutral" or "off" position after the test.

The equipment is now locked out or tagged out.

D. **RESTORING EQUIPMENT TO NORMAL PRODUCTION MODE**

After the servicing and/or maintenance is complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

After all tools have been removed from the machine or equipment, guards have been reinstalled and employees are in the clear, remove all lockout or tag-out devices to restore energy to the machine or equipment.

X CONFINED SPACE ENTRY**A. DEFINITION**

A confined space is any tank, vessel, tower, heater, reactor, exchanger or any other space with restricted entry and ventilation which:

1. Must be entered through a manhole or other restricted opening.
2. May have unfavourable natural ventilation.
3. Could contain or produce dangerous air contaminants.
4. Is not intended for continuous employee occupancy.

B POLICY

All confined space entries must have the prior approval of the operations supervisor .An Entry Permit is required before any person enters a confined space.(See sample in Appendix IX form HSE-YD-006) A combustible gas test and an oxygen test are required before a permit is issued.

Prior to starting work in vessels, tanks, or confined spaces , each should first be cleaned and / or purged of any toxic materials.Depending on the existing hazard, purging can include either water, steam, nitrogen or air.Finally, the unit is vented to ensure it is gas-free, pressure free, and all lines blanked or disconnected.

In addition, any confined space that may contain hydrogen sulphide (H₂S), sulphur dioxide, carbon monoxide or any other toxic gas or vapour may require specific toxic gas tests. If these tests indicate dangerous or unhealthy atmospheric conditions, the Entry Permit may be denied or restricted as specified by the Safety Department.

If the confined space previously contained toxic materials,or if any obnoxious fumes are present ,additional checks must be conducted to determine appropriate procedures necessary to allow safe entry

Pumps / motors used to operate any vessel are to be locked out / tagged out at the electrical breaker prior to sign off on the permit by the operating supervisor.The electrical connection must then be tested by the supervisor to determine proper lockout.

Positive fresh air ventilation must be established in the vessel for atleast 30 mins and must continue to be used throughout the work performed, where necessary.

Supervisors must review and sign-off all Entry Permits issued in their assigned areas and will ensure that other workers in the area are aware of the work being done.

Person entering the confined space must be advised (by the supervisor signing the permit) of the potential hazards involved, precautions necessary and the equipment required before entry. The workers performing the actual "entry" are responsible for following all the precautions listed on the Entry Permits and Entry Tag, as well as all other applicable safety rules. They may also be required to sign the permit.

Suitable protective clothing, goggles, gloves, boots, chemical suits, etc. must be worn when evidence of corrosive and / or toxic hazards exist.

In case of an emergency ,or change in the work conditions due to climatic changes, the permit is no longer in effect and work cannot be continued.

The permit System for employees :

1. The confined space entry permit is originated by the location manager or the Safety officer.
2. The permit form is completed in full and is dated for one shift only.
3. Before sign off ,the supervisor / safety officer incharge of the area and / or department where work is to be done must verify the following :
 - a) The location of the job;
 - b) Type of work to be done;
 - c) That all hazards have been evaluated;
 - d) That necessary protective measures have been implemented.

Contractors will comply with the same rules and will follow the same procedures required of H.T.C. personnel in regard to Entry Permits.

C. ENTRY TAGS

All entrances to a confined space must be tagged before any entry is considered. If there is no tag or if the entryway is tagged with a "**Do Not Enter**" tag, no person shall enter the confined space.

Red Tag - A red tag indicates that the confined space may be entered only while wearing supplied air respirators. Other protective equipment such as a lifeline, egress bottle, slicker suits, rubber boots, and gloves may be required as specified on the tag.

Blue Tag - A blue tag indicates that entry can be made without protective equipment (besides hard hat and safety glasses).

Entry tags may be removed only in the presence of and under the direct supervision of the Safety officer, Rig Manager or operation Supervisor. All tags must be returned to the Safety Department.

D. SAFETY WATCH

A Safety Watch (standby person) is required for all confined space entry jobs. (The Safety Watch must be able to speak and understand English.)

The Safety Watch shall remain at the man-way or entrance to the confined space and shall be in continuous visual contact with workers within the vessel or confined space, whenever practical.

The Safety Watch shall not enter the confined space or leave the man-way area unless properly relieved.

If supplied air respirators are in use, the Safety Watch shall be equipped with self-contained breathing apparatus.

E. GAS TESTING CRITERIA

No Entry Permit shall be issued until a combustible gas and oxygen test are taken.

Appropriate respiratory protective equipment shall be specified by the Safety Department and required for entry if one or more of the following conditions exists:

1. If any combustible gas is detected.
2. If the oxygen content is less than 20.0%.
3. If the hydrogen sulphide concentration exceeds 10 ppm.
4. If the sulphur dioxide concentration exceeds 3 ppm.
5. If the carbon monoxide concentration exceeds 35 ppm.
6. If there is any residual product or other potentially hazardous material in the vessel or confined space.

Gas tests shall be repeated as necessary to ensure the validity of the Entry Permit restrictions.

XI. PRESSURE TESTING SAFETY PROCEDURE**A. TESTS, GENERAL**

Prior to initial operation, installed piping (and maybe vessels) shall be pressure tested to assure tightness and strength. The pressure test shall be maintained for a sufficient time to determine if there are any leaks but not less than ten minutes. Safe practices should be observed and work shall proceed according to an approved procedure by competent personnel.

When conducting pressure tests at metal temperatures near the ductile-to-brittle transition temperature of the material, the possibility of brittle fracture shall be considered.

B. TEST FLUID

The test shall be hydrostatic using water, except as follows:

If there is a possibility of damage due to freezing or if the operating fluid or piping material would be adversely affected by water, any other suitable liquid may be used. If a flammable liquid is used, its flash point shall not be less than 1200 F (500C) and consideration shall be given to the test environment. Testing with flammable liquids shall only be carried out as a last resort.

If hydrostatic testing is not considered practicable, a pneumatic test in accordance with an approved procedure may be substituted, using air or another non-flammable gas.

A preliminary air test at not more than 25 psi (0.17 Mpa) gauge pressure may be made prior to hydrostatic test in order to locate major leaks. Pneumatic testing involves the hazard due to possible release of energy stored in compressed air. Therefore, particular care must be taken to minimise the damage or injury due to failure of any material. The test temperature is important in this regard and must be considered when the choice of material is made in the original design. The pressure shall be increased gradually in steps providing sufficient time for all the piping to equalise strains during test and to check for leaks.

C. SAFETY MEASURES

1. Notify all affected personnel that a pressure test is to be conducted, the exact location and reason for it. The person responsible for carrying out the pressure test shall be fully aware of the potential hazards associated with pressure testing.
2. Test area must be secured by roping the area off with yellow caution rope and attached signs stating, "CAUTION - HAZARDOUS AREA - DO NOT ENTER". A minimum distance of 20 feet must be provided between the piping system or vessel being tested and the caution barrier.
3. Piping designed for vapour or gas shall be provided with additional temporary supports, if necessary, to support the weight of the test liquid.
4. Expansion joints shall be provided with temporary restraint, if required, for additional pressure load under test or shall be isolated from the test.
5. Equipment which is not to be subjected to the pressure test shall be either disconnected from the piping or isolated by blinds or other means during the test. Valves may be used provided that the valve (including the closure mechanism) is suitable for the proposed test pressure.
6. If a pressure test is to be maintained for a period of time and the test liquid in the system is subject to thermal expansion, precautions shall be taken to avoid excessive pressure.

XII. EXCAVATION**A. INTRODUCTION**

Ground adjacent to an excavated area cannot be relied upon to support its own weight. Even rock that looks solid from a cursory inspection can collapse without warning. The sides of any type of excavation almost invariably need to be suitably shored or sloped back to the natural angle of repose. To minimise the risk involved with excavation the following factors will be considered before the job starts:

1. Size, method and purpose of the excavation.
2. Nature of the ground, including the proximity of any made-up ground.
3. Proximity of adjacent structures and the position of underground obstructions such as pipes and cables.
4. Weather and moisture conditions.
5. Adjacent roads, footpaths and sources of vibrations.

Consideration of the above factors will indicate the safety measures to be taken and whether the sides of the excavation can be sloped back to a safe angle or alternatively the necessary protection required. Adequate and suitable shoring material will be on site for use whenever deep excavation work is to be carried out. Shallow excavation work may also require shoring. Failure to take this precaution is the root cause of the majority of excavation accidents.

B. UNDERGROUND OBSTRUCTIONS

Whenever the presence of underground pipes, cables, vessels, or structures is known or suspected, mechanical excavators will not be used until all such obstructions have been exposed by hand digging. Mechanical excavators will not be used within 5 feet of any such obstruction. Pneumatic breakers will only be used where necessary to break concrete or other hard surfaces. An underground services detector will be used to locate any suspected underground pipes and cables,

C. SAFETY MEASURES

1. As soon as excavation reaches a depth where men working in it would be buried or trapped if there were a collapse of the sides, suitable shoring will be installed or the sides sloped back to a safe angle. Shoring may be of timber or any other suitable material such as steel sheet piling. In accordance with standard industrial practice and with approval of Client's Site Engineer, pipeline trenches in firm grounds need not be shored.
2. The determination of the angle of slope, or the choice will be based on careful evaluation of pertinent factors such as: depth of cut, possible variations in water content of the material while the excavation is open. Anticipated changes in materials from exposures to air, sun, or water; loading imposed by structures, equipment, overlying material or stored material; and vibrations from equipment, blasting and traffic will also be considered. Every part of any excavation where persons are employed will be inspected by a competent person before the start of work or at least once on every day during which persons are employed there.
3. Where vehicles or equipment dump materials into an excavation stop blocks or other suitable means will be provided and used to prevent such vehicles or equipment overrunning the edge.
4. Temporary crossings for personnel over trenches more than 150cm deep will be at least 600 mm wide and sufficiently strong with a railing on one side.
5. It might be necessary to obtain an excavation work permit from the client operations or the local authorities while working near or inside existing facilities
6. All excavations will be back-filled and consolidated, and the surface will be left level and in good condition, as soon as is practicable.
7. Safe means of getting into and out of an excavation will be provided at intervals not to exceed 15 meters (except on pipelines). Where there is a possibility that the excavation may become flooded, intervals will not exceed 7.5 meters. Ladders will be placed at an angle 75° extended at least 1 meter above the stepping off point, and if more than 3 meters in length, be securely fixed.
8. In a cross-country pipeline trench, access for workers required to enter the trench will be provided.

9. Where there is reason to suspect the presence of a hazardous atmosphere in an excavation, tests will be carried out by a qualified person, and, where necessary, artificial ventilation used or other appropriate precautions taken before men enter.
10. Where an internal combustion engine is used in an excavation, special precautions will be taken to ensure that exhaust gases are discharged so as not to be a hazard to men working in the excavation.
11. Where there is likelihood of persons, vehicles, or equipment falling into an excavation, suitable barriers will be erected. If people or vehicles may be in the vicinity after dark, warning lights will be used to mark the limits of the work.
12. Excavation work in roads, streets, and sidewalks will not be undertaken without the prior approval of the relevant authorities. Excavation work on public highways will have to be cleared in advance with Government relations and special measures that they might specify, will be implemented.

XIII. RADIOGRAPHY WORK

A. GENERAL

All activities associated or involved with radioactive material shall be performed in accordance with this procedure.

All exposures will be kept as low as reasonably achievable and will not exceed the limits shown below:

The whole-body dose equivalent will not exceed 50mSv (5 rem) in any one year period.

The average annual dose equivalent will not exceed 5mSv (0.5 rem).

Substances or apparatus that emit ionising radiation will not be brought on the job site without the written approval of the Client and the local authorities.

B. RADIOLOGICAL WORKERS: CLASSIFICATION AND REQUIREMENTS

1. Persons below 18 years of age will not be involved in radiological work.
2. Any person who may be exposed to a dose equivalent of 5mSv (0.5 rem) will be classified as a radiological worker.
(Typically this will include radiographers and their helpers.)
3. Any person who may be exposed to radioactive emission levels in excess of 7.5mSv/h (0.75 mReh/h).
4. Every radiological worker will be fully acquainted with the rules and regulations contained within the radiation section of this document.
5. Every activity requiring the exposure or handling of radioactive sources will be performed when two persons are present, at least one of these will be trained and qualified to an internationally acceptable standard for the work in which they are engaged.
6. All radiological workers will be medically examined before being employed for that work and re-examined annually.
7. All radiological workers will wear a personal film badge relevant to the type of radiation to which they may be exposed, these film badges are to be changed and sent for analysis on a monthly basis and the results of analysis advised to the Safety Department who will keep records.

8. All radiological workers will wear personal dose meters and a log kept of the readings. If a radiation exposure is suspected then the film badge will be sent for analysis as soon as possible.
9. During handling of radioactive sources a constant reading radiation meter will be at hand. This meter will be calibrated and certified at least annually.

C. **SAFETY MEASURES**

1. Any area where radiological work is regularly performed will be walled off and have black and yellow trefoil warning signs posted outside it. Unauthorised personnel shall not be allowed into the area. The maximum radiation levels outside the area will be 2.5 mSv/h (0.25 mReh/h).
2. An area of irregular use of radiological sources, e.g. a plant construction area, will have the work area indicated by checker tape or rope with black and yellow trefoil warning signs. The radiation levels outside this area will be checked with a radiation meter to ensure they do not exceed 7.5 mSv/h (0.75 mRem/h) and all non-classified personnel shall be kept out of this area.

D. **CONTROL AND TRANSPORT OF RADIOACTIVE SOURCES**

1. Radioactive substances will be kept in specially designed containers with proper shielding, shutters and locks.
2. All radioactive substances and equipment in use or storage on or around a project sight will be notified to the Safety Department in writing with the following information:
 - a. Type of radioactive substance.
 - b. Sealed or unsealed sources.
 - c. Nuclide (type of substance).
 - d. Activity, including half life data where appropriate (Becquerel or curie).
 - e. Date of receipt.
 - f. Storage location.
 - g. Date of disposal.
 - h. Method of disposal.
3. Any change of storage location is to be advised to the Safety Department in writing.
4. Any radioactive source shall be stored on site for the absolute minimum amount of time.

4. X-ray equipment will be registered with the Safety Department and the following data to be submitted.
 - a. Make and type.
 - b. Maximum tube voltage.
 - c. Location and usage.
5. Decay charts will be kept for all sources with the classified persons using them.
6. A record will be maintained of the radiation levels emitted from the exterior of containers by having tests performed on the container at least annually for all sources and six monthly on alpha emitting sources with the first reading taken prior to or on receipt on project site. Further recording will be taken if the source is damaged.
7. Inspection measurements will also be performed on x-ray equipment at least annually.
8. A daily log will be maintained for each source to show use:
 - a. Time out of storage.
 - b. Area of use.
 - c. Time returned to storage.
 - d. Name(s) of user.
9. Source substances will only be transported in properly designed transport containers which do not emit more than 0.1 mSv/h at 1 m from the source.
10. Any loss of a radioactive source will be reported to the local authority controlling it and the Safety Department **IMMEDIATELY**.
11. Personnel will not travel in the same compartment of a vehicle as a radioactive source.
12. All radioactive sources being transported will be secured such that they cannot be damaged or lost in transit.
13. All vehicles transporting radioactive sources will:
 - a. Display yellow and black trefoil signs on the entry to the compartment containing the source and at the front and rear of the vehicle
 - b. Display a fire proof warning notice front and rear stating the contact and telephone number of the relevant authority controlling it.

- c. Carry a portable halon or CO₂ type fire extinguisher.
 - d. When sources are not in an approved storage pit they will not be left unattended.
14. Transport of radioactive substances will be done by a classified radiological worker who will be wearing his film badge and personal dosimeter while doing so.

E. STORAGE OF SOURCES

- 1. Radioactive substances will be stored in a locked underground pit from which the radiation level will not exceed 2.5 mSv/h (0.26 mRem/h).
- 2. The storage pit will be located inside a securely fenced area with a locked gate away from building and road ways:
 - a. The emission level outside this fence will not exceed 1mSv/h (0.1 mRem/h).
 - b. The fence will be at least 3m from the pit edge.
- 3. Yellow and black trefoil warning signs will be displayed on all sides of the fenced area.
- 4. Sources will only be put into or removed from the pit by classified radiological workers.
- 5. X-ray equipment will not be left unattended if in an operable condition and the x-ray room or equipment will be kept locked when not in use.

F. EMERGENCY PROCEDURES

- 1. If a person is suspected of receiving a dose above the allowable limits of Section A, then the Safety Department shall be informed immediately.
- 2. Provisions will be made to return sources to a sealed container in the event of any emergency.

G. WASTE HANDLING AND DISPOSAL

- 1. Sealed sources will be disposed of by returning to the supplier or an approved international radioactive waste disposal agency as agreed with the Safety Department and as required by the local authorities.
- 2. Waste is considered radioactive as long as its activity is higher than 100 Bq (2nCi) per gram.

XIV. CRANES AND LIFTING GEAR

A. CRANES

1. Due to its nature of work, crane operation involves a higher degree of risk and constitutes a bigger safety hazard than other equipment if not carried out properly and as such crane operators and riggers should be carefully selected.
2. The operator will be in possession of a current Crane Operator's License applicable to the country in which the project is located, conversant with the type of crane he will operate. His competence must be beyond doubt as judged after tests by the Superintendent.
3. The operator will not engage in any practice which will divert his attention while operating the crane, nor operate the crane if he feels physically unfit or unwell.
4. When handling loads, the operator will not start crane movement until load is within his range of vision.
5. The crane operator will respond to operating signals only from the appointed rigger. He will obey an emergency stop signal at any time.
6. The crane operator is in command of all crane handling operations and is primarily responsible for carrying out the crane operations in a safe and efficient manner. The crane operator will have the authority to stop and refuse to handle loads until safe conditions have been re-established.
7. Each day before the crane is put into use the operator will ensure that all safety devices are set and operating correctly and that the wire ropes are in approved working condition.
8. Cranes will not be used if any limit switches or other safety equipment are out of order.
9. A crane will only be used for vertical lowering and lifting of loads.
10. The operator of a crane will not leave the operating seat when any load is hanging on the hook.
11. A suitable container or basket will be used for mass transportation of loose material so that no material is likely to fall during operations.

12. The slinger/rigger is responsible for properly attaching the load to the crane and giving the correct hand signals to the crane operator. Correct slinging practices must be followed at all times.

All repairs and maintenance work on cranes shall be carried out by competent technicians in accordance with the manufacturers recommendations. Proper records of major repairs shall be maintained. Welding on the hook sections or any critical structural member shall be carried out under the supervision of a welding inspector, to be followed by non-destructive testing, as appropriate, and a proof test.

At least once every period of 12 months each crane will be subjected to an independent survey. This survey consists of:-

1. A thorough visual examination and non-destructive testing of components if required by the inspector.
2. A load test.

A copy of a test certificate will be requested and kept on file by the Superintendent and the Safety Department.

B. LIFTING GEAR

Riggers handling lifting gear shall:

1. Carefully assess the weight of the load.
2. Work out which are the correct suspension points in order for the load to be correctly balanced.
3. Check the efficiency of the ropes and chains and straps prior to each use.
4. Use the correct equipment for the job making the slings in the correct way.
5. Check the maximum safe working load of the slings and shackles on the chart.
6. Protect the safety of others by keeping them away from, and preventing them from crossing the area where work is in progress.
7. Clearly indicate the manoeuvres to be carried out to the crane operator.

8. A colour coding system will be adopted for all lifting equipment to identify the operation/inspection schedule. Colour code identity boards will be located at all working areas so that users may be instantly aware of the inspection validity period of each item of lifting equipment.
9. A register of all lifting equipment will be kept and regularly updated. If any piece of lifting equipment is taken out of service, for whatever reason, it must be noted in the lifting equipment register.
10. Frequent inspections will be made of all lifting equipment and if there are any doubts as to the safety of this equipment it will not be used.

C. COLOUR CODING PROCEDURE :

1. All lifting gears and lifting equipments including slings, shackles, hooks, turn-buckles , chains , connecting links , safety harnesses , lanyards etc would be inspected every 6 months and colour coded.
2. Inspection would be either a third party inspection , or would be carried out by the onsite safety officer. The inspection criteria is to look out for wear and tear of the equipment including bends, cracks, cuts, condition of the threads etc and to identify the ones that are not fit for further use and remove from service.
3. The colours that would be used for colour coding are: White , yellow , blue , red .The Equipment unfit for use would be marked-RED and be removed from service. A register has to be maintained , and updated periodically after the inspection and maintained in the onsite files. See sample (Appendix IX , HSE YD-016 form)
4. Colour code identity boards would be placed at prominent workareas , so as to make the workers aware of the prevailing colour code , its validity period; so as to clearly identify the lifting equipments that are fit for use.

XV. SITE STORAGE AND HANDLING OF GAS CYLINDERS**A. GENERAL**

1. The gases contained in cylinders are identified by the colour or combination of colours painted on the cylinders. Charts showing the appropriate colour codes will be on display for reference by users.
2. All gas cylinders received will be examined for damage and correct colour coding. Cylinders which are not in good condition, will be returned to the supplier immediately.
3. Gas cylinders will be handled with care, they will not be dropped, thrown about, or left in positions where they may be subject to damage, and should not be subjected to temperatures over 54.⁰ C or to a direct contact with a flame.
4. Cylinders will be prevented from movement during transportation. Cylinders will not project over the end or sides of the vehicle. Whenever possible, all gas cylinders will be transported upright. The vehicles tailgate will be closed and fastened. Valve caps will be fitted when cylinders are not in use.
5. Cylinders will be stored in a well ventilated area protected from the direct sun rays by a sun shield. Cylinders containing flammable gases will not be stored with cylinders containing oxygen.
6. Only standard keys will be used to open the valve. All valves will be cracked (vented) gently before use.
7. Repairs or adjustments will not be made to gas cylinders other than the normal regulation of the valve.
8. Cylinder valves will be closed at all times except when gas is being used.
9. Cylinders will not be placed where they might become part of an electrical circuit. If cylinders are used in conjunction with electric welding, precautions will be taken against accidentally grounding the cylinders and allowing them to be burned by electric welding arc.
10. Threads on regulators will be the same as on the cylinder valve outlet. Force will not be used on connections that do not fit.

11. Regulators, gauges, hoses, etc. provided for use with a particular gas will not be used on cylinders containing gases with different properties.
12. Before a regulator is removed from a cylinder, the cylinder valve will be closed and all pressure released from the regulator.
13. Ignition sources will be kept away from cylinders. A flame will never be used to detect leaks. Soapy water can be used to detect flammable gas leaks.
14. Gas cylinders will not be used as rollers, supports or for any purpose other than to carry gas.
15. Cylinders will never be dropped from a height or subject to mechanical shock, acetylene cylinders should **always** be kept in the vertical position.

B. LPG PROPERTIES AND HAZARDS

As the name implies, LPG or "Liquefied Petroleum Gas" is petroleum derived gas which is compressed into a liquid and stored and handled as a liquid under pressure. It is commonly called "LP-Gas". LPG is odourless and colourless in its natural form. It is difficult to detect unless an odorising agent has been added.

The boiling points of LPG materials are well below usual ambient temperatures. A LPG product, when released to atmospheric pressure, will quickly boil or "flash" into vapour and can create a flammable atmosphere over a large area. For example, one gallon of butane vaporised and mixed with air in proportions corresponding to the lower flammable limit will create a flammable atmosphere in a 1 meter layer over an area 7.5 meters in diameter.

LPG gases are not considered toxic. They are a simple asphyxiant in that they can dilute the oxygen content of air to levels insufficient for breathing.

XVI. HAZARD COMMUNICATION PROGRAM**A. POLICY**

It is hereby stated that, the hazard communication programs at H.T.C work operations complies with the OSHA Hazard Communication standard, 29 CFR 1910.1200; by compiling a list of hazardous chemicals, by using Material Safety Data sheets, by ensuring that containers are labelled , and by providing adequate employee training.

This program applies to all work operations, were employees may be exposed to hazardous substances under normal working conditions. The Safety Manager is the program Co-ordinator who will review and update the program as necessary. Copies of the written program may be obtained from the Safety Manager's office and the respective worksite supervisor's office for reviews by all employees.

B. PURPOSE

The purpose of the program, is to inform the employees about the contents of the Hazard Communication Standard, the hazardous properties of the chemicals which they would be exposed to, safe handling procedures, and measures to take for protection from these chemicals.

C. MATERIAL SAFETY DATA SHEETS

The MSDS provides with specific information of the chemicals that are being used. It provides information regarding the product, hazardous ingredients, description of its hazards and precautionary measures. Copies of MSDS's for all hazardous chemicals to which the work site employees may be exposed will be kept in the Supervisor's office and the Safety Manager's office. The Safety Manager would update and review the MSDS sheets as necessary.

MSDS's will be available for review to all employees during each work shift. Copies will be available upon request to the Supervisor.

D. CONTAINER LABELLING

The work site supervisor will verify that all containers received for use are :

1. Clearly labelled as to the contents .
2. Appropriate hazard warnings are provided.
3. The name and the address of the manufacturer is listed.

No container will be released for use until the above data is verified.

No container should be accepted in the site without the above data.

If the chemicals are transferred from a labelled container to a portable container, that is intended only for immediate use, no labels are required on the portable container.

E. **EMPLOYEE TRAINING AND INFORMATION**

Everyone who works with or is potentially exposed to hazardous chemicals will receive initial training on the Hazard Communication Standard and the safe use of those hazardous chemicals by the onsite Safety officer. Whenever a new chemical is introduced, additional training will be provided. Regular safety meetings will also be used to review the information presented in the initial training. Supervisory personnel will be extensively trained regarding hazards and appropriate protective measures so that they will be available to answer questions from employees and provide daily monitoring of safe work practices. Before starting work, each new employee will attend a safety orientation and be given a copy of H.T.C.'s Hazard Communication Program, which will contain the following information:

1. Chemicals and their hazards in the work area.
2. How to lessen or prevent exposure to the hazardous chemicals.
3. What H.T.C. Company has done to lessen or prevent worker's exposure to the chemicals.
4. Procedures to follow if they are exposed to the chemicals.

The training program will emphasize these items :

1. Summary of the standard and this written program.
2. Chemical and physical properties of hazardous materials (for example, flash Point, reactivity) and methods that can be used to detect the presence or release of chemicals.
3. Physical hazards of chemicals (potential for fire, explosion, etc.)
4. Health hazards, including signs and symptoms of exposure, associated with the Exposure to the chemical.
5. Procedures to protect against hazards (personal protective equipment that is required and its proper use and maintenance; and procedures for emergency response).
6. Work procedures to follow to assure protection when cleaning hazardous Chemical spills and leaks.
7. Where MSDS are located, how to read and interpret the information on both

Labels and MSDS and how employees may obtain additional hazard information.

The Safety Manager will review the company's employee training program and give advice regarding training and retraining needs. Retraining is required when the hazard changes or when a new hazard is introduced into the workplace, but it will be H.T.C.'s policy to provide training regularly in safety meetings to ensure the effectiveness of the training program. As part of the assessment of the training program, the Safety Manager will obtain input from the employees regarding training that you receive and suggestions for improving it.

Monthly safety meetings will be held and hazardous materials used in the project will be discussed. Attendance is mandatory for all Supervisors who will be responsible for passing the information to employees in their section.

Notices will be posted on the employee bulletin board that provide an explanation of the container labelling system and location of the written Hazard Communication Program.

F. **LIST OF HAZARDOUS CHEMICALS**

A list of hazardous chemicals used at different worksites is stated in Appendix VIII, of this manual. Further information on each hazardous chemical noted can be obtained by reviewing Material Safety Data Sheets in the Safety Manager's office and the notice board in the worksite supervisor's office.

G. **EMPLOYEE ORIENTATION OF OSHA'S COMMUNICATION STANDARD, 29 CFR 1910.2100. "RIGHT-TO-KNOW"**

1. **Introduction**

Many types of job-related hazards are present with any position. As stated in OSHA's Communication Standard 29 CFR 1910.2100 or the "R", it is therefore necessary to manage these effectively.

2. **General Hazards**

Each working environment experiences the "every-day hazards" such as slips, trips and falls, minor cuts and bruises, etc. These hazards are always present in all areas of the plant facilities and work sites and can become serious if overlooked. Any accident, incident or near miss must be reported so that corrective action can be taken to avoid a recurrence.

3. **Main and Structural Shops**

The majority of accidents occur in the Main Shop and the Structural Shop. The fabrication and welding of vessels, pipe, platforms, and skids are performed in this area.

- a. In the process of fabrication and welding, one of the main hazards is heat burn due to cutting with an oxygen/acetylene torch as well as welding. This produces extremely high heat capable of causing severe burns.
- b. During the fabrication and welding processes, large amounts of grinding are required causing small metal particles to be constantly thrown into the air. These particles can get in the eye and cause irritation or become lodged in the eye, which requires a doctor's assistance, or even surgery, for removal.

4. **Electrical Shop**

- a. The most obvious hazard in this area is dealing with electricity, resulting in burns and electrical shock, or even death, to the employee.
- b. An employee in the Electrical Shop will handle heavy equipment at various times. Precautions should be taken when lifting heavy equipment to prevent back and muscle injuries.

5. **Maintenance Shop**

The Maintenance Shop performs maintenance work on the equipment located through the plant facilities,

- a. There are many heavy objects to be lifted in this area. Improper handling and lifting of heavy equipment can cause back and muscle injuries.
- b. The Maintenance Shop also deals with many types of electrical equipment, which could result in electrical burns, shock or even death.

6. **Assembly Area**

- a. The Assembly Area requires heavy equipment to be lifted, set into place, and fitted together which could easily result in strains and pulled muscles.
- b. Overhead work is also performed in the Assembly Area and employees are subject to falling objects from overhead that could cause severe injuries.

7. **Quality Control Department**

- a. The most serious hazard in the Quality Control Department is dealing with radiation. Radiography (x-ray) is performed with the use of radioactive material
- b. Other hazards in this area are chemical burns and vapour inhalation due to dealing with chemicals used to develop radiography film.

8. **Sandblasting and Painting**

- a. The sandblasting and painting areas deal with many different types of chemicals which can cause burns. Also present is the danger of vapour inhalation from thinners and paints.
- b. The employee is working with very high air pressure which operates the sandblasting equipment and the paint spray gun. If the air pressure is misused, serious injuries can result

9. **Conclusion**

H.T.C. encourages each employee to exercise caution on an "every-day" basis and particularly around known hazards. A Safety Program has been established such as carrying out risk analysis, Job Safety Analysis to handle any unsafe actions being performed and to prevent future accidents. JSA's would be reviewed and be made available in the worksite supervisor's office. These JSA's would be discussed in the tool box meetings before any critical jobs.

XVII. OCCUPATIONAL HEALTH POLICY**A. STATEMENT**

H.T.C. is committed to the continuous improvement of its working conditions and towards educating its employees about the potential health hazards in the operations and projects they are involved in and the means to minimise or eliminate these.

As addressed in the hazard communication program section of this manual, occupational illnesses might be developed during some operations if the required precautions have not been taken. The following section briefly describes these.

B. HEALTH HAZARDOUS TASKS**1. PAINT SHOP**

Employees are exposed to toxic vapours or spray mist, which will cause respiratory problems. To avoid this, employees shall wear an appropriate properly fitted respirator until vapours and mists are exhausted unless air monitoring demonstrates vapour and mist levels are below applicable limits. Use approved chemical/mechanical filter designed to remove a combination of particles and vapours. Local exhaust ventilation system shall be used at all times during the spray painting process to keep the air contaminant concentration below the lower explosive limit (LEL), and below current applicable exposure limits.

2. FABRICATION AND WELDING SHOP

Respiratory ailments might result due to inhalation of fumes emitted during the welding process, eye injuries and burns might result from the welding arc lights and from foreign bodies during the grinding process. Proper eye protective glasses should be worn at all times.

Exposure to high radiation doses might take place during radiography work if safety measures are not taken.

3. DESERT FIELD LOCATIONS

Exposure to sunstroke, heat exhaustion, and respiratory ailments due to dust inhalation during sand storms or earth moving operations might occur. Employees should use filter type dust masks during these conditions but should stop the work if these conditions get worse.

C. HYGIENE STANDARDS AT FIELD LOCATIONS

Camps, offices and workshops installed at remote locations during project execution should maintain a high level of hygiene for the following facilities:

1. Kitchens, and dining halls.
2. Potable water storage and distribution system.
3. Recreational facilities

Proper toilet and labour ablution facilities along with adequate sewage system shall be provided.

D. TRAINING

Management and supervisory staff shall be trained on how to deal with unhealthy site conditions as referred to in "B" above and on how to treat first aid cases.

All employees will be educated by their respective supervisors during the single concept safety meetings about the health hazards related to their tasks.

E. INSPECTION AND AUDITS

The Project Medical Doctor (when available) and the Safety Manager will conduct a monthly inspection tour covering the project:

1. Camps
2. Workshops
3. Offices
4. Any other site locations

Their purpose is to determine deficiencies on the Health and Hygiene Standards, working conditions and practices, to be followed by submitting a report to the Superintendent or Drilling Manager on their findings including their recommendations for the necessary improvements.

The Superintendent or Safety Manager and other members from the main office management will conduct random health audits to the project facilities and will document findings and necessary action to be taken,

XVIII. ENVIRONMENTAL PROTECTION POLICY

A. STATEMENT

H.T.C. will use its best efforts to prevent and take all reasonable precautions to avoid pollution or contamination of the land or water arising out of its performance of any work. Should there be any discharge or escape of any appreciable quantity of pollutants or contaminants during the performance of the work, H.T.C. will immediately notify the Client so that necessary actions and measures are taken to contain, control, recover or disperse the substance.

B. ACTIONS TO BE TAKEN IN THE EVENT OF AN INCIDENT CAUSING OR LIKELY TO CAUSE POLLUTION

1. KEY INDIVIDUALS

The following personnel will take action as detailed.

- a. Incident Observer/Reporter
- b. Safety Manager
- c. Drilling Manager or Supervisor

2. INCIDENT OBSERVER/REPORTER

Any person discovering a pollution incident/oil spill will immediately raise an alarm and advise the Safety Manager providing the following information:

- a. Location of incident,
- b. Nature of spill,
- c. Extent of spill,
- d. Areas likely to be affected (watercourses, etc.).

Having raised the alarm an attempt will then be made to stop or minimise the spill at source using the equipment stored on job site and to prevent further progress of the spill.

The Safety Manager (or his designate) will be available at all times and will establish a 24 hour contact system.

3. SAFETY MANAGER WILL:

On receipt of pollution incident notification:

- a. Register call and accurately record all relevant details.
- b. Notify the following personnel immediately,
 - i. Drilling Manager
 - ii. Drilling Superintendant

4. THE SAFETY MANAGER WILL:

- a. Ensure that a clean-up/recovery operation is mobilised.
- b. Supervise cleaning-up operation.
- c. Act as point of contact.

5. THE DRILLING MANAGER/ DRILLING SUPERINTENDANT WILL:

- a. Notify the Field Superintendent.
- b. Initiate contacts to other parties as necessary.
- c. Notify Client's Safety Department.
- d. Inform concerned parties of the severity of the incident,
- e. Organise emergency response, if any.

C. CLEAN-UP PROCEDURE

As this depends on the type and extent of pollution involved, H.T.C. will prepare and implement a clean-up procedure with the help of specialised companies if need to. This procedure shall be agreed upon with the Client and local authorities.

XIX. DRUG AND ALCOHOL POLICY**A. STATEMENT**

H.T.C recognizes its duty and responsibility to provide a safe working environment free of the illegal use of drugs and the abuse of alcohol. In compliance with the Drug free Workplace act of 1988, it is the policy of H.T.C that all its employees are prohibited from the use, abuse, unlawful possession and the distribution of alcohol in the workplace. Additionally, any full time , part time employees or contract employees found to be illegally manufacturing, selling, distributing, dispensing, possessing or using controlled substances in the workplace shall be subject to disciplinary action, upto and including termination of employment.

B. HEALTH RISKS

The following information describes various health risks and consequences associated with use, misuse and abuse of alcohol and other drugs :

Alcohol – Addiction, liver disease, higher than normal rates of peptic ulcers, pneumonia, cancer of respiratory and digestive tracts, heart and artery disease, deaths and injuries due to accidents.

Marijuana – Addiction, short term memory loss, paranoia, increased heart rate, lung cancer, affects respiratory and reproductive systems and suppresses immune system.

Stimulants – Addiction, paranoia, depression, confusion, possible hallucinations, weight loss, dehydration, low resistance to disease, psychiatric problems and higher rate of liver and heart disease.

Cocaine – Addiction, heart seizures, lung damage, severe depression, paranoia and anxiety.

Heroin – Addiction, lethargy, weight loss, depressed central nervous system, heart and lung abnormalities, hepatitis infection, HIV infection, reduction of visual acuity and constriction of the pupils, overdose and death.

Inhalants – Lack of coordination, unconsciousness, suffocation, nausea and vomiting, damage to brain and central nervous system, respiratory depression and brain damage.

Steroids – Liver toxicity and cancer, increased blood pressure, baldness, skin problems, insomnia, loss of elasticity in tendons and ligaments, testicular atrophy, decreased sperm count, fluid retention, pore enlargement, general masculinization in women and impotence with gynecomastia in men.

Depressants – Addiction, muscle rigidity, sleep disturbances, overdose and death (especially if combined with alcohol).

XX. CONTRACTOR SAFETY POLICY

A. SCOPE / OBJECTIVES

The purpose of this section is to describe our responsibilities for the safety of contractors Who perform work for H.T.C or are on H.T.C Yemen drilling operations premises.

B. POLICIES / PROCEDURES

1. All contractors shall abide by the safety and health policies pertaining to the location, facility or project on which they are working. A contractor's violation Of these safety and health policies could expose our employees and property, as well as the contractor, to unnecessary hazards. Strict enforcement of this policy by supervisory personnel is expected.
2. Each contractor must certify in writing (See Appendix IX, form HSE-YD-001, HSE Induction) that he/ she has been informed about, and understands, all relevant safety information before commencing work on H.T.C premises.
3. The contractor is responsible for keeping site injury statistics and reporting all incidents resulting in injury to a contract employee on the premises to H.T.C.
4. All incidents or accidents occurring on H.T.C Yemen drilling locations will be investigated by the contractor within 48 hrs. The investigation will include a

description of the incident, a primary cause for the incident, corrective actions addressing the primary cause, and assignment of responsibility for completion of the corrective action.

5. The Incident Statistics records pertaining to other contract companies working on H.T.C's premises, but reporting directly to the Client Company; however shall not be reflected in H.T.C Yemen drilling's Incident Statistics, since they are not directly under the H.T.C's immediate supervision. H.T.C's Incident statistics will only reflect the records of incidents or accidents involving its employees or sub-contract employees directly answerable to the company.

XXI. EMERGENCY PROCEDURE

A. PURPOSE

To establish procedures to be followed in the event of an emergency incident occurring on the project job site and to define action to be followed by all H. T. C. personnel in the event of an emergency incident who shall be aware of this procedure.

B. DEFINITION

Emergency Incident shall be any accident, fire, or situation that endangers or is capable of endangering human life or property.

C. PROCEDURE

In the event of an accident, fire or other emergency, the following action is to be taken:

1. ACCIDENT

- a) Superintendent / Rig manager / Operation Supervisor to take control, render first aid, DO NOT MOVE INJURED PERSON unless he is in further danger.

If electrical power is involved, DO NOT TOUCH THE INJURED PERSON. Switch off or arrange to have power switched off before attempting to touch or remove patient.

- b) Detail someone to call for medical assistance. Where site emergency medical facilities are available, the call out procedure must be posted at work sites and all employees made familiar with these facilities. If such on site facilities are not available, emergency medical assistance will be provided by the nearest outside medical centre. In either case, the following information is to be communicated:

- i. Location of accident.
- ii. Number of injured persons.
- i. Any further, relevant information.

Where required, arrangements should be made to direct emergency vehicles to the accident location.

- c) Inform the Safety Manager and the Client Safety Representative of the accident.
- d) Secure the area leaving all equipment, materials or tools in position. This will assist in any subsequent investigation.

2. **FIRE AND EXPLOSION OR RADIOACTIVE EMERGENCIES**

1. a) The person discovering a fire should raise the alarm and alert others in the area
 He should make others aware of :
 - i. Type of incident
 - ii. Location
 - iii. Any further relevant information.
- b) Alert the on-scene commander (Rig manager / Operations supervisor) and summon the driller or any personnel available at the moment to blow a fire alarm. Attempt to extinguish the fire using available fire fighting equipment. Do not risk injury or endanger life in this operation.
- c) Provide information / assistance to the on-scene commander. Inform the superintendent of the incident. Follow instructions to provide assistance to injured persons and to control the incident with incurring risk to self.
2. a) The person discovering explosion or radioactive hazards should :
 - b) Alert others in the immediate area of the potential danger and take immediate steps to move all personnel back to a known safe area and to prevent any accidental approach to the affected area by other personnel.
 - c) Alert the onsite supervisor of the discovery of the hazardous materials and remain at the scene until the supervisor arrives.
3. a) The on -scene commander upon arrival at the scene , will complete a Situation assessment and determine the most appropriate method to manage the incident. Identify all safety hazards and ensure all Emergency duty personnel are aware of the hazards and implement immediate response actions to control the incident .
 - b) Notify H.T.C Management as outlined in the ' Incident reporting flowchart '.

3. **MEDICAL EMERGENCY / MOTOR VEHICLE INCIDENT**

1. a) The on-site medic will determine the need for a medical evacuation case of an onsite medical emergency by determining the severity of the injury Or illness and will advise the On-scene commander of the need to make an evacuation.
- b) The Medic and the On scene commander, in consultations with the Superintendant , will determine the best method to transport the patient to the identified destination medical facility.
- c) Notify H.T.C Management of the course of the actions to advise and arrange of the transportation of the patient.
2. a) It is expected that most vehicle accidents will occur at a location away from the drilling lease or Project site. In such case often, a third party will notify the site supervisor of the incident.
- b) Upon being informed about the Motor Vehicle accident obtain as much as information as possible including :
 - Name(s) of individual(s) involved in the accident;
 - Status of the individual(s) involved in the accident;
 - Location of individual(s) involved in the accident;
 - Location of the accident;
 - Was there third party involvement in the accident.
 - Requirement for additional assistance (e.g. medical personnel, medical evacuation requirements, personnel rescue from motor vehicles.
- c) If personnel injuries are known or suspected, the On-scene commander will arrange for the site medic and possibly other medical personnel to mobilise to the location of the injured person(s) and determine the seriousness of the injuries.
- d) If additional medical care or personnel rescue from a damaged vehicle is required , the On-scene commander will make appropriate arrangements with advise from the Superintendant.
- e) Notify H.T.C Management of the course of the actions to advise and arrange for transportation of injured personnels and legal matters pertaining to the incident.

The On-scene commander will complete and submit an incident report in the event of Occurance of any of the above incidents, however big or small.

4. **WELL CONTROL**

Safety of the general public and that of H.T.C Employees and contract employees will be most important and of highest priority. Every possible precaution will be taken to Minimize the risk to the public, H.T.C and contract employees. Protection of the environment and third party equipment and property will be the next priority.

The most important aspect of its prevention, is regular trainings. The drilling crew must Practise regular kick drills, kick detection etc.

A well control situation can develop through 4 levels:

- Level 1 - A kick has occurred but the well is under control.
- Level 2 - Operational conditions occur which increases the risk of loss of well control and causes concerns for personnel safety – such as calculated Circulation pressures being at the limit of well control equipment or developing equipment problems raise concerns as to their continued Effectiveness.
- Level 3 - Equipment failure puts well control in serious jeopardy but attempts to regain control can be made.
- Level 4 - Uncontrolled flow at which well control can no longer be regained.

1. a) During a well control situation the On scene commander will:
 - Conduct operations as per Well control procedures.
 - Inform the Field Superintendent and update him of the situation.
 - Keep a personal log of events whenever possible, with accurate times and kick details.
 - Check wind direction in relation to the camp and access road position.
 - Shut down any equipment that could cause a Fire or Explosion.
- b) Notify H.T.C Management of the details of the well kick and the course of actions.

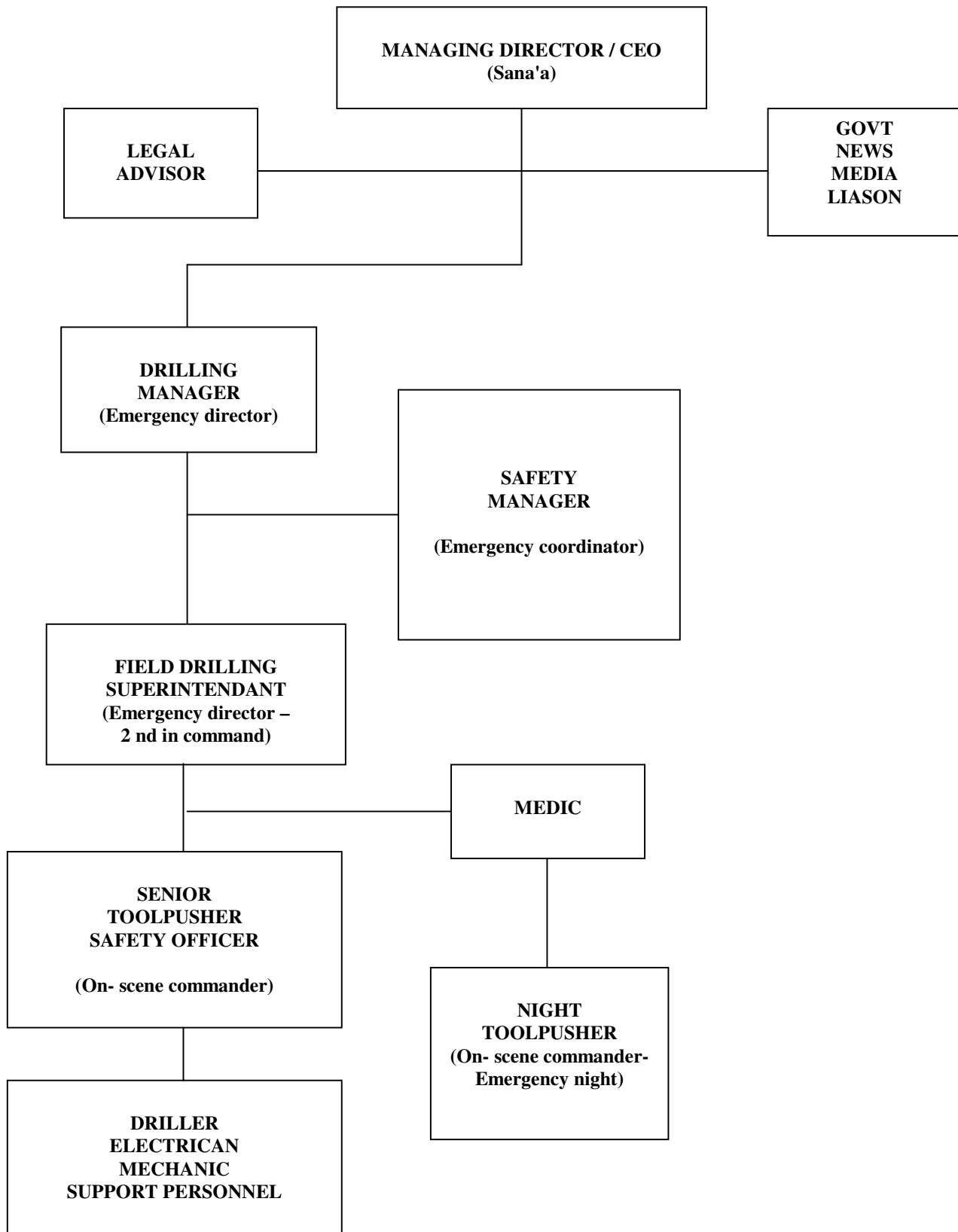
D. EMERGENCY TELEPHONE NUMBERS

The telephone numbers to be contacted in case of emergency are:

1. President & CEO ; Mr Hussain al-hashedi - Cell phone 711207771
2. Drilling Manager; Mr Barry Russell - (+ 967 1 414166 / 188) Ext.108
Cellphone 711276925
3. Drilling Superintendant; Mr Jim Tucker - Cellphone 711381095
4. Field Superintendant - Cellphone 711201345
5. Safety Manager; Mr Saju Kuttappan - (+ 967 1 414166 / 414188) Ext. 115
Cellphone 711371152

Also a reference of the Clients Emergency contact nos is to be kept at each of the locations. These contact numbers shall be posted on sign boards around the different site locations and offices and in different languages conversant with the site personnel.

E. **EMERGENCY RESPONSE PLAN – Incident reporting flowchart**



XXII. SAFETY RULES AND REGULATIONS

A. PURPOSE

To define the job site disciplinary rules as applicable to H. T. C. and its subcontractor personnel and the procedure to be followed in the event of a violation. A violation shall mean any act, omission, operation or condition that contravenes any of the listed disciplinary rules (see attachments).

B. RESPONSIBILITIES

Superintendent, Safety/Training Manager, Engineers, supervisors and subcontractors are to ensure that all employees are fully conversant with site safety and security rules and regulations and that failure to comply with these will result in disciplinary action.

C. PROCEDURE

1. Reported violations of job site disciplinary rules may be originated by any of the site senior staff members.

When the originator is the Client the report will be directed to the Superintendent and / or Safety/Training Manager.

2. The Superintendent and/or Safety/Training Manager will then carry out any investigation and/or implement the required disciplinary action in any reported violation of the rules by his employee.

The Manager will forward a copy of all warning letters/action taken to:

- a. The originator of the violation report.
- b. Safety Manager.
- c. Personnel department.

D. REFERENCES

The job site "Safety Rules-Table of Penalties", a copy of which will be displayed on all contractor notice boards.

Note: The Safety rules and penalties are not intended to be a complete listing of all safety rules.

H.T.C. Yemen International, Ltd.
 Safety Manual and Procedures
 Date: April 2006 (revision 2)

Safety Rules and Regulations
 Page 70 of 132

JOB SITE SAFETY RULES TABLE OF PENALTIES
DISCIPLINE LEVEL NO. 1

ITEM NO.	NATURE OF OFFENSE	FIRST TIME	SECOND TIME	THIRD TIME	FOURTH TIME	REMARKS
1	Not wearing hard hats on the job	Written Warning	Written Warning	Suspension of yearly salary Increase or any promotion	Termination	
2	Not wearing safety footwear on the job	=	=	=	=	
3	Not throwing trash in designated containers	=	=	=	=	
4	Not wearing proper clothing on the job	=	=	=	=	
5	Failure to wear ID badge at all times	=	=	=	=	

H.T.C. Yemen International, Ltd.
 Safety Manual and Procedures
 Date: April 2006 (revision 2)

Safety Rules and Regulations
 Page 71 of 132

**JOB SITE SAFETY RULES
 TABLE OF PENALTIES**

DISCIPLINE LEVEL **DEGREE OF PENALTY**
NO. 2

ITEM NO.	NATURE OF OFFENSE	FIRST TIME	SECOND TIME	THIRD TIME	REMARKS
1	Not abiding by Client Security procedures or refusal to co-operate with Client Security and Safety Personnel	Written Warning	Written Warning	Termination	
2	Not holding a valid operator's license while operating a vehicle on the site	=	=	=	
3	Not co-operating with designated Authorities conducting a safety audit or investigation	=	=	=	
4	Not reporting to the proper authority an accident that causes personnel injury or property damages	=	=	=	
5	Employees going into existing facilities and operating areas if work does not require them to do so	=	=	=	
6	Violation of site traffic regulations and speed limits	=	=	=	
7	Sleeping on the job during working hours	=	=	=	

H.T.C. Yemen International, Ltd.
 Safety Manual and Procedures
 Date: April 2006 (revision 2)

Safety Rules and Regulations
 Page 72 of 132

JOB SITE SAFETY RULES TABLE OF PENALTIES	
DISCIPLINE LEVEL NO. 3	DEGREE OF PENALTY

ITEM NO.	NATURE OF OFFENSE	FIRST TIME	REMARKS
1	Fighting on the site at any time	Termination	
2	Using or possessing any illegal drugs or alcoholic beverages	=	
3	Working under the influence of alcoholic beverages or illegal drugs	=	
4	Entering or leaving the site other than through designated gates	=	
5	Intentionally destroying or damaged H.T.C.'s or Client's property	=	
6	Violating the equipment safety lock out or tagging procedures	=	
7	Not wearing proper safety protection while welding	=	
8	Not wearing proper eye protection while grinding	=	
9	Operating a piece of equipment without proper operator's permit	=	

APPENDIX I

ORGANISATION CHART

&

JOB RESPONSIBILITIES

I. CEO/OWNER & GENERAL MANAGER

Although they are not present daily on project sites, their responsibilities include:

- A. Ensure that there is an effective policy for health and safety within the Company.
- B. Periodically appraise the effectiveness of the policy and ensure that any necessary changes are made.
- C. Through the Managers, Superintendents, and Safety Manager ensure that a Safety and Accident Prevention Plan is established and executed on site of each project.

II. MANAGERS AND ENGINEERS IN CHARGE OF PROJECTS

- c. Ensure that the Company's policy is understood and effected by all his subordinates.
- d. Determine at the planning stage:
 - 1. The most appropriate order and method of working.
 - 2. Allocation of responsibilities with sub-contractors and clients.
- c. Ensure that safe working practices are adopted and are carried out as planned.
- d. Maintain working methods in accordance with the safety regulations of the Company and those imposed by the clients.

III SUPERINTENDENTS

- a. Ensure that all plant and equipment on site or place of work is safe, guarded and equipped with appropriate safety devices.
- b. Ensure that all personnel employed are suitable for the jobs they have been recruited for.
- c) Check that periodic tests, inspections and maintenance work are being carried out on equipment and tools used.
- d) Ensure that correct procedures and systems of work are being developed and maintained
- e) Appraise the effectiveness of all supervision under his control.

IV. SUPERVISORS/ RIG MANAGERS

- A. Organise sites/places or work so that work is carried out to the required standard with minimum risk to men, equipment and materials.
- B. Know the broad requirements of relevant safety regulations and clients specific provisions.
- C. Give all trades precise instructions on their responsibilities for correct working methods.
- D. Arrange delivery and stacking of materials to avoid increasing the risks of double handling; position plant effectively; ensure that the electrical supply is safely maintained.
- E. Plan and maintain a tidy site/work area arranging for removal of debris daily or more frequently if required.
- F. Implement arrangements with sub-contractors and others to avoid any confusion about areas of responsibility.
- G. Check that all machinery and plant are maintained in good condition, report any defects immediately.
- H. Make sure adequate clothing and equipment is issued to each person and that the equipment is used.
- I. Ensure that all persons in his control know what to do in the event of fire or other emergency.
- J. Investigate all accidents promptly to discover their root cause to eliminate recurrence and to report findings to the Safety Manager for further investigation.
- K. Liaise with his superiors on matters of safety and where necessary consult the Safety Manager.
- L. Continually develop safe practices in his section to ensure maximum safety for all under his supervision.

V. ALL EMPLOYEES OF AL-HASHEDI

- A. Shall use the correct materials, tools, equipment and methods for the work they are carrying out.
- B. Ensure that all safety equipment/clothing provided for safety is used and maintained in good condition.

- C. Develop a personal concern for themselves and others around them.
- D. Avoid improvising which entails unnecessary risk.
- E. Observe all safety rules at all times.

VI. **SAFETY MANAGER**

- A. Advise the Project Personnel on:
 - 1. Prevention of injury to personnel and damage to plant and equipment.
 - 2. Further improvements in existing working methods.
 - 3. Application of Company Safety Procedures and those of the client.
 - 4. Suitability from a safety viewpoint of new and hired plant and equipment and validity of all appropriate test certificates.
 - 5. Suitability standards of protective clothing and equipment.
 - 6. Potential hazards on new contracts before work commences.
 - 7. The site/work area safety organisation and fire precautions required.
- B. Carry out survey and inspections on a regular basis in association with supervision to ensure that safe working practice are in operation.
- C. Investigate all accidents promptly and supervise the recording, analysis of information on injuries, damage and production loss, assess accident trends and review overall safety performances and recommendations.
- D. Develop and co-ordinate a training program for all levels of employees to promote awareness of injury prevention and damage control.

APPENDIX I

ORGANISATION CHART

&

JOB RESPONSIBILITIES

1. **SECURITY PROCEDURE**

A. **PERSONNEL ADMITTANCE TO PROJECT**

1. All personnel entering the project premises will be in possession of a security badge (including vendor's, supplier's and sub-Contractor's personnel).
2. Personnel not in possession of their security badges will be refused admission to the project until such time as they are identified by their Company Official who can authorise, by his signature, admittance to the project.
3. Personnel refused admittance can use the security telephone to contact their Company Official if a telephone is available.
4. Should there be no telephone facility to individual contractor companies on site, a verbal or written message can be delivered to company concerned by other personnel from the same company who have obtained authorised entry to the project.

B. **REMOVAL OF EQUIPMENT, TOOLS, MATERIAL FROM FENCED SITES**

1. **GENERAL**

No person is allowed to remove from site, any tools, equipment or material, unless he is in possession of a gate pass listing the items to be removed by authorised signatories (Purchase Manager / Field Superintendent).

2. **DEPARTURE OF LOCATION VEHICLES**

Location vehicles and equipment leaving the project site loaded with material do require authorisation from the Drilling Manager / Field Superintendent.

C. **SECURITY GUARD GENERAL INSTRUCTION**

1. **GENERAL**

The Security Guards will maintain an alert attitude and observe carefully, everything taking place in the assigned area.

The Security Guard will report all witnessed or reported policy violations and will enforce all orders, rules and regulations as instructed in the post special orders or as directed by the Construction Manager.

The Security Guard will not leave his post unless properly relieved or unless required to do so in performance of assigned functions.

2. **LOGBOOK**

The Security Officer will obey and enter in the post log book, all orders received verbally or in writing.

3. **CONVERSATION WITH OTHERS**

The Security Guard will restrict conversations with fellow employees, vendors, sub-contractors, etc. to job related matters only.

4. **GUARD INSTRUCTIONS**

In the event of an emergency situation not covered by instruction, the Security Guard will call the Drilling Manager or Superintendent immediately.

A Security Guard receiving instructions from someone other than the Project Management or Superintendent, will advise the person that such instruction cannot be carried out unless authorised by one of the above listed persons.

Instructions in direct contradiction to general or special orders will not be followed unless approved by the Management.

5. **FALSE INFORMATION**

A Security Officer who wilfully issues false information or makes false statements regarding assignments and/or responsibilities to fellow Security Officer, Supervisors, or Client personnel, will be subject to termination.

6. **GRATUITIES**

Security personnel are prohibited from accepting gratuities from anyone for any purpose. Any offer of a gratuity is to be reported promptly to the Construction Manager or Superintendent.

7. **PUBLIC/PERSONNEL RELATIONS**

Security Guard will use discretion and care in the questioning of project employees and in the handling of possible irregularities.

Under no circumstance will a Security Guard question a person except in the presence of a reliable witness.

Under no circumstance will a Security Guard threaten, touch (except in self-defence), assault or coerce in any way, any person.

Every effort must be made by Security Guards to positively identify people who refuse to comply with normal security instructions. All such instances must be reported immediately to the Project Management or Superintendent.

Security Guards, at all times, must be professional and helpful in their approach to the project workforce and in their dealings with the general public. It is expected that they and their work places be clean and tidy at all times i.e. main guard gate, offices, etc.

8. **PROBLEMS WITH INSTRUCTIONS**

Security Guards who experience difficulty in interpreting instructions, duties, etc. must obtain advice from the Drilling Manager or Superintendent promptly. The excuse "I wasn't sure or I didn't understand" is not acceptable if an efficient security operation is to be carried out to the benefit of the project.

9. **PHOTOGRAPHY**

Photography on site will only be allowed if prior permission is obtained from the Client and photographs will only be taken in accordance with the Client's rules and regulations.

APPENDIX III

**ACCIDENT REPORTS
AND
RECORDS PROCEDURE**

I. ACCIDENTS, REPORTS AND RECORDS PROCEDURE

- A. An immediate verbal report will be made to the Drilling Manager / Safety Manager / Superintendent in the case of
 - 1. All fatal injuries,
 - 2. All serious injuries.
 - 3. All damage to Client/Company plant, equipment and materials over U.S.D. \$1,000.00.
 - 4. All fires.
 - 5. Near misses.
 - 6. Minor injury, i.e. first aid.
- B. Initial verbal reports of such incidents will be followed by a written report detailing circumstances, corrective action taken and action taken or recommended to prevent a recurrence.
- C. Written reports will be upon standard forms. In the cases of serious accidents, a fully detailed account of the circumstances with witnesses' statements and descriptive photographs will be made.
- D. In addition to the reports mentioned above the Drilling Manager/ Safety Manager / Superintendent will keep records of all injuries and damage to property. These will be kept by the Safety Manager and/or the person responsible for administration for review by the Company's top management.

II. ACCIDENT INVESTIGATION

- A. Accident investigations will be conducted in a manner which will provide facts rather than faults. The point of such investigations is to prevent recurrence of similar accidents. Each accident will be followed by an investigation, the level of which will be governed by the severity or the potential of the situation.
- B. The main purposes of an accident investigation are:
 - 1. To find the causes so that similar accidents are prevented.
 - 2. To determine the point at which the "unplanned" event took over from the planned sequence of events.
 - 3. To recommend the corrective action to be taken.

III. RESPONSIBILITIES FOR CARRYING OUT INVESTIGATIONS

A. RIG MANAGER / SAFETY OFFICER

The Rig Manager or Safety Officer will carry out an immediate investigation of every accident that occurs within his area of responsibility. He will complete an Accident Report as soon as possible and submit it to the superintendent, with a copy to the Safety Manager.

B. SAFETY MANAGER

As soon as possible, the Safety Manager will verify the findings and carry out an independent investigation of every serious or potentially serious occurrence, a copy of each independent report will be submitted to the Drilling Manager / Drilling Superintendent.

C. DRILLING MANAGER / SUPERINTENDENT

They will review all accident investigation reports to ensure that corrective action has been taken and to observe any trends that may require action on their part.

IV. REPORTING PROCEDURE - PERSONAL INJURY

- A. In the event of any injury the injured person will if possible go to the First Aid Centre for treatment.
- B. The Medical Officer or nurse responsible for first aid treatment will record details of the injury on the form "Daily Accident Register". If the injury is minor the injured person will be sent back to work after treatment.
- C. If the injured person requires leave from duty or to go to hospital this will require approval by the Superintendent. In the case of an emergency this may be bypassed, but the injured person's supervisor will be kept informed of the situation.
- D. If leave from duty or a visit to the hospital is required the person responsible for first aid will complete the form "Application for Medical Treatment". This form will require authorisation by the injured person's Superintendent.
- E. All completed forms will be returned to the officer responsible for first aid. Any comments from the hospital will be communicated to the Superintendent.

- F. If the injured person loses more than one day as a result of his injuries a "Personal Accident Injury and Investigation" form will be issued by the officer responsible for first aid and submitted to the appropriate Supervisor for completion.
- G. Copies of "Application for Medical Treatment" and "Personal Accident, Injury and Investigation" forms will be submitted by the Supervisor to:
 - 1. His immediate superior.
 - 2. Safety Manager/First Aid Centre.
 - 3. Drilling Manager/Superintendent.

V. REPORTING PROCEDURE - PROPERTY DAMAGE

- A. In the event of any accident which involves damage or loss to any property, whether owned by Company or not it will be reported on the "Property Damage and Loss Report" form.
- B. The responsibilities for reporting are the same as indicated earlier in this procedure.
- C. It is important that immediate notification is made verbally to the Safety Manager and Project Administrator/Insurance Clerk as notification to the Insurers is essential within 24 hours of the incident.
- D. Copies of all reports will be sent to:
 - 1. Drilling Manager / Superintendent.
 - 2. Safety Manager
 - 3. Project Administrator / Insurance Clerk.
- E. Photographs of damage are essential and will be arranged if possible before materials are removed or the work on site is rearranged.
- F. All damage will be reported. The responsibility for filing claims is that of the Project Administrator/Insurance Clerk no matter how small the damage may appear it will be reported.
- G. Estimates of damage are always necessary but under no circumstances will these be discussed with any third party.
- H. Repairs will not be carried out until the Project Administrator/Insurance Clerk gives clearance. However, if danger prevails immediate action will be taken to render the area safe.

- I. All reports and communications with the insurers will be executed by the Project Administrator / Insurance Clerk.

VI. MONTHLY STATISTICS

- A. At the end of each month the Safety Manager will issue a report indicating the safety performance of the project for the previous month. The Client's monthly safety statistics form will also need to be completed, if required.
- B. The Safety Manager will submit copies of this report to all the senior staff on the project.
- C. The Project Administrator will ensure that a copy of this report is sent to Managing Main Office, with the Monthly Progress Report.

VII. REPORTING FORMS

- A. The pages at the back of this manual show copies of forms used for reporting of accidents: The forms used are:
 - 1. Application for Medical Treatment.
 - 2. Personal Accident Injury and Investigation Report.
 - 3. Property Damage and Loss Report.
 - 4. Daily Accident Register.
 - 5. Monthly Accident Report.
 - 6. Near Miss Accident Report.

VIII. DEFINITIONS

For the purpose of these procedures the following definitions will apply.

1. LOST TIME ACCIDENT

An accident which causes absence from duty for an employee beyond the day or shift in which the accident occurred.

2. MINOR ACCIDENT

An accident which results in first aid treatment and the person returns to work immediately after treatment.

3. **OFF DUTY ACCIDENTS**

An accident which occurs outside the hours of work which the employee is employed.

4. **FREQUENCY RATE**

The rate used to compare accident and injury statistics within the project section by section. Direct comparisons can be made as the rate is a function of the hours worked (see formula below).

$$\text{F.R.} = \frac{(\text{No. of lost time accidents} \times 1,000,000 \text{ man hrs.})}{\text{Amount of man hours worked.}}$$

APPENDIX IV

WORK PERMIT PROCEDURE

1. **WORK PERMITS PROCEDURE**

Work permits may be subdivided into:

- => Cold Work Permits
- => Hot Work Permits
- => Confined Space entry Permits
 - ⇒ Other permits – Electrical / mechanical lockout permit, Pressure testing, radioactive materials, excavations.

A. **COLD WORK PERMIT**

Cold work is defined as all operations which do not require the use of naked flames, or machines or actions which produce sparks. Cold work permits are issued in order to provide a clear definition of the job and the area where it will be done.

B. **HOT WORK PERMIT**

Hot work is defined as all operations which require the use of naked flames, such as oxy-acetylene or arc welding and cutting, or which require the use of machines and actions which produce sparks or heat, such as internal combustion engines, grinding machines, soldering, etc. Hot work permits are issued in order to provide a clear definition of the job and the area where it will be done.

C. **CONFINED SPACE ENTRY PERMIT**

Confined space entry is defined as any operations require the entry into confined space such as tank, vessel, tower, pit, or sewer. Confined space entries are issued to provide a safe work procedure for the job, including gas testing prior to start of job.

D. **VALIDITY OF WORK PERMITS**

Work permits must:

1. Specify the nature of the job required,
 - a. Hot Work
 - b. Cold Work
 - c. Confined space entry
 - d. Other
2. Bear a date and show the time when work begins and the time of expiry of the permit's validity.

(The expire date must be definite and precise. It may not be replaced by phrases such as: upon job completion, or, end of day, as these are open to differing interpretations).

3. Specify the exact location of the job to be done and define the type of action.

4. Indicate all precautions taken to provide for the safety of the operation.
5. Describe if and how isolation of the plant and area involved is to be effected (e.g. shutting of electric current, blinding lines, closing valves, earth-bonding of appliances etc.) and the measures to be taken for the safety of the operation.
6. If gas tests are required, indicate the type of gas, the percentage found, the time of the test and include the signature of the operator who carried out the test.
7. Be complete in the section that calls for the observance of current legislation and regulations as well as of those specific rules governing the type of work concerned, and indicate the necessary precautions and measures to be taken: e.g. Required presence of the operator. Self-contained breathing apparatus, fire fighting equipment etc.
8. Must be signed and approved by a person authorised to issue permits who is in a position to be able to guarantee the application of the safety provisions stipulated for the execution of the job concerned.

E. The work permit must always be kept by the person who is doing the job.

F. In the case of particularly dangerous jobs which are not usual except with issue of work permit, it is recommended that the immediate Supervisor, or his substitute, and, if deemed necessary, an officer from the Safety Department oversee the operation directly.

G. Work permits are only valid for one day irrespective of the number of hours validity which may be indicated. When the work schedule is in rotational shift, the permit issuer will check for the prelevant safe work conditions to allow continuation of work in the following shift.

H. **EXTENSION OF WORK PERMIT**

The extension provision of the work permit is incorporated to eliminate the need for a new permit application if the work duration is greater than one day. Extension is for a maximum of 15 days. (Refer to Work Permit Specimen)

The permit applicant must contact the Client's Operating Authority each day to discuss and agree permit renewal. This can be done by telephone for remote locations. The Client's Operating Authority will then authorise the Contractor's Representative to revalidate the permit for 24 hours by signing.

Before the permit is revalidated on site and work recommences the facility must be re-checked for compliance with the precautions and conditions indicated on the permit.

The Client's Operating Authority must keep a log of all work permits issued in their area to keep a check on revalidation.

I. WORK COMPLETION

The Client's Operating Authority will not authorise the completion of the work permit until they have received the signature of the Work Supervisor that the work is complete and that all men and equipment are out of the facility and the work-site is clean and tidy.

J. INVALID PERMIT

Any work permit is automatically rendered invalid if:

1. Any abnormal situation develops (gas/oil leak etc.) in the vicinity of the work. The Safety Representative has the authority and responsibility to stop work progressing if in his opinion any hazard is present.
2. The work is delayed or interrupted for any reason for more than the time period in the work schedule approved or the application is exceeded.

K. ENTRY INTO CONFINED SPACE PERMIT

A work permit is required for work to be carried out in vessels, tanks or other confined spaces.

L. ADDITIONAL CERTIFICATES

1. EXCAVATION CERTILFICATES

An Excavation Certificate is required for any excavation work to be carried out in an operational area. The Excavation certificate must be attached to the back of the work permit prior to presentation to the responsible person for signature.

2. ELECTRICAL PERMIT

An Electrical Permit is required for work on high voltage equipment and must be attached to the back of the work permit prior to presentation to the Operating Authority for signature

3. ELECTRICAL ISOLATION CERTIFICATES

An Electrical Isolation Certificate is required before any work can be carried out on high voltage equipment.

4. **GAS FREE TESTING**

A Gas Free testing is required prior to the start of hot work or vessel entry.

- a. Hot Work - The Work Permit is to be completed before any hot work commences and a gas testing would be done prior to start of work and the readings must be noted down on the permit.

b. **VESSEL OR CONFINED SPACE ENTRY**

The Gas testing readings must be mentioned in the work permit prior to presentation to the Operating Authority for signature. The certificate may be validated for each day's work provided that a gas test is carried on by the Operations Site Representative.

5. **PERMIT PROCEDURE**

- Step 1 The permit applicant completes Section of the permit describing as fully as possible the nature of the work, the precise location and expected duration.
- Step 2 If the work involves excavation, vessel/confined space entry or electrical work, then the appropriate certificate should be attached to the permit.
- Step 3 The permit applicant hands the permit to the Operating Authority (normally the Operations Supervisor for the area concerned) who completes Sections indicating the preparations to be carried out and the precautions to be taken. The Operating Authority signs off and the permit applicant also signs off.
- Step 4 If the permit applicant is not the person who supervises the work site then he passes the permit to the permit holder who signs Section acknowledging the precautions and renewal procedure.
- Step 5 The permit holder hands the permit to the Operations Representative on site. The Operations Representative carries out a gas test (if applicable), checks that the work party has complied with Section and then initials these sections. Prior to commencement of work he signs on the gas test Section.
- Step 6 Work may now commence.
- Step 7 When work is completed or has ceased for any reason, the permit holder signs Section H having ensured that the site has been left in a tidy condition with all waste material removed.

- Step 8 The Operations Representative inspects the work-site, de-isolates (if necessary) and signs off.
- Step 9 The permit applicant hands the permit to the Operating Authority who signs Section to cancel the permit.

IMPORTANT NOTE

As soon as the work detailed on the permit is complete, the permit must be signed off. It is not acceptable to wait until the expiry time of the permit to sign it off.

APPENDIX V

**H₂S SAFETY
AND
TRAINING COURSE**

HYDROGEN SULPHIDE (H₂S) SAFETY AND TRAINING COURSE**I. PROPERTIES OF H₂S**

Colour	:	Colourless
Odour (up to 100 ppm)	:	Very offensive. Similar to “rotten eggs”
Vapour density	:	1.189 (air = 1.00) therefore H ₂ S is heavier than air
Boiling point	:	-404° C (-760° F)
Explosive Limits	:	4.3% - 46% by volume in air
Ignition temperature	:	2760° C (5000° F)
Water solubility	:	Yes, 4 volumes of gas in 1 volume of water @ 160° C (320° F)
Flammability	:	Forms an explosive mixture with air or oxygen
Corrosivity	:	In its dry state, not corrosive to most metals, but when wet becomes corrosive to most common metals
Biological effects	:	Irritates the eyes, throat, and upper respiratory system. In higher Concentrations will cause unconsciousness and eventually, death.

II. TOXIC EFFECTS OF HYDROGEN SULPHIDE

<u>Concentration</u>			<u>Toxic Effect on Humans</u>
<u>% H₂S</u>	<u>PPM</u>	<u>GR/100 SCF</u>	
0.001	10	0.65	Obvious and unpleasant odour. Eyes may start to sting and to water. Permissible exposure level for 8 hours
0.01	100	6.48	Kills sense of smell in 3 to 15 minutes. May sting eyes and throat. Respiration rate will change and coughing will start and you will feel drowsy. Possible delayed death within 48 hours
0.02	200	12.96	Sense of smell killed very quickly. Eyes and throat sting. Respiratory irritation followed by death in 1 to 2 hours.
0.03	300	19.44	IDLH
0.05	500	32.96	Dizziness, breathing ceases in a few minutes. Self-Rescue is impossible due to loss of muscle control. Artificial respiration is essential as soon as possible.

II. TOXIC EFFECTS OF HYDROGEN SULPHIDE (H₂S) - continued -

<u>Concentration</u>			
<u>% H₂S</u>	<u>P</u>	<u>GR/1</u>	<u>Toxic Effect on Humans</u>
	<u>P</u>	<u>00</u>	
	<u>M</u>	<u>SCF</u>	
0.07	7	45.36	Quickly become unconscious. Death will result if not rescued promptly and given immediate artificial respiration
	0		
	0		
0.10	1	64.80	Unconscious almost immediately. Death will follow Within minutes if not rescued and given immediate artificial respiration
	0		
	0		
	0		

Note: *Under no circumstances attempt to rescue any person overcome by H₂S unless you have suitable fresh air breathing equipment.*

III. GENERAL INFORMATION

Hydrogen sulphide gas is one of the most deadly of all hazards in our work. It is also called H₂S, sour gas. Workers in the oil and gas industry are aware of its deadly properties. Sewer maintenance crews, blasters, miners, and some commercial fishermen also fear this gas.

Every employer, whose workers may at any time become exposed to H₂S gas, must make sure they know how to recognise its presence, protect themselves and avoid its lethal effects, and rescue and administer first aid to victims who are overcome.

The purpose of this course is to help train employers and workers to recognise the characteristics and toxicity of H₂S gas, review H₂S detection equipment and personal protection equipment required to operate safely in an H₂S atmosphere, and review the rescue and first aid procedures needed to revive a victim.

IV. HAZARDS

Hydrogen sulphide is a highly toxic, colourless gas, heavier than air with the odour of rotten eggs. If ignited, it burns with a blue flame and produces sulphur dioxide, which is a very irritating gas with a pungent odour. H₂S forms explosive mixtures with air, the lower explosive limit being 4.3% hydrogen sulphide and the upper explosive limit, 46%. H₂S is most frequently encountered in the production and refining of high sulphur petroleum, natural gases, gypsum and sulphur mining, rock strata and underground water because it is soluble in water, gas manufacture, and manufacture of artificial silks and chemicals.

Hydrogen sulphide is generally recognised by a characteristic foul odour. Prolonged exposure to low concentrations has a tendency to act upon the olfactory nerves, thereby dulling the sense of smell. This is important, especially to those who think they can detect dangerous concentrations by the sense of smell. It acts on the eyes and respiratory system resulting in irritation. Irritation to the eyes often causes severe pain and may incapacitate the worker. When high concentrations are present, death may occur before the odour is detected; death being due to lung paralysis.

V. SYMPTOMS**A. ACUTE**

Results in almost instantaneous asphyxia with seeming respiratory paralysis. Acute poisoning or strangulation may occur after even a few seconds' inhalation of a high concentration causing panting, pallor, cramps, paralysis, and almost immediate loss of consciousness. Death may follow with extreme rapidity from respiratory and cardiac paralysis. ONE SNIFF of a sufficiently high concentration may bring this about.

B. SUB-ACUTE

Results in irritation, principally smarting of the eyes, persistent cough, tightening or burning in the chest, and skin irritation. A concentration of a few hundredths of one percent higher than that causing irritation can cause asphyxia and death. In other words, there is a very narrow margin between consciousness and unconsciousness and death. A concentration of only 0.07% (700 parts per million in air) of H₂S may cause collapse, unconsciousness, and death.

Note: Where high concentrations cause respiratory paralysis, spontaneous breathing does not return unless artificial respiration is applied. Although breathing is paralysed, the heart may continue beating for a few minutes after the attack. Therefore, it is of utmost importance that artificial respiration be given as quickly as possible and continued until medical aid is available or until the victim resumes natural breathing.

C. OTHER EFFECTS

There is no way of knowing what will happen when a person is affected by H₂S. Hysteria is not uncommon. Violent convulsions may result with the victim becoming very rigid before falling. Some victims have received injuries as a result of falling. The victim may be difficult to handle and will invariably need some form of artificial respiration to assist or restore breathing. There does not appear to be any cumulative effect to the body from repeated exposures, but there are reported cases in which the victim appears to have less resistance to subsequent exposures. Speed is essential in rescuing and administering first aid and the need for training in artificial respiration where workers may be exposed to H₂S cannot be overemphasised.

VI. SULPHUR DIOXIDE

Sulphur dioxide is a colourless, transparent gas and is non-flammable. Sulphur dioxide (SO₂) is produced during the burning of H₂S or mercaptan. Although SO₂ is heavier than air, it will be picked up by a breeze and carried downwind at elevated temperatures.

While sulphur dioxide is extremely irritating to the eyes and mucous membranes of the upper respiratory tract, it has exceptionally good warning powers in this respect.

TOXIC EFFECTS OF SULPHUR DIOXIDE

<u>Concentration</u>		<u>Toxic Effect</u>
<u>% SO₂</u>	<u>PPM</u>	
0.0002	2	Safe for 8 hours exposure
0.0005	5	Pungent odour Normally a person can detect SO ₂ in this range
0.0012	12	Throat irritation, coughing, constriction of the chest, watery and sore eyes
0.010	100	IDLH
0.015	150	So irritating that it can only be endured for a few moments
0.05	500	Causes a sense of suffocation, even with the first breath. Immediately dangerous to life.

VII. DETECTION

There are several ways you can be alerted to the presence of H₂S gas. Your nose is usually the first and unfortunately, sometimes the last. You can smell as little as one part of H₂S in a million parts of air. However, if the concentration of gas is in the 100-150 ppm range, the sense of smell is quickly lost giving a false sense of security.

When testing for H₂S gas, be prepared for lethal concentrations, and if it is expected, ensure that all necessary precautions are taken to protect yourself.

WARNING! YOU CANNOT RELY ON YOUR NOSE TO TELL YOU HOW MUCH H₂S IS PRESENT. WEAR YOUR BREATHING APPARATUS.

To determine the amount of H₂S present in your work area, one of the following means of detection should be used:

LEAD ACETATE AMPOULES OR COATED STRIPS. These change colour (usually turn brown or black) in the presence of H₂S. The degree of colour indicates the concentration. These are not accurate and should be used only as an indicator for the presence of H₂S.

AIR SAMPLING GAS DETECTOR TUBES. The concentration of H₂S is registered by the length of discoloration when air is drawn through the detector tube. There are several reliable makes and types available but their accuracy will depend on the training and practice of the operator.

SENSING DEVICE. Single or multiple sensors which signal semi-conductor or lead acetate detector units provide a system of continuous monitoring. Samples from hazard areas are tested by electrical or mechanical means at regular intervals. An alarm system, actuated by a sensing unit, will give warning when the H₂S concentration gets above certain fixed limits.

VIII. SPECIAL HEALTH PROBLEMS

It is believed that employees with special health problems such as listed below should not work in a H₂S atmosphere or in an atmosphere requiring the wearing of a respirator.

- A perforated eardrum, as this may allow air passage through the Eustachian Tube into the respiratory tract
- Emphysema
- Chronic Pulmonary Obstructive Disease
- Bronchial Asthma
- Coronary Artery Disease
- Angina Pectoris
- Myocardial Infraction
- Progressive or Severe Hypertension
- Claustrophobia
- Diabetes
- Grand-Mal Epilepsy

If you should have any of these conditions, you must report them to your supervisor

IX. EMERGENCY PLAN

After a release or a potential release of H₂S, the following steps should be taken:

- A. **DO NOT PANIC.**
- B. Recognise detectors and audio/visual warning devices (alarms, flashing beacons, and wind sock).
- C. Hold your breath (**do not take a big gulp of air** as this may exacerbate the problem) and rapidly leave area containing the H₂S, moving crosswise and upwind.
- D. Put on your breathing apparatus.
- E. Help anyone who appears to be affected by gas.
- F. Move quickly to the upwind "MUSTER POINT OR ASSEMBLY AREA" to receive instructions.

X. SCBA - SELF CONTAINED BREATHING APPARATUS

When you are required to work in or be present in any area where H₂S is or may be found, you must wear breathing protection. Unless protected by breathing apparatus, no workman shall enter any area where a deficiency of oxygen may exist or where the atmosphere is contaminated or in danger of being contaminated by flammable or toxic vapours, gases or dusts in sufficient quantities to create a hazard.

There are certain jobs that cause H₂S to be released into the air, and it is necessary to protect a workman. The type of equipment that is required for use in H₂S gas is not designed nor intended to be worn continuously throughout the whole day. It is emergency equipment and must be treated as such.

It is most important that everyone realises the limitations of each type of breathing apparatus.

A. **SPECIAL PROBLEMS IN SCBA UNITS**

1. **FACIAL HAIR**

Facial hair between the sealing surface of the face mask and the wearers skin will prevent a good seal. Even a few days growth of stubble will permit excessive contaminant penetration.

2. CONTACT LENSES

Contact lenses shall not be worn while wearing a facemask in a contaminated atmosphere.

3. CORRECTIVE SPECTACLES

Spectacles that have temple bars or straps shall not be worn with a facemask.

4. MISCELLANEOUS SEALING PROBLEMS

Scars, hollow temples, very prominent cheekbones, deep skin creases, the lack of teeth or dentures may cause facemask seating problems.

B. TWO TYPES OF SCBA UNITS**1. EGRESS PACK**

This type of apparatus can be used for a maximum of five (5) minutes entirely independent of the surrounding atmosphere. This unit supplies five (5) minutes of breathable air for egress from hazardous environments.

2. RESCUE PACK

This type of apparatus can be used for a maximum of thirty (30) minutes entirely independent of the surrounding atmosphere. This unit supplies thirty (30) minutes of breathable air for egress and rescue from hazardous environments.

XI. RESCUE-FIRST AID**A. YOU MUST PUT ON YOUR BREATHING APPARATUS BEFORE ATTEMPTING A RESCUE. YOU TOO CAN BECOME A VICTIM.**

B. Remove victim immediately to fresh air zone, preferably upwind of the gas release

C. Maintain victim at rest.

D. If patient is not breathing, commence artificial respiration immediately

E. Summon a doctor or get victim to a doctor.

F. Keep patient warm.

- G. When breathing is restored, give patient stimulants such as tea or coffee, but do not leave unattended.
- H. If eyes are affected, wash them thoroughly with clear water (cold compresses will help, for slight eye irritation),
- I. Patients should be kept under medical observation until the doctor declares them fit to return to work.

Once a victim is removed to pure air and respiration set in motion before the heart action ceases, rapid recovery may be expected.

In cases of slight or minor exposures where the workman has not been totally unconscious and wants to return to work after a short rest period, it is recommended that he not be allowed to return to work until the following day. His reflexes may not be normal and he could be subject to injury from other work hazards.

It is **vitaly important** that everyone working around or near where hydrogen sulphide gas may be encountered have a good working knowledge of artificial respiration. Practices should be held regularly to ensure that personnel maintain a working knowledge of some form of artificial respiration.

XII. ARTILFICIAL RESPIRATION (Mouth-To-Mouth Resuscitation Method)

- A. Place victim on his back, loosen clothing around neck and waist. Turn victim's head to the side, wipe out the mouth quickly, using your fingers to get rid of any foreign matter.
- B. Insert thumb in the mouth - grasp lower jaw and lift it forcibly upwards and forwards.
- C. Hold the lower jaw up and with the other hand close the victim's nostrils.
- D. Take a deep breath, place your mouth firmly over the victim's mouth, and breathe in once every 5 seconds.
- E. While breathing into victim, watch chest rise to indicate air passage is clear.

Remove your mouth from the victim's to allow breath to be exhaled. Count three and repeat.

NOTE: Every moment lost before beginning artificial respiration lessens chances for success. Artificial respiration should be continued until the patient recovers or the patient is pronounced dead by a qualified doctor.

APPENDIX VI

OFFSITE SAFETY

OFFSITE SAFETY

I. CAMP SAFETY

H.T.C recognises the importance of health, safety and environmental considerations at its onsite camp premises, which is equally important as at the worksite. Every employee of H.T.C and contract employees are equally responsible to maintain a safe and hygienic camp premises .

On all H.T.C camp locations , a camp boss would be appointed to oversee and supervise activities at the camp premises and he would be responsible to maintain the camp site to meet the HSE requirements.He would report to the Rig Manager /Superintendant on his findings and areas that needs improvement.A formal camp inspection would be carried out by the onsite Safety officer and the medical officer on a weekly basis to monitor the HSE conditions at the camp .A record of it would be kept on location (See Sample in Appendix IX ,HSE-YD-015). The camp boss would follow up on the findings of the inspection and report it when these tasks are accomplished.

The following rules and procedures implies at all H.T.C camp locations :

A. CAMP RULES

1. The rules and procedures to be followed at the camp premises implies to all employees and contractors.Any person found to be violating these rules would be liable for strict disciplinary action including termination from the job.
2. Upon arrival at the camp site , personnel would report to the camp boss and receive an orientation on the camp site comprising the camp rules, alarms and emergency procedures, familiarization of camp layout and administration.
2. Smoking and Non-Smoking areas shall be designated in the camp, where smoking is strictly prohibited in the accommodation shacks.
3. Noise levels shall be kept down in the camp premises at all times, and adequate signs should be displayed to follow act.
4. Rules regarding drug and alcohols are strictly forbidden in the camp, refer H.T.C 'Drug and alcohol policy' .
5. Vehicle parking areas should be defined and adequate signage should be posted.All vehicles should be parked in this designated area and should be reverse parked.
6. All H.T.C employees and contract employees shall maintain a acceptable personal conduct and would not indulge in quarrel and fights with co-workers or other staff.

7. Proper waste disposal and waste management shall be followed at the camp premises and a good housekeeping should be maintained.

B. HOUSEKEEPING

1. Camp premises shall be kept clean and orderly at all times.
2. Spills of oils, grease or water on floors shall be promptly cleaned up.
3. Materials and supplies shall be stored in an orderly manner to prevent their falling or Spreading.
4. Do not overload shelves, which may collapse and injure personnell.
5. Waste disposal pit should be atleast 100 ft away from the camp premises.Waste should be burnt out in a periodic basis.

C. HEALTH AND HYGIENE

1. All H.T.C employees and contract employees shall keep a good personal hygiene at the camp premises.Food handling staff are at first priority and shall ensure to keep a good personal hygiene when handling foods. Periodic medical Check-ups shall be arranged and records shall be kept on location.
2. Refridgeration units shall be defrosted and cleaned periodically on a weekly basis.
3. All food items shall be checked for their expiry dates on a periodic basis, and ones found defective shall be removed.
4. It is the responsibility of the food handling staff to keep the kitchen premises clean. Combing hair, applying cosmetics and smoking is not allowed in the kitchen premises. All food items including cooked items shall be kept covered.
5. Living quarters, toilets shall be cleaned on a daily basis.Beds, linens shall also be changed on a periodic basis.
6. Waste shall be deposited in bins provided, and should not be thrown in the camp premises.

D. SECURITY MEASURES

All personnel upon arrival at the camp site shall report to the camp boss. Everybody shall be responsible for their personal belongings, and valuable items are not advised to be carried along with. Weapons of any kind are strictly prohibited in the camp premises. No person is allowed to remove from site, any tools, equipment or material, unless he is in possession of a gate pass listing the items to be removed by authorised signatories. (Rig manager/ Field Superintendant).

E. EMERGENCY PROCEDURE

Fire emergency at camp is one of the prime concerns and needs a level of alertness, swift action and knowledge of responsibilities to take control on these situations. All personells should make themselves aware of the location of the emergency alarms and the fire equipments and their use. Periodic emergency Fire drills shall be conducted at the camp site by the onsite safety officer to keep a check on the efficiency of these drills and a record shall be maintained at the location. (See sample form, HTC-YD-008)

The following is the procedure in case of Fire emergency :

1. The person discovering a fire should raise the alarm and alert others in the area, Summon to inform the Camp boss or any senior personnel available at the site and the emergency team.
2. Try to extinguish the Fire by taking the nearest extinguisher without risking his life.
3. Personnel on hearing the alarm, would immediately assemble at the muster point.
4. The Camp boss / Rig manager or any senior personnel available would take control and assign duties to the emergency team, senior personells to arrange for extinguishing the fire , cut-off Electricity , removing flammable materials from the vicinity of fire etc.
5. In the meanwhile a head count would be made at the muster point by the radio man Or camp boss to know the missing persons ,if any. Search and rescue for the missing Persons would be carried out by the emergency team.
6. Inform the Field superintendent, H.T.C management of the incident as soon as possible.

An incident report will be prepared by the Rig manager and sent to the office as soon as possible.

II. TRANSPORT OF PERSONNEL

- A. All operators of company vehicles must have a valid driving license for the specific type of vehicle to be operated and must be familiar with and abide by all traffic laws.
- B. Picking up hitchhikers is strictly forbidden.
- C. All vehicle accidents, major or minor, must be reported as soon as possible to the Rig Manager / Field superintendent. Operators of the company vehicles must be familiar with the procedures to be followed in the event of a vehicle accident.
- D. Never operate a company vehicle while under the influence of intoxicating beverages, Drugs, or prescription medications which may impair the reaction time.
- E. If you feel drowsy while driving, let someone else drive if there is a qualified and Licensed driver available.
- F. At least one rear wheel must be blocked before raising a vehicle with a bumper jack. Follow the manufacturers instructions usually posted to the underside of the 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 fail and allow the vehicle to fall.
- G. Seat belts are installed in all company vehicles. They must be maintained in good Operating condition and must be worn by all persons at all times.
- H. Unsafe and discourteous driving practises 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 towards the Company and causes accidents.
- I. The driver must take positive action to ensure a vehicle does not move while Unattended. A vehicle must not be left parked while motor running.
- J. Smoking is not allowed in or around a motor vehicle while it is being refuelled.
- K. Motor vehicles must not be driven near or within known gaseous areas such as Gaseous wells, emergency burning pits, and low points where gas may accumulate.
- L. Company vehicles must be maintained in good mechanical condition at all times. If a driver detects a mechanical defect or safety hazard in a vehicle assigned to them, they will arrange to have repairs made at once.

APPENDIX VII

**INSPECTION REPORTS
(PRIME MOVER, TRUCKS,
LIGHT VEHICLES)**

**INSPECTION REPORT
GENERATOR INSTALLATION**
(To be filled in for each Generator)

1. Site of Installation : _____

2. Capacity of Generator

- a) K.V.A.: _____
- b) Make: _____
- c) Year of Mfg.: _____
- d) Full Load Current: _____
- e) No. of Phases: _____

3. Metering

- a) Is Voltmeter available at Generator Panel? : Yes/No
- b) Is Voltmeter available, is it working? : Yes/No
- c) Is Ammeter available at Generator Panel? : Yes/No
- d) If Ammeter is available, is it working ? : Yes/No

4. Protection

- a) Protection just after Generator Terminal : Available/ Not Available
- b) Type of Protection : Yes/No
 - Isolator : Yes/No
 - Fuse Switch : Yes/No
 - MCCB : Yes/No
- c) Protection Fuse/MCCB Rating : _____ Amps.

5. Grounding

- a) Is Generator neutral grounded? : Yes/No
- b) Is Generator body grounded? : Yes/No
- c) N^o of ground pits : Yes/No
- d) Value of ground resistance. : Yes/No
- e) If ground pit not available, how has the grounding been done?

Describe: _____

6. Distribution System after Generator

- a) Is the system sound and safe: _____
 - Is upgrading necessary: _____
 - (Describe requirement) _____
- b)
 - i) Check state of Distribution Boards/Busbar
 - ii) Check cable outgoing.
 - iii) Check grounding of installation.

7. Recommendation for Improvement:

[illegible]

Inspected By: _____

Date: _____

APPENDIX VIII

**LIST OF
HAZARDOUS MATERIALS**

PAINT SHOP
LIST OF HAZARDOUS CHEMICALS

MATERIAL	HAZARDOUS COMPONENT	EFFECT
CO-POXY PRIMER	ETHYLENE GLYCOL ETHER XYLENE ETHYL BENZENE POLYAMIDE RESIN TALC	Eye contact causes extreme irritation, burns, and corneal injury. Symptoms are tears, redness, and discomfort. Skin contact can cause irritation which may lead to dermatitis. Toxic by absorption through skin. Inhalation causes irritation to nose and throat. Extended exposure can cause brain or nervous system depression causing dizziness, headache or nausea, and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat, oesophagus and stomach irritation or burns, nausea, vomiting, and diarrhoea.
COROBOND 391 Q.D. PRIMER (RED OXIDE)	TOLUENE XYLENE SOLVENT NAPHTHA ETHYL BENZINE BUTYL ACETATE BUTYL ALCOHOL IRON OXIDE SILICA ZINC OXIDE ZINC PHOSPHATE TALC	Eye contact causes irritation. Symptoms are tears, redness, and discomfort. Skin contact causes irritation and can cause defatting of skin which may lead to dermatitis. Inhalation causes irritation to the nose and throat. Extended exposure may cause brain or nervous system depression causing dizziness, headache or nausea, and if continued indefinitely, loss of consciousness, liver, and kidney damage. Ingestion may cause mouth, throat, oesophagus and stomach irritation, nausea, vomiting, and diarrhoea.
GALVA-PAC 300	ETHYL ALCOHOL N-BUTYL ALCOHOL XYLENE	Eye contact causes irritation. Symptoms are tears, redness and discomfort. Skin contact causes irritation and can cause defatting of the skin which may lead to dermatitis. Inhalation can cause irritation to the nose and throat. Extended exposure may cause brain or nervous system depression causing dizziness or nausea, and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat, oesophagus and stomach irritation, nausea, vomiting and diarrhoea.
HI-BUILD EPOXY WHITE, BASE	PROPYLENE GLYCOL MONO-METHYL ETHER EPOXY RESIN XYLENE ETHYL BENZENE TITANIUM DIOXIDE SILICA, CRYSTALLINE TALC	Eye contact causes irritation. Symptoms are tears and corneal injury. Skin contact can cause skin irritation, which can lead to dermatitis. Inhalation causes irritation to the nose and throat. Extended exposure may cause brain or nervous depression causing dizziness, headache or nausea and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat oesophagus and stomach irritation, nausea, vomiting and diarrhoea.
HI-BUILD EPOXY-CONVERTER	PROPYLENE GLYCOL MONO-METHYL ETHER XYLENE ETHYL BENZENE POLYMER RESIN SILICA, CRYSTALLINE TALC	Eye contact causes irritation. Symptoms are tears and corneal injury. Skin contact can cause skin irritation, which can lead to dermatitis. Inhalation causes irritation to the nose and throat. Extended exposure may cause brain or nervous depression causing dizziness, headache or nausea and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat oesophagus and stomach irritation, nausea, vomiting and diarrhoea.
CRYSTALLINE SILICA	SILICON DIOXIDE	Repeated inhalation of crystalline silica dust may cause silicosis, a form of disabling, progressive and sometimes fatal pulmonary fibrosis
XYLENE	XYLENES ETHYL BENZENE	This material is an eye irritant. Direct contact with the liquid or exposure to vapours or mists, may cause tears, stinging, redness and swelling. This material may cause mild skin irritation. Prolonged contact may cause redness, burning, drying or cracking of the skin. While this material has a low degree of toxicity, breathing high concentrations of vapours or mists may cause irritation to the nose or throat. Ingestion of excessive quantities may cause irritation to the digestive tract.

PAINT SHOP

LIST OF HAZARDOUS CHEMICALS - Page 2

MATERIAL	HAZARDOUS COMPONENT	EFFECT
METHYL ETHYL KETONE	METHYL ETHYL KETONE	Ingestion can cause mental sluggishness. Inhalation causes irritation to nasal passages and throat. Can cause moderate skin injury (redness and swelling). Liquids and vapours are irritating to the eyes.
CO-POXY PRIMER (BASE)	ETHYLENE GLYCOL XYLENE 1,2,4 TRIMETHYL BENZENE EPOXY RESIN TITANIUM TALC	Eye contact causes tears, redness and discomfort. Skin contact can cause dermatitis. Inhalation causes irritation to the nose and throat. Extended exposure may cause brain or nervous system depression causing dizziness, headache or nausea, and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat, oesophagus and stomach irritation.
#801 GLS EN CHAULK WHITE	SOLVENT NAPHTHA TITANIUM DIOME SILICA AMORPHOUS	Eye contact causes extreme irritation, burns and corneal injury. Symptoms are tears, redness and discomfort. Skin contact can cause irritation, which may lead to dermatitis. Toxic by absorption through the skin. Inhalation causes irritation to the nose and throat. Extended exposure may cause brain or nervous system depression causing dizziness or nausea, and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat, oesophagus and stomach irritation, nausea, vomiting and diarrhoea.
ACROTHANE WHITE CAMP AGENT	PROPYLENE GLYCOL MONO- ETHYL ETHER ACETATE XYLENE ETHYL BENZENE TITANIUM DIOXIDE SILICA, AMORPHOUS N-BUTYL ACETATE	Eye contact causes irritation. Symptoms are tears, redness and discomfort. Skin contact causes irritation and can cause defatting of the skin, which may lead to dermatitis. Inhalation causes irritation to the nose and throat. Extended exposure may cause brain or nervous system depression causing dizziness or nausea, and if continued indefinitely, loss of consciousness, liver and kidney damage. Ingestion may cause mouth, throat, oesophagus and stomach irritation, nausea, vomiting and diarrhoea.
ACROTHANE URE CURING AGENT	HE XAMETHYLENE DI- ISOCYANATE BEXANEHYLENE DI- ISOCYANATE HOMOPOLYMER ETHYL BENZENE N-BUTYL ACETATE	Eye contact causes irritation. Symptoms are tears, redness and discomfort. Skin contact causes irritation and can cause defatting of the skin, which may lead to dermatitis. Sensitise may include rash, itching and hives symptoms. Extended exposure may cause brain or nervous system depression causing dizziness or nausea, and if continued indefinitely, loss of consciousness, liver and kidney damage. Over-exposure to di-isocyanate containing mists and vapours may cause an allergic respiratory reaction or sensitisation in some individuals, producing asthma-like symptoms on subsequent exposures at very low concentrations. Sensitisation may be temporary or permanent. May also cause irritation to nose, throat and lungs. Symptoms include pain or dryness in the throat and nasal passages and coughing. Ingestion may cause mouth, throat, oesophagus and stomach irritation, nausea, vomiting and diarrhoea.

PIPE WELDING AND FABRICATION SHOP
LIST OF HAZARDOUS CHEMICALS

MATERIAL	HAZARDOUS COMPONENT	EFFECT
CARBON STEEL	IRON MANGANESE CARBON ALUMINIUM PHOSPHOROUS SULPHUR SILICON	Short term exposure to fumes / dust may produce irritation to eyes and respiratory system. Inhalation of high concentrations of freshly formed oxide fumes of iron, manganese and lead may cause metal fume fever (symptoms very similar to influenza).
STAINLESS STEEL	IRON NICKEL MANGANESE MOLYBDENUM COPPER TITANIUM CARBON PHOSPHOROUS SULPHUR SILICON COBALT NIOBIUM NITROGEN TIN	Short term exposure to fumes / dust may produce irritation of eye and lungs. Oxide fumes of iron, manganese and copper may cause metal fume fever (symptoms very similar to influenza).
ALLUMINIUM ALLOYS	ALUMINIUM COPPER MANGANESE SILICON TIN CHROMIUM NICKEL	Aluminium dust should be treated as a nuisance dust and exposure may produce irritation of the eyes and respiratory system. The potential for over-exposure to copper fumes may exist when welding, flame cutting, etc. On alloys containing high amounts of copper (i.e. >2.5%). Over-exposure to copper fumes can result in respiratory irritation, nausea and metal fume fever. Plasma arc cutting or welding of aluminium can generate ozone. Over-exposure to ozone can result in mucous membrane irritation as well as pulmonary changes including irritation, congestion and oedema.
GALVANISED STEEL	ZINC	"Zinc Chills", a form of metal fume fever can occur while welding or burning galvanised steel.
ACETYLENE GAS	ACETYLENE GAS	In high concentrations in a confined space, can be an asphyxiant and also an explosion hazard. Breathing high concentrations causes cramps, nausea, respiratory difficulties, loss of consciousness, convulsions and eventually death.
ARGON GAS	ARGON GAS	A simple asphyxiant. Over-exposure may cause loss of balance and dizziness.
NITROGEN GAS	NITROGEN GAS	A simple asphyxiant. Over-exposure may cause loss of balance and dizziness.
HYDROGEN GAS	HYDROGEN GAS	A simple asphyxiant. Over-exposure will lead to dizziness, deeper breathing, possible nausea and eventually unconsciousness and death.
CARBON DIOXIDE GAS	CARBON DIOXIDE GAS	Low concentrations cause increased respiration and headache and vomiting. Higher concentrations cause rapid circulation. In both cases if moved to fresh air ,it will lead to coma and eventually death.

EQUIPMENT MAINTENANCE SHOP
LIST OF HAZARDOUS CHEMICALS

MATERIAL	HAZARDOUS COMPONENT	EFFECT
NON-BUTYL DEGREASER	SODIUM METASILICATE	Acute exposure may cause irritation to the eyes and skin. Inhalation may cause irritation of the nasal and respiratory passages. Ingestion can cause gastro-intestinal irritation, nausea, vomiting and diarrhoea.
LUBRICATING GREASE	PETROLEUM HYDROCARBONS	Has a defatting action on the skin. Prolonged exposure may cause skin disorders such as dermatitis, folliculitis, oil acne or even skin cancer.

QA/QC SHOP
LIST OF HAZARDOUS CHEMICALS

MATERIAL	HAZARDOUS COMPONENT	EFFECT
RAPID FIXER	ALUMINIUM SULPHATE SULPHURIC ACID	Causes irritation to the eyes and the skin. Ingestion may cause irritation or burns of the oesophagus.

The complete list of hazardous chemicals can be found in the MSDS supplied by the manufacturer , kept on location. A copy of it can be available from the onsite Safety officer / Safety Manager.

APPENDIX IX

HSE FORMS

H.T.C. YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING

EMPLOYEE / VISITOR HSE INDUCTION FORM

RIG NO.: _____

EMPLOYEE'S NAME: _____

EMPLOYEE'S BADGE NO.: _____

Topics discussed :

No.	Description	Yes	No	Items Issued
1	Personal Protective Policy			
2	Drug and Alcohol Policy			
3	Smoking Policy			
4	Housekeeping and Environmental Policy			
5	Hazardous Materials Right - To - Know			
6	Work Site Organization & Responsibilities			
7	Reporting of Accidents / Incidents			
8	Safety Meetings			
9	Work Permit System			
10	Traffic Rules			
11	Emergency Drills / Response			
12	Alarms & Muster Locations			
13	Training			
14	Personal Hygiene			

Method of orientation : (walkaround / video / slideshow) -----


Comments :

Position: _____

Signature: _____

Prepared by:

(Form HSE-YD-001) ; This form is to be completed after providing safety induction to New employees / Visitors)

	ACCIDENT / incident report	Ref number : IR /YD/
----------------------------------------------------------------------------------	-----------------------------------	----------------------

Date incident identified:		Time incident identified:	
Location of accident:		Activity :	
Cause of the accident :			
Actions taken to eliminate the Incident:			
Further recommended actions:			
Reported by:			
Name:		Position:	
Date:		Signature:	
Are further actions required?: Y / N		If yes, indicate by whom:	
Comments:			
Rig Manager :			
Name :		Date:	
		Sign:	
Company Site Representative :			
Name:		Position:	
Date:		Signature:	

H.T.C YEMEN INTERNATIONAL LIMITED
YEMEN DRILLING



PROPERTY DAMAGE AND LOSS REPORT

PROJECT NAME :

DATE :

PROJECT NO :

1.DAMAGE/LOSS : _____

2.LOCATION AT WHICH DAMAGE/LOSS OCCURRED: _____

3.DATE AND TIME OF OCCURANCE : _____

4.LIST OF ITEM DAMAGED OR LOST : _____

5.IDENTIFY/DESCRIBE DAMAGE TO PROPERTY(BY ITEMS) : _____

6.OWNERSHIP OF PROPERTY DAMAGED(IF NOT AL-HASHEDI,STATE OWNER'S NAME AND
ADRESS) : _____

7.ACTION TAKEN TO PREVENT REOCCURANCE : _____

Sr TOOLPUSHER :

NAME

SIGN

FIELD SUPERINTENDENT :

NAME

SIGN

(Form HSE-YD -003 ; This form is to be filled out for propert damages above US \$ 1000.)

H.T.C YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING**PERSONNEL ACCIDENT/ INJURY AND INVESTIGATION REPORT****SECTION A : DETAILS OF INJURED PERSON**

1. INJURED PERSONS NAME : _____
 2. ID NO : _____ 3. DESIGNATION: _____
 4. SECTION EMPLOYED : _____ 5. AGE : _____
 6. LENGTH OF SERVICE WITH COMPANY : _____
 7. DATE OF ACCIDENT : _____ 8. TIME : _____
 9. PLACE ACCIDENT OCCURRED : _____

10. INCIDENT CATEGORY :

LOST TIME INCIDENT(LTI)
 MEDICAL TREATMENT
 CASE(MTC)

☐
☐
☐

MATERIAL LOSS INCIDENT(M I)

FATALITY(FAT)

NEAR MISS INCIDENT(NMI)
 ENVIRONMENTAL
 ACCIDENTS(ED)

☐
☐
☐
SECTION B : ONSITE SUPERVISOR'S REPORT ON ACCIDENT

1. WAS INJURED PERSON ON DUTY AT THE TIME OF ACCIDENT ?
 YES/NO: _____

2. ON DAY OF INCIDENT BETWEEN WHAT HOURS :
 a. WAS THE PERSON EXPECTED TO WORK
 FROM : _____ TO : _____
 b. HAS THE PERSON RESUMED DUTY, IF YES ; DATE: _____

3. ARE YOU SATISFIED AS A RESULT OF YOUR INVESTIGATION THAT AN
 INCIDENT OCCURRED :-
 a. AT THE DATE AND TIME AS STATED IN A7
 YES/NO _____
 b. PLACE STATED IN A8
 YES/NO _____

4. AT THE TIME OF THE INCIDENT ,WHAT WORK WAS THE PERSON
 PERFORMING ? _____

5. AT THE TIME OF THE INCIDENT , WAS THE PERSON AUTHORIZED
 FOR THE PURPOSE OF HIS WORK ?
 a. TO BE WHERE HE WAS ?
 YES/NO _____
 b. TO BE DOING WHAT HE WAS?
 YES/NO _____

6. WHAT WAS THE CAUSE OF THE INCIDENT AND HOW DID IT HAPPEN?
 (IF A FALL OF PERSON, PLANT OR MATERIALS, ETC STATE HEIGHT OF FALL)

7. WAS THE INCIDENT REPORTED TO YOU OR TO ANOTHER RESPONSIBLE

H.T.C.YEMEN INTERNATIONAL ,LIMITED

PERSON. YES/NO _____
IF SO REPORTED, _____
DATE & TIME _____

8. WHAT INJURIES TO THE PERSON WERE :

a.OBSERVED SHORTLY AFTER THE INCIDENT : _____

b.REPORTED BY THE INJURED BUT NOT OBSERVED AS IN a. _____

9. GIVE NAME AND I.D. NO. OF WITNESSES WHO ACTUALLY WITNESSED
THE INCIDENT: _____

10.WHAT ACTS AND/OR CONDITIONS CAUSED THIS ACCIDENT ?

11.WHAT HAS OR IS TO BE DONE TO PREVENT A REOCCURANCE:

Sr TOOLPUSHER :

NAME

SIGN

SUPERINTENDENT :

NAME

SIGN

INVESTIGATED BY :

HSE MANAGER :

NAME

SIGN

DRILLING MANAGER :

NAME

SIGN

(Form HSE-YD-004;This form is to be completed for major accidents, fatality, high potential incidents)

H.T.C YEMEN INTERNATIONAL LIMITED
YEMEN DRILLING



APPLICATION FOR MEDICAL TREATMENT
TO WHOMSOEVER IT MAY CONCERN

We refer the person named below for further treatment and for examination and would be obliged for any comments you may have, your honest, open and professional judgement would be appreciated.

PATIENTS NAME: _____ NATIONALITY: _____

AGE: _____ DESIGNATION: _____ ID NO: _____

IF ACCIDENT WHERE IT OCCURED: _____

DATE AND TIME REPORTED: _____

DESCRIPTION OF ACCIDENT / SICKNESS : _____

TREATMENT GIVEN: _____

MEDIC: _____ SIGNED: _____ DATE: _____

MEDICAL OFFICER/ HOSPITAL REPORT:

DATE EXPECTED TO COMMENCE WORK: _____

SIGNATURE: _____

DATE: _____

(Form HSE-YD-005; This form is to be used to record medical treatment)

SAFE WORK PERMIT**YEMEN DRILLING**

A Division of Al-Hashedi for Trading & Contracting

RIG #**SAFE WORK PERMIT FOR HOTWORK / CONFINED SPACE ENTRY / OTHER**

Date of issue : _____ Time of issue : _____ Time of expiry : _____

Type of work : HOT WORK ☐ CONFINED SPACE ENTRY ☐ OTHER ☐

Location of work: _____ Persons performing work : _____

Description of work to be done : _____

~~Potential hazards associated with work :~~

Checklist for safe work	N/A	YES	NO
(1) Has an inspection been made of the unit / equipment to be worked on ?			
(2) Where inspected , was it found to be safe to carry the above work ?			
(3) Have combustible materials ,if any, removed from the area?			
(4) Is fire protection required ? (specify)			
(5) Has the confined space or vessel been prepared for safe entry ?			
(6) Are gas tests required during the job ?			
(7) Is welding permitted ?			
(8) Have electrical switches been locked out and tagged ?			
Signatures: Chief electrician : _____ Chief Mechanic : _____			
(9) Is permit receiver aware of the hazards associated with the job, MSDS etc ?			

TYPES OF GAS TEST REQUIRED AND RESULTS OBTAINED (Check where required)

I have examined the above equipment at _____ am/pm & observed the reading to be :

H2S: _____ ppm LEL : _____ % CO : _____ ppm Oxygen : _____ %

Gas testers Name and Signature : _____

What additional protective equipment / measures is required ? (specify)
: _____**Extension of permit :**

Permit extended to _____ Date : _____ Time : _____ Approved by : _____

AGREEMENT : I HAVE CHECKED BOTH THE PERMIT AND THE JOB. I UNDERSTAND THE NATURE AND EXTENT OF THE WORK AND THE PRECAUTIONS TO BE FOLLOWED IN COMPLETING THE WORK .

Permit issued by : _____ Position : _____

Permit approved by :

YD Approval : _____ Position : _____

Client Approval : _____ Position : _____

PERMIT SIGN OFF : Work complete: _____ Date : _____ Time : _____

(Form HSE-YD-006 ; This form is to be used for issuing work permits for hot work , confined space entry, and other jobs requiring permits)

SAFETY MEETING RECORD FORM



YEMEN DRILLING

A Division of Al-Hashedi for Trading & Contracting

Rig No.: YD #

Location:

CLIENT.

Date:

TYPE OF MEETING.

TOOL BOX

11

WEEKLY

11

MONTHLY

11

TOPIC OF MEETING;

PARTICIPANTS

[illegible]

DISCUSSION LEADER:

Name: _____

Position: _____

Sign : _____

DRILL RECORD FORM**YEMEN DRILLING**

A Division of Al-Hashedi for Trading & Contracting

Rig No.: _____ **Location:** _____ **Client** _____ **Date:** _____

TYPE OF DRILL

Fire ☐ Medical ☐ H2S ☐ Well Control ☐ Other ☐

DATE & TIME OF DRILL: _____

DETAILS OF DRILL (Location, scenario, expected response, etc.):

CRITIQUE OF DRILL (Response times, correct/incorrect actions, equipment used, etc.)

PARTICIPANTS

NAME & POSITION	NAME & POSITION

RECORD FORM COMPLETED BY:

Name: _____ **Position:** _____

Sign: _____ **Date:** _____

(Form HSE- YD- 008 ;This form should be completed to record all the drills)

H.T.C YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING



TO, : YEMEN DRILLING OFFICE,
 ATTN, : Mr.BARRY \ JIM
 CC, : Mr. SAJU, Safety Manager
 FROM, : SAFETY OFFICER Y.D #
 CC, : WELL SITE FILE

MONTHLY HSE STATISTICS

MONTH : TOTAL SAFETY DAYS\ NO L.T.A :
 RIG # LAST L.T.A REPORTED :

DESCRIPTION	MONTH TO DATE	YEAR TO DATE
FAT-Fatal accident		
NMI-Near Miss Accident		
LTA-Loss Time Accident		
MTC-Medical treatment case		
OI-Occupational illness or injury		
RWC-Restricted Work Day Case		
MI-Material loss accident		
ED-Environmental Accident		

Training-H2S,Scaba,Fire,Others etc		
Safety meetings & PJMS		
Drills-BOP\Fire\Mandown\H2S\Others		
PTW-Permits to work		
Inspection Audit Rig		
Inspection Audit Camp		

Monthly Manhours	Rig	Camp	Total

(Form HSE-YD-009,; This form is to used to complete the monthly HSE statistics, and a copy is to be sent to the drilling office)



H.T.C YEMEN INTERNATIONAL LIMITED
YEMEN DRILLING
MONTHLY ACCIDENT REPORT

RIG**#**

PROJECT NAME:

PROJECT NO:

DATE:

MONTH ENDING:

PREPARED BY:

DESCRIPTION	THIS PERIOD	TOTAL ACCUMULATIVE	REMARKS
TOTAL LOST TIME ACCIDENTS			
TOTAL MINOR ACCIDENTS			
TOTAL OFFDUTY ACCIDENTS			
TOTAL FATAL ACCIDENTS			
TOTAL DIRECT MANHOURS			
OVERALL FREQUENCY RATE			
SEVERITY RATE			
MEAN DURATION			

FORMULA USED: FREQUENCY RATE = LOST TIME ACCIDENT / TOTAL MAN-HOURS WORKED 1,000,000
 (GIVES FREQUENCY RATE ACCIDENT MAY BE EXPECTED TO OCCUR)

SEVERITY = MAN-HOURS LOST / TOTAL MAN-HOURS WORKED X 100
 (GIVES SEVERITY AS A PERCENTAGE OF MAN-HOURS WORKED)

MEAN DURATION = MAN-HOURS LOST / NUMBER OF LOST TIME ACCIDENTS
 (GIVES AVERAGE HOURS LOST PER LOST TIME ACCIDENT)

(Form HSE-YD-010; This form is to be used to record the monthly accidents)

H.T.C YEMEN INTERNATIONAL LIMITED



YEMEN DRILLING
MONTHLY RIG HSE CHECKLIST

RIG :

month:

SAFETY & FIRE FIGHTING EQUIPMENT

Fire pump
 Fire hoses
 Foam system
 Portable extinguishers
 Fire suits
 SCBA's
 Portable multigas detectors
 Eye wash stations
 Derrickman's climbing assist
 Monkeyboard retractable life line
 Stabbing board retractable life line
 Safety harnesses,belts and lanyards

OK	Need Attn.	Remarks

PERSONAL PROTECTIVE EQUIPMENT

Coveralls
 Hardhats
 Safety boots
 Safety glasses
 Hearing protection
 Respiratory protection
 Chemical protection
 Gloves

Adeq.Nos.	Needed	Remarks

ADMINISTRATIVE

Pre-tour safety meetings
 Weekly safety meetings
 Special\pre-job safety meetings
 Well control drills
 Fire drills
 Medical\ rescue drills
 Trainings

Held	Date last held	Remarks

Weekly HSE report completed
 Camp inspection completed
 All accident reported to head office

Yes	No	Remarks

Completed by : SAFETY OFFICER :

(Form HSE-YD-011,This form is to be completed as a monthly rig safety checklist)

H.T.C YEMEN INTERNATIONAL LIMITED YEMEN DRILLING



MONTHLY SAFETY INSPECTION REPORT

RIG #.

Month :

Item	Work Area	Yes	No	N/A
1	Is PPE available, in good condition and used correctly for all work problems?			
2	Are work areas clear of oil, grease and trip hazards?			
3	Are walkways clear of oil, grease and trip hazards?			
4	Are all areas clear of oil, grease, chemical or other spillages?			
5	Are plans for containment of oil, chemical, etc. spillages available?			
6	Are emergency exits and escape routes clear, adequately marked and clear of trip hazards?			
7	Is sufficient lighting available to enable people to work safely?			
8	Can all alarms be heard above the sound of operating equipment?			
9	Do all personnel know what actions to take if alarms sound?			
10	Are appropriate safety signs displayed and in good condition?			
11	Is appropriate fire fighting equipment readily available and adequately maintained?			
12	Are safety showers and eye baths available, in good condition and operational?			
13	Are pipes, hoses and fittings correctly pressure rated and in date for inspection?			
14	Are pipes, hoses, etc. secured such that they will not cause a hazard during operations?			
15	Is ventilation adequate to prevent build-up of fumes from exhaust systems, chemicals, etc. which could cause a health hazard? NATURAL			
16	Are hazardous materials stored, mixed and used correctly and appropriate hazard warning signs posted?			
17	Are portable ladders in date for inspection and in good condition?			
18	Are portable ladders secured, in good condition, top extends 1 meter above landing point and the 4 in 1 rule observed?			
19	Are manual handling procedures being followed and have personnel been trained in them?			
20	Is all equipment in a good state of repair?			
21	Is housekeeping to a high standard?			
22	Are tools on location correct for the job in hand?			
23	Are tools being used correctly?			
24	Are tools in a good state of repair?			
25	Do all employees and third party contractors attend and get involved in rig safety meetings?			
26	Are minutes of safety meetings documented and a roll call taken?			

27	Are risk assessments/JSA's conducted prior to all critical or non-routine tasks and do all relevant personnel participate in the process?			
28	Are toolbox talks held with all relevant personnel for all critical and non-routine tasks?			
29	Are industry and company Safety Alerts available to all personnel?			
30	Are accident, incident and near miss reports followed up to find root cause?			
31	Do accident, incidents, near miss reports follow the standard ratio (i.e. 1:29:300)			
32	Is a copy of the Chemical hazard assessment available on the installation?			
33	Are emergency drills held regularly? IN PROGRES			
34	Is there a de-brief following drills and is an action plan for improvement prepared?			

General Comments:

Signature:**Name/Position:****Date:**



HTC YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING

PRE-SPUD & POST DRILL OUT INSPECTION REPORT

DATE :

LOCATION :

INSPECTED BY :

POSITION :

INSPECTED BY :

POSITION :

1	DERRICK	S	U	P	NA
1.1	red crown lights operational				
1.2	man assist device operable				
1.3	crown block				
1.4	bumper blocks meshed/strapped				
1.5	monkey board fingers chained				
1.6	monkey board fingers straight				
1.7	diving board safety chained				
1.8	escape buggy accessible				
1.9	escape line flagged/secure				
1.1	all sheaves have safety lines				
1.1	kelly hose safety cabled				
1.1	deadline stabilizers safety cabled				
1.1	block hanging line secured				
1.1	stabbing board condition/position				
1.2	condition of beams and girts				
1.2	lights have safety cables				
1.2	general condition of wiring				
1.2	climbing device and belts cond'n				
1.2	pins and keepers in place				
1.2	ladder condition				
1.2	tong hanging lines condition				
2	DRLG LINE & TRAVEL ASS'Y	S	U	P	NA
2.1	line off the ground				
2.2	slip and cut program followed				
2.3	condition of deadline anchor				
2.4	condition of spooler				
2.5	safety line on weight indicator				
2.6	hook latch / pin condition				
2.7	elevator bale latches				
2.8	elevator hinges and latches				
3	SUBSTRUCTURE	S	U	P	NA
3.1	pins and keepers in place				
3.2	spreaders in place				
3.3	illumination and wiring				
3.4	oil leaks evident				
3.5	sub base grounded				
3.6	hand rails on walkaways				
3.7	walkaways pinned properly				
3.8	cellar cribbed / sump pump installed				
3.9	matting condition				

4	BLOWOUT PREVENTERS	S	U	P	NA
4.1	flow line diverter(trip tank)operable				
4.2	fill up line connected				
4.3	kill line connected /safety chained				
4.4	choke line condition				
4.5	valve handles installed				
4.6	hydraulic lines fire sheated				
4.7	control lines / nipples leak free				
4.8	BOP's turnbuckled to sub				
4.9	handwheels available for rams				
4.1	BOP'S pressure tested each hole				
4.1	BOP's function tested daily				
4.1	BOP's handling system condition				
5	MANIFOLD / DEGASSER	S	U	P	NA
5.1	adequate lighting				
5.2	valve handles installed on manifold				
5.3	remote choke operable				
5.4	bar accessible for hand pump				
5.5	C.P guages functioning(floorman)				
5.7	D.P.P guages functioning				
5.8	degasser inlet-fluid cushion turns				
5.9	degasser lines appropriately sized				
5.1	gut/degasser lines straight secure				
6	ACCUMULATOR	S	U	P	NA
6.1	main control and remotes operable				
6.2	safety device for blind ram controller				
6.3	adequate lighting in accum. Shack				
6.4	fluid level in reservoir OK				
6.5	pressure guages appropriate				
6.6	ann.pressure regulator functioning				
6.7	adequate # of nitrogen cylinders				
6.8	appropriate accumulator sizing				
6.9	remote controls operable				
6.1	accumulator shack grounded				
6.1	auto start sign on accum.pump				
6.1	BOP controls labelled				
7	DRAW WORKS	S	U	P	NA
7.1	guards in place				
7.2	drillers controls labelled /operable				
7.3	crown saver operating & checked				
7.4	brake hold down chain in place				

H.T.C.YEMEN INTERNATIONAL ,LIMITED

7.5	brake linkage and bands inspected				
7.6	min. 7 wraps on drum				
7.7	catheads and divider condition				

8	FLOOR	S	U	P	NA
8.1	handrails in place and secure				
8.2	condition of flooring				
8.3	non-skid material around table				
8.4	min.3 exits from floor,stair cond'n				
8.5	pipe racking platform condition				
8.6	mouhole even w/floor & covered				
8.7	kelly pullback system condition				
8.8	mud can / rubbers available				
8.9	slips (dies,handles,hinges) cond'n				
8.1	dog collar(dies,handles,pins..)				
8.1	kelly cocks operable (w/key handy)				
8.1	lighting adequate				
8.1	tugger (line,guard,spooler,brake)				
8.1	slickline unit,guard and spooler				
8.2	tong safety lines/clamps in place				
8.2	tong condition				
8.2	make up / break out lines				
8.2	general housekeeping				
9	DOGHOUSE	S	U	P	NA
9.1	general housekeeping				
9.2	eyewash station functioning				
9.3	fire extinguisher prominent				
9.4	blowout drill posted				
9.5	approved intercomm				
9.6	bulletin board useable				
9.7	trip sheets available				
9.8	safety meetings being held				
9.9	spare asfety belts and lanyards				
9.1	safety signs posted				
9.1	lighting explosion proof				
9.1	electrical panels sealed				
10	V-DOOR/CATWALK/PIPE RACKS	S	U	P	NA
10	V-door properly secured				
10	condition of ramp stairs				
10	condition of catwalk deck				
10	catwalk stairs in place				
11	catwalk/ pipe rack level				
11	pipe racks fastened together				
11	stop pins attached and in place				
11	condition of derrick stand				
11	FUEL TANK	S	U	P	NA
11	no leaks evident				
11	pumps guarded				
11	condition of wiring				
11	condition of ladder				
12	no smoking signs in place				

12	WATER TANKS	S	U	P	NA
12	pumps guarded				
12	condition of wiring				
12	condition of ladder				
13	MUD TANKS				
13	shakers/ transfer pump guarded				
13	lighting adequate and explosion proof				
13	general wiring condition				
13	handrail condition				
14	stairs / walkaways condition				
14	no leaks evident				
14	floor openings covered				
14	goggles/shiels/rubber gloves handy				
14	eye wash operable				
13	pit level indicators operable				
13	trip tank indicator and PVT at floor				
13	general housekeeping				
14	MUD PUMP AREA	S	U	P	NA
14	releif valve set at proper psi				
14	set at 3200 psi				
14	releif line sloped to drain/secured				
14	shock hoses cabled				
15	guards in place				
15	valve handles in place				
15	fire extinguisher nearby				
15	eye wash nearby				
15	general housekeeping				
15	MUD STORAGE AREA	S	U	P	NA
15	stacks safe and orderly				
15	bulk bags handled correctly				
15	chemical signs in place				
15	general housekeeping				
16	OIL STORAGE	S	U	P	NA
16	no smoking signs in place				
16	no leakage on fittings/pump/barrels				
16	fire extinguisher nearby				
17	GENERATORS / SCR	S	U	P	NA
17	fans and belts guarded				
17	no leaks evident				
17	used oil disposed properly				
17	noise hazards sign posted				
18	fire extinguishers nearby				
18	shafts,pulleys,belts covered				
18	air compressor guards in place				
18	safety valve on air receiver tanks				
18	auto start sign on compressors				
17	general housekeeping				

H.T.C.YEMEN INTERNATIONAL ,LIMITED

[illegible][illegible]

COMMENTS/ RECOMMENDATIONS :

FOLLOW UP ACTION :

H.T.C YEMEN INTERNATIONAL LIMITED YEMEN DRILLING



MAST INSPECTION REPORT

Rig :
Date:

Operator:
Location:

Mast is being : ☐ Raised ☐ Lowered

To be completed before mast is raised or lowered :

Items	Inspection checklist:	Yes	No	N/A
1.	The mast is free of bent or missing braces ?			
2.	Is the mast ladder secure and in good condition the entire length?			
3.	Are crown sheaves in good condition?			
4.	Is monkey board securely attached?			
5.	Are monkey board fingers safety-chained their entire length?			
6.	Is derrickman's escape line properly attached and no kinks?			
7.	Are tong hangar pulleys securely bolted and have safety lines?			
8.	Are tong hangar lines in good condition?			
9.	Is climbing device pulleys and line in good condition?			
10.	Are mast bolts and pins in place with safety keepers?			
11.	Have all pinning taps been checked for cracks?			
12.	Does the Kelly hose has snub lines at both ends?			
13.	Is stand pipe securely attached to the mast?			
14.	Is drilling line free of wickers and in generally good condition?			
15.	Is deadline anchor and line clamp in good condition?			
16.	Does crown have two red lights?			
17.	Are all mast lights in good order and secured with safety lines?			
18.	Is crown bumper in good condition and covered with mesh?			
19.	Are there any loose lines or ropes that can snag during raising?			
20.	Are there any loose parts or tools left in the mast?			
21.	Are all hand railings securely attached?			
22.	Is block hangar line securely attached to the mast?			
23.	Are traveling block guards securely bolted?			
24.	Is the weight indicator working properly?			
	Comments and remarks:			

SIGN OFF:

YD RIGMANAGER :

SAFETYMAN:

SIGNATURE:

SIGNATURE:

(Form HSE-YD-014; This form is to be for mast inspections)

H.T.C. YEMEN INTERNATIONAL LIMITED
YEMEN DRILLING



CAMP INSPECTION REPORT

Project :

Month:

Camp :

Location:

No	Description	Good	Satisfactory	Unacceptable	Comments
1	Living accomodation				
2	Lavatory block				
3	Shower / bath block				
4	kitchen				
4a	Cook / helper- medical (y/n)				
4b	Cook / helper-neat & tidy (y/n)				
4c	Cook / helper-wearing aprons (y/n)				
4d	Utensils				
4e	Gas system				
4f	Waste disposal				
4g	Freezer tidiness & temperatures				
4h	Exhaust fans				
4i	Drinking water				
4j	Food quality				
4k	Food stores (chilled)				
4l	Food store (tinned & dry goods)				
4m	Housekeeping				
4n	General safety				
5	Dining hall				
6	Staff accomodation				
7	Staff dining room				
8	Electrical supplies				
9	Security fencing / lighting				
10	General camp area				
No	Action Required (use reverse of form if more space required)	Due date		Responsible	

Inspected by :

Signature :

Name:

(Form HSE-YD-015; This form to be used as checklist for camp inspections including senior and junior)

RIG

DATE:

[illegible]

HTC YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING

MONTHLY SCABA INSPECTION REPORT



MONTH:

RIG :

[illegible]

INSPECTED BY :

SIGNATURE :

(Form HSE-YD-017; This form is to be filled to keep record of smoke detector inspections)

H.T.C. YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING



WEEKLY RIG SITE AND CAMP FIRE EXTINGUISHER INSPECTION

RIG No.

DATE.

No.	Description	Tag	Seal	Physical Damage	External Corrosion	Comments

Inspected by :

Signature :

(Form HSE-YD-018; This form is to be completed to keep record of the fire extinguisher inspections)

H.T.C YEMEN INTERNATIONAL LIMITED
YEMEN DRILLING**WEEKLY SMOKE DETECTOR INSPECTION REGISTER****RIG #****DATE:**

Sr no.	Description	STATUS	COMMENTS

INSPECTED BY :**SIGNATURE:**

(Form HSE-YD-019 ; This form is to be filled to keep record of smoke detector inspections at the rig and the camp site)

H.T.C YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING

VEHICLE INSPECTION REPORT

Date

:

Location :

Inspected by :

Vehicle Number							
Cab :							
Housekeeping							
Communications system							
Speed monitor							
Seat belts							
Battery operational							
Emergency brake							
Windsheild							
Wiper Fluid							
Mirrors							
Lights							
High beam							
Low beam							
Cab marker lights							
Right front turn signal							
Left front turn signal							
Brake lights							
Strobe light							
Back up lamp							
Right rear turn signal							
Left rear turn signal							
Right rear tail lights							
Left rear tail lights							
Tires							
Front tire condition							
Center tire condition							
Rear tire condition							
Winch & tie-downs							
Winch cable							
Sling condition							
Chain connectors							
Boomers							
Webbing tie-downs							
Chains							
Fire extinguisher							

ok = item in good condition

x = item in not good condition

Remarks :

(Form HSE-YD-020; This form is to be used to keep records of vehicle inspections including Rig move trucks & all other vehicles on site)

TRAINING RECORD FORM



YEMEN DRILLING

A Division of Al-Hashedi for Trading & Contracting

Rig No.: YD #	Location:	CLIENT.	Date:
---------------	-----------	---------	-------

TYPE OF TRAINING. PRACTICAL ☐ VIDEO ☐ SLIDESHOW ☐

TOPIC OF TRAINING;

PARTICIPANTS

[illegible]

DISCUSSION LEADER:

Name: _____ **Position:** _____

Sign : _____

HTC YEMEN INTERNATIONAL LIMITED

YEMEN DRILLING**DAILY CRANE / FORKLIFT INSPECTION REPORT**Inspections to be conducted at the beginning of each shift

CRANE / FORKLIFT No. WEEK STARTING :

	<u>Date</u>		<u>Date</u>		<u>Date</u>		<u>Date</u>		<u>Date</u>		<u>Date</u>		<u>Date</u>	
<u>SHIFT</u>	<u>Day shift</u>	<u>Night shift</u>	<u>Day shift</u>	<u>Night shift</u>	<u>Day shift</u>	<u>Night shift</u>	<u>Day shift</u>	<u>Night shift</u>	<u>Day shift</u>	<u>Night shift</u>	<u>Day shift</u>	<u>Night shift</u>	<u>Day shift</u>	<u>Night shift</u>
BRAKES														
TIRES														
LIGHTS														
LIFT SYSTEMS														
FLUID LEVELS														
EMERGENCY BRAKES														
FUEL														
CONTROLS														
STEERING MECHANISMS														
INSPECTED BY														
COMMENTS														

(Form HSE-YD-022 ; This form is to be used to carry out crane/_forklift inspections on a daily basis)

WEEKLY SIGN OFF:

YEMEN DRILLING

A division of H.T.C YEMEN INTERNATIONAL LIMITED

DRILLING ADDENDUM

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 1 of 21

DRILLING ADDENDUM

XXIII DRILLING SAFETY GUIDELINES

INTRODUCTION :

H.T.C is committed to operate its facilities and to supply products and services in a manner consistent with the health and safety of the employees and the public while protecting the environment. Likewise, we are committed to making every attempt to assure that those operating or working around drilling equipment are protected from personal injury as much as possible.

This publication is not intended to address every possible situation that may arise or every possible hazard that may come to exist during drilling activities. It is the sole intent of this publication to address some of the common safety concerns which should be considered while performing drilling and workover activities.

RESPONSIBILITIES :

It is proactively the responsibility of the H.T.C Management to ensure that unsafe conditions do not exist at a workplace. It is the responsibility of H.T.C to take steps to correct all hazards that exist at a workplace. H.T.C is committed to ensure that its drilling equipments are used for the purpose for which it is intended, and that tolerances and limitations of the equipments are not exceeded. H.T.C understands the responsibility that its drilling equipments stay in strict compliance with all local, state and federal regulations, governing any and all aspects of drilling operations or any related activities.

Supervisors are responsible for ensuring that the day-to-day safety is maintained at all times during the drilling operation. Likewise, he must be aware of and ensure that the drilling equipment be used properly and that tolerances and limitations are not to be exceeded.

Employees must be instructed that they too are responsible not only for their own personal safety, but also for the safety of those with whom they are working.

MAINTAINENCE :

Drilling equipment is subjected to long hours of operation and many varied conditions. It is therefore imperative that proper preventative maintenance be performed on a daily basis. Servicing of drilling equipment must be performed following all manufacture guidelines. Beyond these guidelines, supervisors must constantly observe their equipment. They must be sure that more frequent servicing is taken care of if dictated by working conditions. It is recommended that all preventive maintenance schedules be strictly followed and that proper documentation be maintained to reflect that indeed such servicing and repairs have been done.

WARNING LABELS :

Many labels have been placed on the drilling equipments and these labels are in place to serve as instructions and warnings regarding various aspects of the equipment. It is critical that these labels be kept clean and legible. If for any reason these labels should become worn or destroyed, they should be immediately replaced by ordering labels from the manufacturer. These labels are categorised into two parts. One part refers to labels for controls, etc and other part refers to safety labels. Please communicate with the manufacturer or the purchase officer in order to obtain replacements.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 2 of 21

INSPECTIONS :

Daily, pre -shift inspection of the drilling equipment and operation is essential to maintaining productivity and the safety of the workers. Pre-shift inspections must be performed by the driller or the onsite safety officer who is knowledgeable of the equipment and the workarea.

At a minimum , the following questions should be positively answered during the inspection:

1. Are all employees wearing proper personal equipment ?
 - a. Hard hats
 - b. Steel-toed boots
 - c. Hearing protection ...(when noise levels require it)
 - d. Safety glasses
 - e. Coveralls
 - f. Working gloves
 - g. Other equipment as may be dictated by weather conditions, environmental conditions.
 - h. If required, are climbing devices, harnesses, safety belts, lanyards, etc are present and in good operating condition ?
 - i. Are vehicles equipped with seat belts and in good operating conditions ?
2. Have all employees received training as dictated by company policies and governmental Regulations ?
3. Are Material Safety Data Sheets (MSDS) available for all chemicals in use on the project ?
4. Are all containers or bags containing chemicals properly labelled and stored ?
5. Are all employees aware of accident reporting procedures ?
6. Are all employees aware of medical facilities and rescue personnel that could be summoned in the event of an emergency ?
7. Are fire extinguishers present ? Are they of the appropriate size and type for the fire hazard involved ? Are annual services current and monthly inspections been performed ? Are the extinguishers currently in good working condition ?
8. Is fuel properly stored in a non- flammable location and properly labelled ?
9. Are 'No Smoking' policies being observed where applicable ?
10. Is trash being properly stored and disposed of regularly ? Are oily rags, etc being stored in a container with a lid ?
11. Are there any leaks present on the rig ?
12. Is the work area clean and organised ?

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 3 of 21

13. Are any trip hazards present ?
14. Are all guards in place on the rig ?
15. Are tools clean and in good working condition ?
16. Are pressure relief devices installed and in good working condition ?
17. Are all wire ropes in good condition ?
18. Are wedge sockets and hoisting plugs in good condition and properly installed ?
19. Are hydraulic hoses in good condition ?
20. Are whip checks in place where needed ?
21. Is there any damage to the rig ? Are welds in good condition ? Are all bolts, pins, nuts, etc in place ?
22. Have daily vehicle checks been performed according to Company requirements ? Have all deficiencies been corrected ?
23. Is there an emergency action plan in place ?
24. Is there an emergency communication source available ?
25. Have all employees been trained in first aid and CPR ?
26. Is there a properly stocked first aid kit available on the rig and in every vehicle ?

Note : The above is a representation of some of the items that should be checked on a daily or pre-shift basis. The list should be expanded as necessary to meet particular working conditions, rigs used and possible hazards that may be encountered.

SITE SAFETY INSPECTIONS :

It is the responsibility of the supervisor to ensure that the drill site is safe to enter and that it is safe to begin work. Such inspections often include the following :

1. Are high voltage overhead powerlines or any other utility lines present in the immediate area .A safe Distance of thirty or more feet should be observed when setting up in the vicinity of overhead lines. This Distance may need to be increased, depending on the hazards involved, size of mast etc.
2. Have all underground utilities been identified ?
3. Is there a danger of being struck by other moving vehicles ?
4. Are poisonous plants, animals or insects in the area of the site ?
5. Is the site designated as a hazardous waste site or have other hazards been identified such as H₂S, Methane etc ? If so , are proper procedures for working in these environments in place, including proper training of employees and certification of safety equipment ?

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 4 of 21

6. Is there a danger of lightning strikes ? This subject must be addressed regardless of time of year or current weather conditions .

TRAINING :

Training of new employees is essential !.Adequate trainings shall be provided to all employees in areas such as first aid, CPR, Defensive driving , forklift safety etc.

Another critical form of training is that which employees receive when they change jobs or have new tasks assigned to them.Supervisors must be sure that the employees are familiar enough with their work assignments before they are left alone to perform it.Documentation of these and other types of training is also critical.

Another form of training that has proven its worth over the years is the traditional tool box meetings.These short training sessions are a valuable tool in addressing safety related issues.Employees are encouraged to make attendance at these sessions mandatory and to document that employees attend such training.

HOUSEKEEPING :

Good housekeeping is another of the proactive approaches that supervisors should insist upon.Many times during the course of conducting drilling activities, tools and other items are left lying where they could cause injury.

Every drill crew must be instructed to constantly " pick up after themselves". Most trip hazards can be eliminated when diligent housekeeping practises are enforced.

In addition to preventing injuries, good housekeeping makes drilling operations look professional. Clients are impressed when the drill sites are always clean and organised.

MATERIAL HANDLING :

Due to the many varied materials that are commonly used during a drilling program, supervisors must use great care to keep employees from being injured while handling materials.Such materials might include, but not limited to :

Heavy bags of cement, sand

Various mud products and chemicals that are contained in bags

Buckets of polymers ,etc

Diesel fuel

Drill pipes, casing, core barrels, hammers etc.

Many of these items weigh fifty pounds or more.Employees must be instructed to use appropriate mechanical lifting devices, when possible, and to solicit the help of the fellow workers when loads are too heavy for a single worker to handle safely.

Every worker must be instructed in proper lifting techniques.These techniques should be reviewed several times during the year. Also, supervisors must constantly be on the alert for a employee who attempts to lift improperly or attempts to lift something that is too heavy for him.In addition to hazards involving heavy loads, employees must also be made aware of the necessity of handling with care those products that could pollute the environment if broken open or spilled.

SAFETY PRECAUTIONS RIG MOVE :

Federal, State and local laws require that vehicles be properly maintained and safe to operate on roadways.Supervisors shall make sure that the drilling equipments are safe to be moved on the roadways prior to the vehicle leaves location.

It should be made sure that all drivers are properly licensed for the equipment that they are to be driving and that they are trained in safe driving procedures. Inspections of vehicles must be performed prior to moving and deficiencies if any must be corrected prior to move.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 5 of 21

" No motor vehicle shall be driven unless the driver thereof shall have satisfied himself that the following parts and accessories are in good working order, nor shall any driver fail to use or make use of such parts and accessories when and as needed :

Service brakes, including trailer brake connections
Parking (hand) brake
Steering mechanism
Lighting devices and reflectors.
Condition of tires.
Horn.
Windsheild wiper or wipers.
Rear vision mirror or mirrors.
Fire extinguishers
Condition of slings.

Upon arrival at the drill site, ensure that it is safe to enter and set up on the site. As mentioned earlier, it is important to look for overhead and underground power and other utility lines. If present, make sure that when long wide loads are moved, they keep a safe distance from these lines.

Examine the actual location where the rig is to be set. If possible, it is best to have a level and clean area. Remove rock and other debris that may interfere with the drilling operation or pose safety hazards. **Take time to set the rig up properly !**

Ensure that the rig is level and everything is secured prior to raising the mast. Also, make sure that nothing is loose on the mast that would fall when the mast is raised to its upright position. Once the mast is raised, take measures to secure it properly.

Organise the work area prior to commencing drilling operations. Many times it is tempting to commence drilling before everything is unloaded and organised. This practise should be avoided. Drilling will progress more smoothly and accidents will be less likely if the driller takes the time to properly set up and organize first.

FIRE PREVENTION :

Fire prevention must be addressed prior to commencing any job. Failure to prevent a fire on a job site could result in severe injury or even death of employees. In addition to the potential of loss of life; severe equipment damage can result along with damage to surrounding areas.

It is therefore the responsibility of the Superintendent, Rig manager, driller, crews and anyone else involved in the drilling operation to take proper steps to reduce the possibility of a fire. Such steps should include:

1. 'No Smoking' policies should be observed when working on drilling operations.
2. Fire extinguishers of the appropriate type for the particular fire hazard involved must be present on the Drill site. It is recommended and required on some jobs, that a fire extinguisher be present in every Vehicles involved with the drilling activities. It should be made sure that fire extinguishers are serviced At appropriate intervals and that an inspection is performed on the fire extinguishers atleast monthly. Such inspections and servicing must be documented. Employees must also be given instruction in Basic fire fighting techniques and in the proper operating procedures associated with the use of the fire Extinguisher.

When involved with repairs that require welding and / or cutting activities in the field, the crew should Be instructed to have a fire extinguisher nearby, as well as a water source that can be used to extinguish a fire.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 6 of 21

3. Other items for fighting fires such as Fire pumps , fire hoses etc should be adequately maintained.The Fire Pump should be operated and tested on a daily basis.
4. Finally, crews should be instructed to know when to call for assistance in the event of a fire.Crews should not become so involved in fighting a fire that they allow it to get out of hand before they call for help.

The best method, of course is to prevent the fire entirely.Proper storage of fuels and good maintainence of Equipments on the rig will prevent many fires from occurring.A proactive approach is by far better than the best Reactive solution to any problem.

FIRST AID :

It is recommended that all crews be trained in and develop proficient skills in administering basic first aid. If an Injury or illness should occur, it becomes essential that someone on the project be able to administer first aid Until help arrives.

Make sure that employees understand that in the case of serious injuries, they should immediately call for help Prior to becoming involved in treatment of an injured or ill worker.

Workers must understand the ABC's of first aid, procedures for immobilizing a possible spinal injury, and Techniques for bandaging and splinting. Employees should be certified in CPR and be able to administer it If needed.

DRUGS AND ALCHOLOL :

Substance abuse has absolutely no place in the drilling industry. Drilling involves working with equipment that Can, if not properly handled, produce injuries and even death.Workers have a right to expect that their fellow Workers and not impaired by alcohols and drugs. Drilling operations require teamwork, thus all members of The team must be clear minded and able to perform their tasks.

XXIV General Responsibilities

It is the responsibility of each person on the rig-site to work safely and take care of the safety of themselves and of all others around them.

Any person discovering a hazard, a defective safety system or unsafe practices of others, has a responsibility to report it to their supervisor so that the matter may be dealt with efficiently and before it escalates into a more serious issue.

Any person sustaining an injury, (including work-related ill health) must report it to their supervisor as soon as possible and should obtain the appropriate treatment from the on-site medic or doctor. The Safety Supervisor must also be informed as soon as practical to ensure appropriate measures are taken to investigate the accident and report the findings to management.

Any protective clothing, footwear, etc. provided by the company for use at work must be worn for the jobs for which it was intended. Failure to do so will be a breach of Safety Policy.

It is the responsibility of every employee to read all safety notices and publications provided and to understand all of the safety and emergency procedures relevant to their work-site.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 7 of 21

All verbal and written instructions provided to employees at, and while travelling to or from their work-site by their supervisor, or any other responsible person, must be complied with.

XXV Well-site Health & Safety

You should:

- ❖ Be in good health
- ❖ On arrival at the work-site, report any drugs or medication prescribed to you by a doctor
- ❖ Report to the medic if you feel unwell
- ❖ Maintain high standards of personal hygiene
- ❖ Ensure that you get the appropriate amount of rest
- ❖ Maintain, so far as is practical, a balanced diet
- ❖ Keep fit and alert
- ❖ Constantly be on the look-out for hazards
- ❖ Participate actively in any drills or exercises held at the work-site
- ❖ Be involved in additional duties, as necessary, e.g. fire team, etc.

You should not:

- ❖ Be under the influence of drugs (prescribed or otherwise) or alcohol
- ❖ Be suffering from a communicable disease, or be suffering from any condition that will, or may, impair your judgement or ability to carry out your job safely
- ❖ Lower your standards of cleanliness or hygiene

You should not (cont.):

- ❖ Endanger the health or safety of others
- ❖ Carry any smoking materials outside of designated smoking areas, and shall not smoke in areas not specifically designated for that purpose

If you are taking prescribed medication, the on-site medic or doctor must be informed.

XXVI YOUR SAFETY AT THE RIG-SITE

A drilling rig is a potentially dangerous place. There are major potential incidents, such as fire and blow-out, and others of a lower potential; these generally relate to people, equipment and materials.

It is essential that everybody knows the layout of the rig-site, especially the area in which they are working. Newcomers to any rig are a potential hazard until they become familiar with the equipment and the layout. Therefore new personnel should be escorted at all times until supervisors are certain that they no longer need to be chaperoned.

All newcomers to the rig-site will receive a safety briefing. The information given at this briefing is vital for the safety and wellbeing of yourself and your fellow workers. You must pay attention to the

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 8 of 21

information provided, and if you are unsure of any systems or procedures, or if you simply need to have something explained again, do not be afraid to ask.

A drilling rig can be likened to a compact construction site, with heavy moving equipment, steel ropes, sharp cutting edges, slippery surfaces and steps and hazardous chemicals. It cannot be stressed enough that great care is needed during all operations and in all areas. Your feedback on any work areas or pieces of equipment that can be improved is welcome, and in fact openly encouraged.

The senior person on the rig is the Day Toolpusher. He has overall responsibility for the day to day operations and for the health and safety of all personnel at the rig-site. If you have any doubts about your ability to carry out your job in a safe manner, you should consult your supervisor or the Toolpusher.

XXVII Specific Hazards

a) Rig Floor

<i>Hazards</i>	Tongs and tong lines Tugger lines and hoists Dropped or falling objects Wet or muddy floor Noise High pressures (cementing, testing etc.)
----------------	----------------------------------------------------------------------------------------------------------------------------------------------------------

Hazard avoidance

- ❖ Do not walk across the drill floor unless it is necessary to carry out your work. Whenever possible, walk behind the drawworks to get to the drill floor and always let the Driller know that you are there.
- ❖ Keep well back from the work areas during trips and connections
- ❖ Keep away from the V-doors, if possible use a different route to the Driller's doghouse
- ❖ Before starting to work on any equipment on the drill floor, tell the Driller and ensure that all precautions are taken to avoid accidents
- ❖ Do not obstruct the Driller's line of sight
- ❖ Move away from the drill floor while a BHA is being made up or broken out (unless you are involved in that process)
- ❖ Be alert at all times! The drill floor is the area where most accidents occur.

b) Derrick

<i>Hazards</i>	Falling Moving machinery Noise
----------------	--------------------------------------

Hazard avoidance

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 9 of 21

- ❖ Find out if a permit to work is needed
- ❖ Always inform the Driller when you intend to climb or work in the derrick
- ❖ Never work in the derrick alone. Ensure someone is always on hand to raise the alarm if you get into difficulties
- ❖ Wear a safety harness when climbing the ladder
- ❖ Never take risks or short cuts. When working on the structural members do not over-reach
- ❖ If you plan to use a riding belt to get up the derrick, make sure the winch operator is competent on the machinery. Also make sure no other winch is used while you are in the derrick to be absolutely certain that the winch wires do not become entangled
- ❖ When climbing ladders, ensure that you maintain a three point contact (two hands and one foot and vice versa) at all times
- ❖ If you need to take tools into the derrick, make sure they are secure and cannot be dropped

c) Mud Room / Shaker House

Hazards

- Moving machinery
- Dark areas
- Pipework
- Low girders
- Slippery surfaces
- Gratings removed
- Caustic soda and oil based mud

Hazards (Cont.)

- Noise
- Fumes

Hazard avoidance

- ❖ Find out if a permit to work is needed
- ❖ Wear ear protection if working in the vicinity of shale shakers that are operating or are liable to operate
- ❖ Rubber gauntlets and goggles must be worn when catching samples
- ❖ Be alert! Foaming mud can conceal areas of the floor where gratings have been removed
- ❖ Take extra care when moving around obstacles such as pipework and valves
- ❖ Keep your head well down when headroom is restricted

d) Pipe Deck

Hazards

- Cranes and winches
- General material movement
- Slippery decks

Hazard avoidance

- ❖ Be alert! Look up and around before crossing the decks

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 10 of 21

- ❖ Never walk under a crane jib. Wait until the crane has stopped or find an alternative route
- ❖ At all times, walk, **DO NOT RUN**

e) Pump Rooms

Hazards Moving machinery
 Noise

Hazard avoidance

- ❖ Check to see if a work permit is needed
- ❖ Only go into the pump room if you have a specific job to do in there
- ❖ Inform the Driller before you start any work in the pump room, particularly on the pumps. On no account do any work on any moving machinery
- ❖ Before working on the pumps, make sure that the lock out procedure has been followed and a permit has been issued. Make sure the correct pump has been locked off
- ❖ All guards are to be properly replaced after completion of any tasks on the pumps

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 11 of 21

f) Working at heights

If it is necessary to work at heights without the use of a harness, this task must be thoroughly discussed with your supervisor prior to the start of the job in order that an alternative safe system of work can be established.

g) Personal Protective Equipment

Personal protective equipment is provided to you to give you protection from specific hazards that you may be exposed to. It is your responsibility to take care of this equipment and to use it when appropriate. You are also required to report any deficiencies or any damage to the equipment.

- ❖ Safety helmets must be worn at all times when outside the offices or the accommodation area. The limiting area for wearing o safety helmets will be advised to your during you induction. Do not be tempted to put stickers etc. on you helmet as the adhesive may have a detrimental effect on the strength and therefore the service life of the helmet.
- ❖ Safety footwear must be worn at all times when outside the offices or accommodation. Footwear must not have exposed steel toe-caps, steel tips, exposed nails or any other exposed metal parts.
- ❖ Eye protection must be worn at all times when outside of the accommodation or offices. General-purpose safety glasses are only suitable for routine, every day jobs. Specific tasks e.g., grinding, welding, chemical mixing requires the use of goggles or a full-face shield.
- ❖ Ear protection must be worn in certain designated areas. If the noise levels are above 85dBa (typically, if you have to raise your voice in a normal conversation), then ear protection is needed. High levels of noise will affect you hearing slowly and over a period of several years. However, once your hearing is affected, there is no cure!
- ❖ Coveralls are provided not just to protect your clothing from getting dirty, but also to protect your skin from contacting harmful products, e.g. oil and chemicals. They will also provide protection to your skin in the event of a fire.
- ❖ Gloves are provided to protect your hands from injury while lifting materials and contacting oil, grease and other chemicals and will provide a general level of protection. If you need to mix chemicals etc. you will need to wear impervious rubber/neoprene gauntlets.

XXVIII Aviation Safety

When travelling by air from one location to another, there are some simple rules which must be obeyed. Generally the client will have a full aviation policy which must be observed, but set out below is the minimum standard the Company will accept.

- ❖ Give any pre-flight briefing your full attention, aircraft types change, and sometimes there are differences in emergency systems and exits on aircraft of the same type.
- ❖ Read the safety-on-board card and if you are unsure of anything, ask the aircraft crew to explain.
- ❖ The Captain of the aircraft is responsible for the safe conduct of his flight – follow any instructions given by him.
- ❖ Sometimes you will be directed to a specific seat. This has been done for operational reasons to keep the weight and balance of the aircraft correct. Do not change your seat during the flight.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 12 of 21

- ❖ Once seated inside the aircraft, fasten your seatbelt and keep it fastened during the whole flight unless the Captain turns off the “Fasten Seatbelt” sign.
- ❖ Observe the “No Smoking” signs at all times.
- ❖ If travelling by helicopter, follow directions to the aircraft very carefully. The tail rotor area of helicopters is an exceptionally dangerous area and you must not approach that area at any time. Again follow the directions of the ground crew at all times.
- ❖ Follow any instructions given to you by the crew whilst airborne.
- ❖ Once you have arrived at your destination, remain seated with your seatbelt fastened until the “Fasten Seatbelt” sign has been switched off by the Captain.
- ❖ When leaving the aircraft, follow the instructions of the ground crew.
- ❖ In the event of an emergency landing, follow the instructions of the Captain, and above all, stay calm.
- ❖ Under International air law, some items of freight **are not allowed** to be flown at all, while some are not allowed to be flown in the same aircraft as passengers. Explosives, radioactive sources, live electronic equipment and gas under pressure are some examples. All items of freight being carried on an aircraft must be properly manifested, and conform to IATA Regulations.

XXIX EMERGENCY RESPONSE

Each work site will have its own emergency response plan and procedures. It is your responsibility to ensure that you know what part you have to play in those plans and to make certain that you understand them and can fully comply with them.

If you are required to be a member of a specific emergency team, training appropriate to the level of involvement will be provided to you.

If you feel uncertain about the task, or if you feel that you require any further training or assistance in understanding or fulfilling your duties, you must talk to your supervisor as soon as possible. If you fail to do so, you could be putting yours or somebody else's safety or life at risk.

Emergency Response plans will be put in place and exercised regularly (where appropriate) for the following scenarios:

- ❖ Medical evacuation
- ❖ Missing person
- ❖ Lost aircraft / aircraft accident
- ❖ Missing vehicle / vehicle accident
- ❖ Fire / explosion
- ❖ Fire at the camp
- ❖ Blowout
- ❖ Sabotage / criminal act / civil unrest
- ❖ Severe weather conditions
- ❖ Pollution incident
- ❖ H₂S release

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 13 of 21

All of the procedures pertaining to these emergency situations will be kept in the Emergency Response Manual, and it will be the responsibility of the Safety Department to ensure that these plans are kept current. However, it is the responsibility of all personnel to feed information back to them on any suggested improvements to the plans. (Refer section: XX, Emergency procedures for guidelines)

The schedule for carrying out these drills is shown below:

Scenario	Drill Frequency
Medical evacuation	At rig-up at new location then quarterly
Missing Person	Quarterly
Lost aircraft / aircraft accident	Quarterly
Missing vehicle / vehicle accident	6 monthly
Fire / explosion	Weekly
Fire at or affecting the camp	Weekly
Pit drills / Blowout	Weekly
Sabotage / criminal act / civil unrest	Monthly
Severe weather conditions	N/A
Pollution incident	Discretionary – circumstance dependant
H ₂ S release	Weekly when in known or suspected H ₂ S zones

It will be the responsibility of the Toolpusher to decide when drills are to be held, and this will be done in conjunction with the Client's Representative taking due regard for current operations.

All personnel at the rig-site will participate unless specifically excused, in writing, by the Toolpusher. Failure to participate will be deemed as gross misconduct and the individual concerned will be subject to disciplinary action.

Each drill will be observed, critiqued and presented to emergency team participants. This critique will also be recorded and a copy kept on file in the Safety Files in Sana'a.

XXX AUDITS & INSPECTIONS

Following rig-up but prior to spudding any well, the drilling rig will be inspected to ensure that no loose items are liable to fall and cause damage to property or injury to personnel. The inspection will be carried out by the Toolpusher, a Driller, The Client's Representative and the Safety Supervisor. The well will not be spudded until all parties are confident that it can be done so safely.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 14 of 21

There will be a schedule of routine audits prepared and these will include audits of various sections of the rig and will be conducted by the rig supervision. These audits will be completed on audit pro-formas and an action plan for any corrective action necessary will be generated.

Twice per year a full audit of the rig will be conducted by a Team comprising management personnel from Sana'a and also representatives from the Client. Again, a report will be generated and an action plan developed.

XXXI DRILLING OPERATIONS SAFETY – GENERAL FLOOR OPERATIONS

1. General Floor Work – Ensure that all escape routes are kept clear at all times, and are not obstructed by hoses, tools, etc.
2. While lifting tubulars from the catwalk or lay-down area, great care is to be taken to ensure that nobody gets into a position where they could become trapped.
3. Nobody is permitted to stand between any tubulars being moved onto or off the rig floor and the joint in the rotary table
4. Personnel guiding tubulars across the rig floor must keep their feet clear of all tubulars and winch operators must not lower them until they are satisfied that all feet are well clear.
5. Keep feet well clear of drillpipe pin end while the drift is still inside and the drillpipe is vertical.
6. Drillers's must make certain that Floormen (and others) are outside the area of the tongs before operating them during make-up or breakout.
7. Snub lines for tongs must be inspected periodically to ensure that they are in good working order.
8. Hanging lines for tongs must be inspected periodically to ensure that they are in good working order.
9. With EZY-Torque systems, make certain that the low-pressure line is connected to the low-pressure port and that the high-pressure line is connected to the high-pressure port. Failure to do so may result in serious damage to the equipment and serious injury to personnel.
10. With EZY-Torque systems, ensure that Floormen only place their hands on the protective handgrip areas only. Hands, fingers and thumbs are **not** to be placed between the tongs, or in any place where they may be crushed by the tongs.
11. While making up and breaking out the BHA, ensure that the floor is clear of any obstructions and that the work area is tidy.
12. All tools and equipment are to be visually inspected before being made-up.
13. While lifting drill collars, always use a tag line, and ensure that all lifting equipment is in good condition and is rated for the lift.
14. While making a connection, nobody is permitted to stand between the mousehole and the joint in the rotary table.
15. When not in use, the mousehole must be kept covered.
16. Do not stand behind the rig tongs while torque is being applied.
17. Keep hands well clear of pin and box connectors while making connections.
18. The trip tank shall be used and monitored at all times while tripping in and out of the hole.
19. To better gauge for the possibility of an influx, ensure that the returns/flow is routed directly to the trip tank.
20. Ensure that the trip tank is never 100% full in order that an influx can be detected when POOH.
21. When using Chiksan piping, make sure the following precautions are followed:
 - Check that the pressure rating and the working pressure are adequate for the job.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 15 of 21

- Check for correct thread engagement and interfacing when making up the hammer connections
 - Ensure that all sections have a test band and serial number and that test certificates are available to match.
 - Keep all personnel away from them while they are under pressure.
 - Check that all sections are fitted with a safety wire or equivalent.
 - **DO NOT** attempt to **loosen or tighten** a Weco hammer union if it is under pressure.
 - If Chiksans are being used in H₂S service, make sure they are H₂S rated – it will be stamped on the test band.
 - Do not attempt to use any piping with improperly fitted couplings – if in doubt, ask.
22. While using a top drive system, do not make stands up in the mousehole with the top drive while drilling
23. The maximum break out torque of the torque wrench is top drive specific, check the manual, and make certain that this torque is never exceeded.
24. Ensure that all top drive hoses are secured with a safety line or chain.

XXXII DRILLING OPERATIONS SAFETY – COMMON DRILLING SUB-PROCESSES

1. During a flow-check, shut in the well at the first signs of a flow and inform the Driller immediately.
2. While flow-checking with a potentially “gas-cut” mud, be aware that the shale shaker area and the rig floor can have accumulations of highly flammable gas and also toxic vapours.
3. While conducting a leak-off test, it is important that good, clear communications are used at all times, and that all personnel are aware when testing is taking place.
4. Ensure that all dead weight testers and gauges have current calibration certificates.

XXXIII DRILLING OPERATIONS SAFETY - DERRICK OPERATIONS

1. Riding belts must be checked for serviceability and condition prior to use.
2. All safety lines and lifelines attached to the Derrickman’s safety harness are to be rigged such that they do not make contact with the travelling block or the top drive system.
3. The Derrickman’s safety line from his harness must be fixed to a solid structural point at the fingerboard area and must be used at all times.
4. If any work in the derrick takes place which could cause items to fall to the rig floor, the rig floor will be vacated for this period of time.
5. Never slip and cut the drill line while the drillstring is in the open hole.
6. Following a slip and cut, ensure that 9 full wraps of line remain on the drawworks drum with the elevators on the rotary table.
7. Safety harnesses must be worn by all personnel working on the travelling block or on the top drive system.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 16 of 21

XXXIV DRILLING OPERATIONS SAFETY – BOP's AND WELLHEADS

1. When changing out BOP rams, make certain that nobody is in the vicinity when opening or closing the BOP bonnets., that the well bore is full of mud and that the blind rams are closed at all times. There must also be adequate lighting for the operation.
2. While pressure testing the BOP and the BOP system, the following precautions must be observed:
 - The pressure rating of the components is to be verified prior to testing.
 - Connections must not be loosened or tightened while under pressure.
 - The area is to be adequately barriered off and all personnel are to be made aware that the test is taking place.
 - Annular BOP's are not to be tested to more than 70% of their rated operating pressure.
3. When running or retrieving a wear bushing, make certain that nothing can drop into the well bore.
4. Take care when pulling the wear bushing to ensure it does not hang on the BOP.
5. When installing the Xmas tree, the work area must be barriered off during heavy lifts.
6. All lifting equipment is to be checked for rating and condition prior to starting the lift.
7. Ensure that nothing falls down the well bore.
8. No personnel are to stand directly under any suspended loads.

XXXV DRILLING OPERATIONS SAFETY – MUD PUMPS AND TANKS

1. A permit to work is required before any major work on the pumps. This will ensure that the motors are isolated and that the appropriate valves are closed.
2. When changing the liners or the pistons on the mud pumps, the mud pump must be isolated from the pressurised mud lines and any pressure bled off before work starts.
3. When cleaning mud tanks, an entry permit will be required. Access to the inside of the tanks shall be by ladder or steps. These may be fixed or temporary. If they are temporary, make certain that they are secured so that they cannot slip.
4. Entry to the mud tanks will not be permitted at any time while the mud pumps are running.
5. Additional precautions will be necessary for entering the mud tanks after drilling an H₂S zone. These precautions will include the use of H₂S monitors and the use of self-contained breathing apparatus.
6. Personnel must be aware of the properties of the mud being used in order to afford themselves the optimum protection. Material Safety Data Sheets (MSDS) are available for all of the constituent products of the mud.

XXXVI DRILLING OPERATIONS SAFETY – CASING AND CEMENTING

1. During casing and cementing operations, the work areas involved will be barriered off to keep out personnel not directly involved in the operation, and all personnel are to be advised of the dangers involved in these operations.
2. While moving casing from trucks to the pipedeck, all personnel not involved must stay well clear.
3. Personnel must not position themselves between casing joints being moved around.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 17 of 21

4. During drifting operations, care must be taken to ensure that the drift does not fall out and cause injuries.
5. While working on the stabbing board, a safety harness and inertia reel line must be used at all times. Ensure that the inertia reel is fixed securely to the derrick and not to the stabbing board.
6. No other work shall take place on the rig floor while testing the stabbing board.
7. Never stand with your back to the V-door when joints are being brought in.
8. Do not stand between the hydraulic tong and the rotary table.
9. Do not attempt to adjust any moving parts of a hydraulic tong while it is still under pressure.
10. Keep hands and feet well away from the pin and box sections of joints to avoid injury.
11. All cementing lines must have valid inspection and test certificates, and all lines must be secured with safety lines or chains.

XXXVII DRILLING OPERATIONS SAFETY – GENERAL RIG-SITE SAFETY

1. Do not attempt to clean or service any moving parts of machinery while they are still moving.
2. When cleaning the rig floor, do not allow the hose to come near any moving or rotating parts such as the kelly or TDS.
3. Do not carry tools, especially ones with sharp edges or points, in pockets, always use a toolbox or tool belt.
4. If using high pressure washdown equipment, do not abuse the hoses, never put any part of your body in the line of the water stream and never point the water jet at any other person. Never attempt to wash boots, coveralls or any other clothing etc. with high pressure water.
5. All lifting equipment is to have a unique number and current test certificate. Modifications to lifting equipment without a subsequent test and issue of a new certificate will not be permitted.
6. Any modification to any lifting equipment will automatically invalidate the certification, at which point the equipment must be removed from service.
7. All lifting equipment must be visually inspected by the user, before it is used. Things to look for are obvious physical damage, kinks in the lay of the wires, corrosion and safe working load.
8. When using a fork lift truck, passengers are not permitted to ride on the unit. It is designed for a driver only.
9. When mixing chemicals, the correct protective equipment must be worn at all times. Also consider other personnel, especially downwind of the mixing area.
10. Cranes will only be operated by approved crane operators. No other person is permitted to use them.
11. If scaffolding is required, it must only be erected, modified or dismantled by competent scaffolders.
12. Scaffold which is incomplete is to have a warning notice placed on it advising personnel not to use it.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 18 of 21

XXXVIII RISK ASSESSMENT

Safety rules are not put in place to hinder work or operations, they are put in place to ensure that tasks can be completed safely. It is not acceptable to carry out any task that will knowingly expose personnel to danger or risk.

If danger is perceived in any task, it must be assessed by carrying out a risk assessment. This will itemise the task into smaller components and address the risks at each stage and find safe ways of completing the stages.

A **hazard** is the inherent ability to cause harm and the **risk** is the likelihood that damage or harm will occur.

Risk potential = Likelihood of Occurrence * Hazard Severity

A copy of the Workplace Risk Assessment form is attached at the end of this section for use on location, and a typical Workplace Risk Assessment is shown below.

To avoid duplication of effort, when an assessment is completed it shall be copied and a copy sent to Sana'a to form a master file of assessments which can then be accessed by other groups within the Company.

The original assessment will be kept on file at the location.

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
 Safety Manual and Procedures
 DATE: April 2006 (revision 2)

Drilling Addendum
 Page D 19 of 21

Document N°		WORKPLACE RISK ASSESSMENT	AI-HASHEDI, Republic of Yemen
Sheet 1 of			
Rev:	Rev date:		
Title:			
Note: This workplace risk assessment has been compiled to identify the potential risks and the precautions required to eliminate, reduce or adequately control them. The assessments are not stand-alone documents and must be read in conjunction with all other relevant job instructions.			
<u>Potential Risk:</u> 1.			
<u>Precautions To Be Taken:</u> 1.			
<u>Potential Risk</u> 1.			
<u>Precautions To Be Taken:</u> 1.			
<u>Potential Risk</u> 1.			
<u>Precautions To Be Taken:</u> 1.			
<u>Potential Risk</u> 1.			
<u>Precautions To Be Taken:</u> 1.			
<u>Potential Risk</u> 1.			
<u>Precautions To Be Taken:</u> 1.			

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 20 of 21

XXXIX ENVIRONMENTAL CONSIDERATIONS

Environmental protection shall be a primary consideration on all locations by Al-Hadeshi employees, contractors and sub-contractors.

No work shall take place that will knowingly have any potential for aquifer contamination. With the known geology in any area, care should be taken to ensure that casing depths are set to provide the maximum protection.

All personnel shall take care to minimise the amount of waste generated during their normal work routines. Waste minimisation will be monitored at two different levels:

1. Natural resources / Energy consumption
2. Chemicals usage

Natural resources/Energy consumption shall be measured using:

Average fuel consumption per meter drilled.

This will be the total fuel consumed in the rig's engines while under a drilling contract, divided by the number of meters drilled under the same contract.

Chemicals usage shall be measured using:

Quantity of mud used per meter drilled

This will be the total quantity of mud fabricated (or received pre-mixed) during the drilling of a well minus the amount of mud recovered for use on a subsequent well, divided by the number of meters drilled.

These figures will be reported monthly from each rig site as a measure of performance using the form below:

H. T. C. YEMEN INTERNATIONAL, LIMITED.

H.T.C. YEMEN INTERNATIONAL, LTD.
Safety Manual and Procedures
DATE: April 2006 (revision 2)

Drilling Addendum
Page D 21 of 21

AL-HASHEDI RIG ENVIRONMENTAL REPORT

Rig Name:			Location:		
Well Name / N°:			Country:		
Month / Year	Meters drilled	Fuel consumed	Fuel/meter	Mud used	Mud/meter
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Totals					

Observations:

YEMEN DRILLING

A division of H.T.C YEMEN INTERNATIONAL LIMITED

QUALITY MANUAL

SECTION 0
TABLE OF CONTENTS

SECTION	DESCRIPTION	REV STATUS
Section 0	Table of Contents	1
Section 0.1	General Statement	1
Section 0.2	Quality Policy Statement	1
Section 1.0	Management Responsibility	1
Section 1.1	Organisation Chart	1
Section 2.0	Quality System	1
Section 3.0	Contract Review	1
Section 4.0	Design Control	1
Section 5.0	Document and Data Control	1
Section 6.0	Purchasing	1
Section 7.0	Control of Customer Supplied Products	1
Section 8.0	Product Identification and Traceability	1
Section 9.0	Process Control	1
Section 10.0	Inspection and Testing	1
Section 11.0	Control of Inspection, Measuring & Testing Equipment	1
Section 12.0	Inspection and Test Status	1
Section 13.0	Control of Non-Conforming Products	1
Section 14.0	Corrective and Preventative Action	1
Section 15.0	Handling, Storage, Packaging, Preservation & Delivery	1
Section 16.0	Control of Quality Records	1
Section 17.0	Internal Quality Audits	1
Section 18.0	Training	1
Section 19.0	Servicing	1
Section 20.0	Statistical Techniques	1
Section 21.0	Listing of Procedures	1

SECTION 0.1

GENERAL STATEMENT

H.T.C. has specialised in the manpower, equipment, supervision, procurement and construction of process facilities and support serving the oil/gas production and refining industry.

Satisfying the needs of its clients and achieving the required quality in every project has been and still is H.T.C.'s main objective. Quality is enhanced by working in a systematic manner to formalised procedures designed to eliminate the occurrence of deficiencies.

It is the responsibility of individual managers to compile and implement these procedures into their regular working methods, and ensure that all such methods are clearly defined and documented.

In order to achieve this objective H.T.C. has established and maintains a quality system which , while not accredited, complies with the applicable system elements of International Standard ISO 9001 (2nd edition - 1994). The quality system and company policies are detailed in this Quality Manual.

It is the responsibility of the Quality Assurance Manager to continuously monitor, through regular audits, the implementation of the quality system, i.e. to verify that the necessary systems, procedures, etc. exist or are being developed, as well as to verify implementation and adherence to these systems.

H.T.C.'s management will review this manual at least annually to re-affirm its adequacy and conformity to current requirements of H.T.C.

Revisions to the manual will be made as required to reflect the current quality system. The revisions will be made by replacement of the applicable page(s), with each revised page identified by revision number and date of revision.

SECTION 0.2

QUALITY POLICY STATEMENT

H.T.C. will strive to give proper attention to the quality of all of its activities.

To achieve this objective, it is the policy of H.T.C. to establish and maintain an effective and efficient Quality Program, planned and developed in conjunction with other management functions which shall ensure that:

- a) Requirements for all projects and associated company activities are clearly defined, communicated to all appropriate parties, agreed upon, and understood.
- b) Procedures, systems and controls are established and implemented to assure compliance with the requirements of the particular project or company activity.
- c) Company personnel and vendors are closely involved and committed to meeting all requirements, while striving to eliminate re-work by performing activities right the first time.
- d) There is a continuing evaluation and improvement of the Quality Program so that it might better serve H.T.C.'s goal to meet it's customer requirements and satisfaction in the most cost effective and efficient way.

SECTION 1.0

MANAGEMENT RESPONSIBILITY

COMPANY POLICY

H.T.C. Management has ultimate responsibility for Quality, and has defined its policy and full commitment to Quality via a Quality Policy Statement. The Quality Policy statement is a part of H.T.C.'s Quality program and shall be distributed and displayed throughout the Company. Managers and supervisors are responsible for ensuring that all employees are aware of this policy and its implementation.

1. Management Representative

- 1.1 H.T.C. has appointed a Quality Assurance/Quality Control Manager as the Management Representative. The QA / QC Manager has authority and responsibility to ensure that the H.T.C. Quality Management system is maintained, its efficiency is continuously improved and that the system meets the requirements of ISO 9001.

2. Organisation

- 2.1 Inter-relation of personnel who manage, perform and verify work affecting quality is demonstrated by the H.T.C. administrative organisation chart contained in Section 1.1 of this manual. Project organisations shall be detailed in applicable project quality plans.

- 2.2 H.T.C.'s organisation is comprised of the following departments:

2.2.1 Management

Management is directed by the Vice President/General Manager. Managers report to the Vice-President/General Manager. The General Manager is the senior person routinely in the Sana'a office.

2.2.2 Engineering/Technical

Project engineering, Instrument/Electrical and Process engineering are directed by the Site Superintendent who in turn reports to the Vice-President/General Manager.

2.2.3 Procurement

Purchasing, expediting, shipping and traffic activities are directed by the Purchasing Manager who reports to the Vice-President/General Manager.

2.2.4 Administration/Accounts

The administration area includes accommodation, travel, human resources, office equipment / maintenance and personnel. The Accounting Manager, and Personnel Manager, report to the Vice-President/General Manager.

SECTION 2.0

QUALITY SYSTEM

COMPANY POLICY

H.T.C. has documented and will be implementing a quality management system that satisfies the requirements of ISO 9001 1994. The Quality System is documented in the Quality Manual, Quality Procedures, Work Procedures, Company Specifications, and International standards.

Implementation of the Quality System shall be regularly audited and reviewed.

1. Quality System Scope

1.1 The Scope of the Quality System is defined in the following documents:

- Quality Manual
- Quality Procedures
- Work Procedures
- Applicable International standards
- Engineering Technical Specifications and drawings
- Project Quality Plans

1.2 The documents above collectively define a Quality System that complies with the requirements of ISO 9001 1994.

2. Quality System Implementation

2.1 All personnel are responsible for implementing the Quality System. The QA/QC Manager is responsible for co-ordinating, monitoring, and auditing the system.

2.2 Implementation of the Quality System shall be assessed regularly by way of internal and external audits and executive management reviews.

3. Reference Procedure

3.1 Activities pertaining to this section of the Quality System are further detailed in Project Quality Plans and Work Procedure Writing.

2.2.5 Quality Assurance/Quality Control

All Quality Assurance and Quality Control activities are directed by the QA/QC Manager. The QA / QC Manager reports to the Site Superintendent.

2.2.6 Safety

Field Safety management on the job site is directed by the Site Superintendent, who in turn reports to the Vice President/General Manager.

3. **Quality Responsibilities**

3.1 Vice-President/General Manager

Formulates the Quality Policy

- Initiates and supervises the Quality System.
- Participates in review of the Quality System.
- Provides resources necessary to maintain the system.

3.2 Project Management/Supervision

- Develop project organisations.
- Are responsible for project execution including planning, resources and budget control.

3.2 Engineering/Technical

- Prepare project specifications from contract requirements.
- Design projects.
- Initiate design review.
- Verify designs.
- Document design output.
- Prepare purchase requisitions.
- Co-ordinate and maintain inspection records for each project.
- Participate in the approval process of vendors and sub-contractors.

3.4 Procurement

- Prepare final purchase documents.
- Monitor and assess supplier's performance.
- Co-ordinate expediting, shipping and traffic activities.
- Participate in the approval of vendors and sub-contractors.

3.5 Quality Assurance - Quality Control

- Establish and maintain a quality management system
- Conduct audits of the Quality System
- Follow up corrective action requests
- Co-ordinate the preparation of Project Quality Plans
- Conduct vendor and subcontractor quality appraisals and audits, participate in the approval process of Vendors and subcontractors
- Co-ordinate H.T.C. and Third Party QC personnel.

4. Management Review

- 4.1 The Vice-President/General Manager shall be responsible for holding a Quality System Management review at least annually

5. Reference Procedure

- 5.1 Management Review shall be implemented in accordance with Quality Procedure Quality System Management Review.

SECTION 3.0

CONTRACT REVIEW

COMPANY POLICY

All contracts and amendments to contracts shall be reviewed to ensure that customer requirements are understood and adequately defined. Upon definition of the work requirement, it will be determined by what methods H.T.C. will provide the resources for contract execution.

1. Definition

1.1 For the purpose of this policy and further procedures the term Contract shall be defined as agreed requirements between H.T.C. and a customer, transmitted by written means. If required, H.T.C. Management shall be responsible for instructing the various areas to begin work on a project, before the actual receipt of the contract or written instruction from a customer.

2. Scope of Review

2.1 For all types of contracts requiring Design, Engineering, and Procurement, contract review shall consist of:

- verification that the customer's requirements are adequately defined and documented
- comparison of customer contract documents with tender documents and H.T.C.'s proposal
- confirmation H.T.C. has available resources to meet the contract requirements.

3. Records

3.1 Managers conducting a contract review shall document each review. Records of contract review shall be distributed throughout the project team in the form as defined by Management.

4. Reference Procedure

4.1 A contract review shall be implemented in accordance with Quality procedures Contract Review, and procedure Amendment to Contract.

SECTION 4.0

DESIGN CONTROL

COMPANY POLICY

All design activities shall be controlled and carried out by qualified personnel. The Site Superintendent together with the Engineering Personnel, shall be responsible for providing adequate design resources to meet contractual requirements

1. Design Planning

Contract documents shall be reviewed to identify design inputs and design outputs. The Site Superintendent, shall be responsible for Planning and Co-ordinating design activities, to produce the required design output documentation.

2. Design Review

Design output shall be reviewed and the results documented. As a minimum, a design review shall include:

- => Piping and Instrument diagram (P&ID) review
- => Hazard and Operability (HAZOP) review

3. Design Verification

All design output documents shall be verified to ensure design input requirements have been met. Design verification shall be performed by Personnel other than the originator.

4. Design Validation

During project commissioning, design validation shall be performed to ensure process requirements have been achieved.

5. Design Changes

All design changes shall be identified, documented, reviewed and approved by the same functions responsible for the original design.

6. Reference Procedure

Design Control shall be implemented in accordance with Quality procedures, Design Control, Design Changes, HAZOP Review and work procedure, Inter-discipline checking of documents.

SECTION 5.0

DOCUMENT AND DATA CONTROL

COMPANY POLICY

Documents and data essential to the functioning of the Quality System, including those which are applicable to departmental activities, (e.g. Quality Manual, Quality Procedures, Work Procedures, specification, codes, standards and drawings, etc.), shall be controlled by the company. Such documentation generated internally shall be reviewed and approved prior to use,

1. Document Issue

- 1.1 Controlled documentation (i.e. that which is subject to amendment control) shall be issued to areas concerned, ensuring that such documents are available at appropriate locations. Master lists shall be developed and maintained identifying current revision status and location of controlled documents,

2. Amendment

- 2.1 Changes to controlled documents shall be approved by the same function responsible for approving the original document. Amendments and revised documents shall be issued to the recipients of original controlled documents, who shall be responsible for ensuring obsolete documents are destroyed.

3. Reference Procedure

- 3.1 Document and data control shall be implemented in accordance with the following procedures:

- Quality Procedures
- Document and Data Control

Work Procedures -

- Computer Access
- Electronic Data Back Up
- Drawing Review and Approval
- Project correspondence
- Vendor data

SECTION 6.0

PURCHASING

COMPANY POLICY

Purchased products shall be purchased from vendors/sub-contractors who have been approved by H.T.C. and can satisfy H.T.C.'s quality requirements. All procurement documents shall clearly describe the required product quality requirements. Procurement documents shall be approved prior to release.

1. Approval of Vendors and Sub-contractors

1.1 Request for approval shall be initiated by either the Technical or Procurement Group.

1.2 The Quality performance of all vendors and subcontractors shall be monitored. Vendors and sub-contractors showing inadequate performance shall be requested to implement corrective action and shall be discontinued if there is no improvement.

1.3 An Approved Vendor List shall be maintained by the Procurement Group. Orders may be placed with vendors that are on the list. For orders which are to be placed with vendors not on the Approved Vendor List, refer to Quality Procedure, Approval of supply sources for direction.

2. Procurement Documents.

2.1 Purchase requisitions shall be prepared by Technical and shall clearly and completely describe the required product including precise identification, reference to applicable standards/specifications, required inspection and quality requirements. Purchase orders shall be prepared by Procurement.

3. Verification of Purchased Product

3.1 Technical shall determine the amount and type of verification of purchased product taking into consideration the design maturity of the product, product complexity, the amount of control exercised by the Vendor/sub-contractors and the Vendor/sub-contractors previous history of supplying product. Verification arrangements shall be specified on purchase orders.

4. Reference Procedure

- 4.1 Purchasing activities shall be controlled by implementing the following procedures.

Quality Procedures -

- Approval of supply sources
- Verification of purchased goods or services

Work Procedures -

- Inquiry for Equipment or Service
- Preparation of Purchase Requisitions
- Preparation of Purchase Orders
- Expediting Procedure
- Local Procurement
- Shipping, Traffic Procedure.

SECTION 7.0

CONTROL OF CUSTOMER SUPPLIED PRODUCT

COMPANY POLICY

Customer supplied product shall be subjected to the same controls as applied to H.T.C. product. Loss, damage or unsuitability of customer supplied product shall be documented and reported to the customer.

1. Reference Procedure

- 1.1 Customer supplied product shall be controlled by implementing Quality Procedure Control of Customer supplied product.

SECTION 8.0

PRODUCT IDENTIFICATION AND TRACEABILITY

COMPANY POLICY

Each item of equipment, instruments, specialist items and valves shall be assigned a project tag or mark number which shall allow for identification during project engineering and procurement activities. Where traceability is a contract requirement it shall be implemented using unique identification for each item and shall allow traceability to its source.

1. Reference Procedure

- 1.1 Product Identification and traceability shall be regulated by implementing quality procedure, Identification/ Traceability of procured project components and equipment.

SECTION 9.0 PROCESS CONTROL

COMPANY POLICY

Processes/activities which directly affect quality shall be carried out under controlled conditions by qualified personnel.

1. Processes/Activities

- 1.1 The controls referenced in section 4.0 shall be implemented to control design activities.
- 1.2 The controls referenced in section 6.0 shall be implemented to control procurement activities.
- 1.3 Engineering activities shall be controlled by implementing the following work procedures.
 - => Process Engineering
 - => Civil/Structural Engineering
 - => Piping Engineering
 - => Electrical Engineering, Instrument Engineering and Mechanical Engineering
 - => Rotating Equipment Engineering, Instrument Design and Drafting
 - => Electrical Design and Drafting
 - => Flowsheet Design and Drafting
 - => Civil/Structural Design and Drafting
 - => Piping Design and Drafting
- 1.4 Project Management activities shall be controlled by implementing work procedure, Project Management.

SECTION 10.0 INSPECTION AND TESTING

COMPANY POLICY

Inspections and tests shall be planned and results documented. Where applicable H.T.C sub-contractors and vendors shall provide project specific inspection and test plans detailing:

- the required tests/inspections
- the procedure to be used
- applicable acceptance criteria
- the record to be produced to document results.

1 Reference Procedure

1.1 Inspection and testing shall be regulated by implementing Work Procedure, Project Management and Vendor Data.

SECTION 11.0

CONTROL OF INSPECTION, MEASURING AND TEST EQUIPMENT

COMPANY POLICY

Due to the nature of our business at H.T.C. this element of ISO 9001 is not applicable.

SECTION 12.0

INSPECTION AND TEST STATUS

COMPANY POLICY

Due to the nature of our business at H.T.C., this element of ISO 9001 is not applicable.

SECTION 13.0

CONTROL OF NON CONFORMING PRODUCT

COMPANY POLICY

Products or services that do not conform to specified requirements shall be controlled. Controls shall include identification, segregation, evaluation and documentation of results. Disposition of non-conforming product shall be approved including, where applicable, customer approval

1. Reference Procedure

- 1.1 Non conforming product shall be controlled by implementing quality procedure, Control of Non-Conforming Products/Service.

SECTION 14.0
CORRECTIVE AND PREVENTIVE ACTION

COMPANY POLICY

Customer complaints, results of Quality audits, non-conformance reports, processes, activities and Quality records, shall be analysed to identify deficiencies or potential deficiencies. Required corrective or preventive action(s) shall be documented and implemented. All changes to procedures, resulting from corrective or preventive action shall be documented.

1. Reference Procedure

- 1.1 Corrective and Preventive Action shall be implemented in accordance with Quality Procedure, Corrective/Preventive Action and Customer Complaints.

SECTION 15.0

HANDLING, STORAGE, PACKAGING, PRESERVATION AND DELIVERY

COMPANY POLICY

All product shall be handled and stored in a manner that prevents damage or deterioration. Requirements for purchased product shall be detailed on Purchase orders. Where documents, drawings, etc. are required to be delivered to a customer, they shall be adequately packaged and transmitted via a document transmittal system

1.0 Reference Procedure

- 1.1 The requirements of Quality Procedure: Handling, Storage, Packaging, Preservation and Delivery shall be implemented for all product.

SECTION 16.0

CONTROL OF QUALITY RECORDS

COMPANY POLICY

Quality related records shall be retained by the company. These records shall substantiate the following:

- Provide objective evidence that specified requirements have been met.
- Demonstrate that the Quality System operated by H.T.C. complies with the requirements of ISO 9001-1994.
- Provide a data base for the analysis of deficiencies
- Provide a reference for fulfilling requirements of subsequent contracts.

Quality records shall be legible, readily retrievable and securely stored to prevent damage, deterioration or loss. These requirements shall also be extended to records developed by H.T.C., Vendors and sub-contractors.

1.0 Reference Procedure

- 1.1 Quality records shall be controlled by implementing Quality Procedure, Control of Quality Records.

SECTION 17.0

INTERNAL QUALITY AUDITS

COMPANY POLICY

Each element of H.T.C.'s Quality System shall be audited at least once per annum. However, audits may be carried out more frequently at the discretion of the QA/QC Manager.

Audits shall be planned and carried out by trained personnel independent of the activity to be audited.

The results of Quality Audits shall be a part of Management review (see section 1.0) and used as a basis for recommending corrective or preventive action (see section 14.0) to improve H.T.C.'s Quality System.

1.0 Reference Procedure

- 1.1 Quality Audits shall be implemented in accordance with Quality Procedure Quality Audit.

SECTION 18.0

TRAINING

COMPANY POLICY

Each Group and Site Superintendent shall ensure that personnel performing activities affecting quality under their responsibility are adequately trained and qualified. Training needs shall be identified and training provided to ensure personnel can conduct the duties required by the Company, and those agreed and specified by the customer. Training records shall be maintained.

1.0 Reference Procedure

- 1.1 The requirements of Quality Procedure, Training shall be implemented.

SECTION 19.0

SERVICING

COMPANY POLICY

Due to the nature of our business at H.T.C. this element of ISO 9001 is not applicable.

SECTION 20.0

STATISTICAL TECHNIQUES

COMPANY POLICY

Due to the nature of our business at H.T.C. this element of ISO 9001 is not applicable.

SECTION 21.0

LISTING OF PROCEDURES

Quality System Management Review
Quality Audit
Document And Data Control
Control of Quality Records
Project Quality Plans
Identification/Traceability of Procured Project Components and Equipment
Control of Customer Supplied Product
Control of Non Conforming Product/Service
Handling, Storage, Packaging, Preservation and Delivery
Corrective/Preventive Action
Customer Complaints
Design Control
HAZOP Review
Design Changes
Approval of Supply Sources
Verification of Purchased Goods or Services
Amendment to Contract
Contract Review
Training
Project Management
Computer Access
Electronic Data Back Up
Process Engineering
Civil/Structural Engineering
Piping Engineering
Electrical Engineering
Instrument Engineering
Mechanical Engineering
Rotating Equipment Engineering
Instrument Design and Drafting
Electrical Design and Drafting
Flowsheet Design and Drafting
Civil/Structural Design and Drafting
Piping Design and Drafting
Inquiry for Equipment or Services
Preparation of Purchase Requisitions
Preparation of Purchase Orders
Expediting Procedure
Local Procurement
Shipping, Traffic Procedure
Drawing Review and Approval

H. T. C. YEMEN INTERNATIONAL, LIMITED

SECTION TITLE: LISTING OF PROCEDURES
DATE: DECEMBER 1998

PAGE 2 OF 2
REVISION:1

LISTING OF PROCEDURES (cont.)

Procedure Writing
Inter-Discipline Checking of Documents
Project Correspondence
Vendor Data

YEMEN DRILLING

A division of H.T.C YEMEN INTERNATIONAL LIMITED

QUALITY ASSURANCE

CONTENTS

- 1.0 Purpose
- 2.0 Scope
- 3.0 References
- 4.0 Definitions
- 5.0 Procedure
 - 5.1 General
 - 5.2 Collection of Data
 - 5.3 Agenda
 - 5.4 Meeting Frequency
 - 5.5 Records
 - 5.6 Follow-up
- 6.0 Documentation

1.0 PURPOSE

- 1.1 The purpose of this procedure is to provide guidelines for management review of H.T.C.'s Quality System to evaluate the overall effectiveness of the system in achieving stated quality objectives.

2.0 SCOPE

- 2.1 The management review shall examine the following, to establish how they affect the present and future functions of the quality management system:

- Confirmation that the Quality Policy Statement is still valid and requires no change
- Performance of the Quality System
- Results of internal and external quality audits
- Major non-conformance and associated corrective actions
- Client complaints
- Changing technologies and other conditions

3.0 REFERENCES

- 3.1 Quality Procedure "Quality Audit"
3.2 Quality Procedure "Client Complaints."

4.0 DEFINITIONS

- 4.1 **QUALITY MANAGEMENT:** The management of H.T.C.'s quality system.
- 4.2 **QUALITY SYSTEM:** H.T.C.'s organisational structure, responsibilities, procedures, processes and resources for implementing quality.
- 4.3 **MANAGEMENT REVIEW** - The formal evaluation by H.T.C.'s management of the status and adequacy of the quality system in relation to quality policy and new objectives resulting from changing circumstances.
- 4.4 **QUALITY AUDIT** - A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements, and whether these arrangements are implemented effectively and are suitable to achieve the objectives.

5.0 PROCEDURE

5.1 GENERAL

- 5.1.1 The General Manager shall be responsible for review of the quality management system in accordance with this procedure. Management review will be achieved by holding a management review meeting and documenting the results.
- 5.1.2 The Quality Manager shall be responsible for collection of all reference documentation e.g. Quality Manual, Specimen Project Quality Plans, Quality Audit Results and Observations required for the review. He shall also be responsible for the preparation, distribution and archiving of the minutes (plus associated closeout documentation) of the meeting.
- 5.1.3 The General Manager shall ensure that all action items raised by the meeting are addressed and resolved. The date for completion of action items shall be recorded in the minutes of the meeting.

5.2 COLLECTION OF DATA

- 5.2.1 The Quality Manager shall be responsible for the preparation of a file containing copies of the reports of all internal and external audits; the related corrective actions and their resolution, non-conformance reports and their solution and any other documents relevant to the review process.
- 5.2.2 This file shall be made available to the attendees of the meeting one week prior to the meeting date.

5.3 AGENDA

- 5.3.1 The Quality Manager shall issue a formal agenda for the management review meeting one week prior to the meeting.

This agenda shall include (but not be limited to) the following topics:

- Quality policy statement review;
- Results of internal audits;
- Results of external audits;
- Operation of the quality system;
- Client complaints.
- Recommended changes and enhancements to the system;

5.4 MEETING FREQUENCY

5.4.1 The management review meeting shall be held at least annually or when serious deficiencies in the Quality System are identified.

5.4.2 The attendees shall include (but not be limited to) the following personnel:

General Manager
Quality Manager
Human Resources Manager
Purchasing Manager

Others may be co-opted as suggested by General Manager and Quality Manager

5.5 RECORDS

5.5.1 Minutes of the proceedings of the meeting shall be taken and a list of actions with designated actionees prepared. The Quality Manager shall distribute these minutes.

5.6 FOLLOW-UP

5.6.1 If required a follow-up meeting to consider the resolution of action items shall be held within six calendar weeks of the management review meeting. This meeting shall also be recorded and minutes distributed.

6.0 DOCUMENTATION

6.1 Minutes of Meeting Format is shown on Attachment 1

ATTACHMENT 1

MINUTES OF MEETING

Page 1 of

Management Review Meeting No.:

Date :

Venue :

Attendees:

Copies to those present and :

Minute Number	Description	Action By	Completion Date

Page ____ of ____

Minute Number	Description	Action By	Completion Date

Acknowledged as a record of the meeting

General Manager: _____

Date: _____

CONTENTS

- 1.0 Purpose
- 2.0 Scope
- 3.0 References
- 4.0 Definitions
- 5.0 Procedure
 - 5.1 Controlled Quality Records
 - 5.2 Indexing
 - 5.3 Storage/Access
 - 5.4 Retention
 - 5.5 Disposal
- 6.0 Documentation

1.0 PURPOSE

1.1 The purpose of this procedure is to provide guidelines for controlling Quality records.

2.0 SCOPE

2.1 This procedure applies to the Quality Records

3.0 REFERENCES

3.1 None

4.0 DEFINITIONS

4.1 None

5.0 PROCEDURE**5.1 Controlled Quality Records**

5.1.1 The following Quality records shall be controlled in accordance with this procedure. Personnel indicated shall be responsible for collecting, filing, and storage of records at the location indicated.

RECORDS	FILE LOCATION	RESPONSIBLE PERSON	RETENTION TIME
Quality System Management Review	Quality Department	Quality Manager	10 years
Corrective / Preventive Action	Quality Department	Quality Manager	10 years
Customer Complaints	Quality Department	Quality Manager	10 years
Quality Audit Reports	Quality Department	Quality Manager	10 years
Non-Conformance Reports	Quality Department	Quality Manager	10 years
Contract Review	Project Office	Project Superintendent	2 years

RECORDS	FILE LOCATION	RESPONSIBLE PERSON	RETENTION TIME
Design Review / Verification (HAZOP/P&ID Review)	Project Superintendent Office	Project Superintendent	2 years
Lost, Damaged or Unsuitable Customer Supplied Product	Project Superintendent Office	Project Superintendent	2 years
Quality Plans	Project Superintendent Office	Project Superintendent	2 years
Computer Software Check	Project Superintendent Office	Project Superintendent	2 years
Vendor/Sub-Contractor Assessment	Purchasing Department	Purchasing Manager	Indefinite
Inspection and Test Records	Site	Project Manager	Life of Project
Training Records	Personnel File	Human Resources Manager	Indefinite
Personnel Qualification/Certification	Personnel File	Human Resources Manager	Indefinite

5.2 **Indexing**

5.2.1 Quality records shall be indexed with one of the following:

- Unique Reference Number
- Applicable Project Job No.
- Applicable Purchase Order

5.3 Storage/Access

- 5.3.1 Quality records shall be stored in an environment that will prevent damage, deterioration or loss and allow for easy retrieval.

5.4 Retention

- 5.4.1 Quality records shall be retained for the time periods indicated in Retention time periods and shall start after project handover for Records held in Project Job files/vendor data manuals, and from the date indicated on the record for other records.

5.5 Disposal

- 5.5.1 Personnel identified in Section on Retention times shall be responsible for disposal of Quality records after the applicable retention period.

6.0 DOCUMENTATION

- 6.1 None

CONTENTS

1.0	Purpose
2.0	Scope
3.0	References
4.0	Definitions
5.0	Procedure
5.1	Handling
5.2	Storage
5.3	Packaging/Preservation
5.4	Delivery
6.0	Documentation

1.0 PURPOSE

- 1.1 The purpose of this procedure is to provide guidelines for handling, storage, and delivery of materials.

2.0 SCOPE

- 2.1 This procedure applies to all H.T.C. materials and materials procured from H.T.C.'s Vendors.

3.0 DEFINITIONS

- 3.1 VENDOR - A manufacturer, fabricator, supplier or sub-contractor who supplies products or services to Al-Hashedi.

4.0 PROCEDURE

4.1 HANDLING

- 4.1.1 All H.T.C. Materials (i.e. Drawings, specifications, manuals, reports etc.) shall be handled in such a manner as to prevent damage or deterioration of information and / or data.

4.2 STORAGE

- 4.2.1 Storage facilities shall provide an environment that will not damage product or accelerate deterioration.
- 4.2.2 Drawings shall be stored in a suitable drawing cabinet.
- 4.2.3 Electronic data files shall be stored on floppy discs and held with the project controller.
- 4.2.4 Other documentation (calculations, reports, specifications etc.) shall be stored in the applicable project file.

4.3 PACKAGING/PRESERVATION

- 4.3.1 Any special packaging or preservation requirements for materials shall be detailed on applicable Purchase orders.

4.3.2 Packaging materials shall not cause damage to product and may serve one or more of the following functions.

- To protect product during shipment or until use
- To carry identification(s) / description(s).
- To carry warning instructions to ensure the correct handling / use of product.

4.3.3 Where H.T.C. materials are required to be delivered to a customer, they shall be robustly packaged.

4.3.4 Product preservation shall protect product from deterioration and may include:

- Segregation (e.g. carbon steel and stainless steel)
- Controlling the environment (e.g. silica gel bags)
- Protection (e.g. bevel protectors, grease, paint, foam / straw packing).

4.4 DELIVERY

4.4.1 Any special delivery requirements for purchased product shall be detailed on applicable purchase orders,

4.4.2 H.T.C. products shall be delivered to customers via a transmittal system

4.4.3 One or more of the following methods shall be used for delivery H. T. C. material

- Mail
- Facsimile
- Courier Delivery Service
- Air Freight
- Sea Freight
- Hand Delivery by H.T.C. Employee

5.0 DOCUMENTATION

5.1 None.

CONTENTS

- 1.0 Purpose
- 2.0 Scope
- 3.0 References
- 4.0 Definitions
- 5.0 Procedure
 - 5.1 Planning and scheduling
 - 5.2 Audit team selection
 - 5.3 Preparation
 - 5.4 Entry meeting
 - 5.5 Execution of audit
 - 5.6 Post audit meeting
 - 5.7 Corrective action requests
 - 5.8 Exit meeting
 - 5.9 Audit reporting
 - 5.10 Distribution of audit report
 - 5.11 Follow up actions
 - 5.12 Close out
 - 5.13 Internal audit formalities
- 6.0 Documentation

1.0 PURPOSE

1.1 The purpose of this procedure is:

- To define the method to be employed for all internal and external Quality Audits and the documentation to be used in recording the results;
- To determine whether the established methods and procedures are effective in achieving H.T.C.'s internal quality objectives;
- To determine whether the established methods and procedures are effective in achieving customer quality requirements.
- To verify compliance with Project Quality Plans.

2.0 SCOPE

2.1 This procedure applies to internal and external Quality Audits performed by H.T.C. It establishes the requirements for planning, scheduling, preparation, execution, reporting, follow-up and close out of such audits.

3.0 REFERENCES

- 3.1 Quality Manual
- 3.2 Quality Procedure 'Approval of Supply Sources'
- 3.3 Quality Procedure 'Quality Records'
- 3.4 Applicable Project Quality Plan

4.0 DEFINITIONS

- 4.1 **QUALITY SYSTEM** - H.T.C.'s organisation structure, responsibilities, procedures, processes and resources for implementing quality.
- 4.2 **QUALITY AUDIT** - A systematic and independent examination to determine whether quality activities and related results comply with planned arrangements, and whether these arrangements are implemented effectively and are suitable to achieve the objectives.
- 4.3 **INTERNAL AUDIT** - A documented activity performed by auditors from within H.T.C. to verify by examination and evaluation whether applicable elements of its Quality System are effectively implemented.

- 4.4 EXTERNAL AUDIT - A documented activity performed by auditors from outside H.T.C. to verify by examination and evaluation, the effectiveness of sub-contractors and suppliers Quality Systems and Procedures.
- 4.5 PROJECT QUALITY PLAN - A document which details the specific quality practices, resources and sequence of activities relevant to a particular contract or project.
- 4.6 QUALITY MANUAL - H.T.C.'s document setting out the general quality policies, procedures and practices.
- 4.7 CORRECTIVE ACTION - An action carried out to remedy a non-conformance and to identify the cause and investigate whether the problem is systematic or unique.

5.0 PROCEDURE

5.1 PLANNING & SCHEDULING

- 5.1.1 The Quality Manager (or his nominee) shall establish and approve an audit schedule of sufficient scope to ensure that all aspects of the quality system are audited at least once annually. In addition an audit schedule shall be developed for each project encompassing the specific project requirements. Where applicable project audits may be used to satisfy the annual audit schedule.
- 5.1.2 Project audits shall be scheduled to start within one month of the project start date.
- 5.1.3 Audit schedules shall be reviewed by the Quality Manager on a regular basis and updated as necessary. The date of each review shall be recorded on the applicable schedule.
- 5.1.4 The audit scope and proposed date shall be prepared and agreed with the auditee (internal Department or outside vendor/supplier) using the Audit Arrangement Record. (See Attachment 2).
- 5.1.5 Should a serious deficiency be identified during the execution of a project/contract, the Quality Manager shall notify the Project Manager of the deficiency and initiate an unscheduled audit immediately without any further notification to the auditee. Such unscheduled audits shall be identified on the Audit Schedule (Attachment 1) and the Audit Report Status Log (Attachment 9) by adding a 'U' to the serial number.

AUDIT TEAM SELECTION

- 5.2.1 Audits may be carried out by the Quality Manager or by an audit team. The audit team size and composition shall be approved by the Quality Manager. Team members shall be selected from H.T.C. personnel who do not have direct responsibilities for work in the area being audited. The audit team leader will normally be the Quality Manager or an experience/trained auditor nominated by the Quality Manager.

5.3 PREPARATION

- 5.3.1 Audits shall be numbered as follows:

- Project Audits - Job No. and Audit No. e.g. 100/01
- Other Audits - Year end Audit No. e.g. 95/01

The Quality Manager shall, for each audit:

- Obtain the audit number from the Audit Report Status Log (see Attachment 9) maintained by the Quality Manager.
- Contact the auditee (seven (7) days in advance) and confirm the arrangements in writing.
- Obtain copies of all relevant procedures, correspondence, specifications, inspection and test plans, earlier Audit Reports etc.
- Prepare (or cause to be prepared) audit checklists (see Attachment 4) based upon:
 - The audit scope
 - The approved Project Quality Plan (where applicable)
 - The contract (where applicable)
 - Specifications
 - Previous audit reports and findings
 - H.T.C. quality procedures and quality manual

Prior to developing checklists, the auditors shall read the relevant documents (e.g. procedure) thoroughly. Checklist questions shall address significant areas of the procedure or system to be audited, and shall elicit a direct answer which can be substantiated by documentary evidence.

5.4 ENTRY MEETING

5.4.1 The Team Leader shall convene a brief meeting between the audit team and appropriate representatives of the auditee. The purpose of the meeting shall be to:

- Effect introductions and obtain names of attendees on an attendance sheet; (see attachment 3)
- Discuss briefly the scope of the audit
- Establish sequence and individuals involved
- Arrange escorts for the audit team and use of an office for audit team meetings
- Establish a provisional time for the exit meeting and invite the appropriate representative of the auditee to attend

5.5 EXECUTION OF AUDIT

5.5.1 Audits shall be conducted in accordance with the documented checklist (see Attachment 4). The use of checklists shall ensure thoroughness and continuity during the audit. The checklists shall be used only as a guide, and should be expanded if additional questions arise. Objective evidence, which is usually in the form of documents, should be examined and essential information recorded in the 'Comments/Remarks' column e.g.:

- Identification of documents examined
- Details of specific non-conformance.

5.5.2 All observations and activities, which are examined, shall be recorded so that an overall view of the Auditee's QA performance is readily seen.

5.5.3 Whenever possible, auditors shall obtain auditee agreement that significant non-conformance exist at the time they are discovered. Auditors shall not, however, tell the auditee that a Corrective Action Request (CAR) (see Attachment 7) will be issued before the Audit Team have had an opportunity to discuss all the audit findings.

5.6 POST-AUDIT MEETING

- 5.6.1 Upon completion of the Audit, and prior to the exit meeting, the Audit Team shall meet together to check and evaluate their findings and complete any Corrective Action Requests (CAR) (see attachment 7) and/or recommendations.
- 5.6.2 Significant departures from approved Quality Plans, Procedures, Job Specifications, non-compliance with Contract Drawings, persistent errors or incompleteness in documentation or any other non-conformance with specified requirements, shall be considered as valid justification for the preparation of CARS.

Recommendations may be issued detailing action(s) which are not obligatory, but in the opinion of the auditor, if implemented, could lead to improvement in systems, performance or prevention of future non conformance.

5.7 CORRECTIVE ACTION REQUESTS (CARS)

- 5.7.1 The auditors shall document any deficiencies on the CAR form shown in Attachment 7 in preparation for discussion and agreement at the exit meeting.
- 5.7.2 CAR's shall be numbered sequentially e.g. for Audit No. 100/01, CAR 100/01/01, CAR 100/01/02 etc.
- 5.7.3 CAR's shall define precisely the area of work involved or describe what type of deficiency was identified, and any procedure reference. However, auditors shall avoid naming those involved, and should preferably use job titles.
- 5.7.4 The Auditors shall complete the CAR only as far as the non-compliance section.

5.8 EXIT MEETING

- 5.8.1 Following the Post-Audit Meeting, the Audit Team Leader shall convene the Exit meeting with representatives of the auditee. (Management representatives for external audits and managers for internal audits). He shall record the names of those present (see attachment 3) and:

- Present an objective summary of the audit
- Discuss audit findings and ensure that they are understood by the auditee

- Obtain signature of the auditee representative on drafted CAR's (NB the auditee signs to indicate that he understands and acknowledges the non-compliance described).
- Give the Auditee copies of acknowledged drafted CAR's.
- State the intended issue date for the audit report and agree corrective action or the date by which the Auditee will respond with his proposed corrective Actions.

5.9 AUDIT REPORTING

5.9.1 Following completion of the audit, the Team Leader assisted by the Audit Team (where applicable) shall prepare the Audit Report (see attachment 5 & 6). It is important that only facts shall be recorded; subjectivity shall be avoided and confidentiality shall be respected.

5.9.2 The Audit Report shall include:

- A lead sheet detailing the Audit Team members, coupled with a summary of the Audit results
- Audit scope
- Persons contacted during Entry Meeting and Exit Meeting, and individuals participating in the audit process
- Specific findings of any non-compliance
- Exit meeting (as appropriate)
- CAR's
- Recommendations

5.9.3 For internal audits, the Audit Report shall be sent to the Project / Departmental Manager for review and comment. On return of the report to the Audit Team Leader the report shall be amended where agreed or annotated accordingly where any unresolved disagreement remain. The report shall then be reissued and officially distributed per 5.10

5.10 DISTRIBUTION OF AUDIT REPORT

- 5.10.1 When the completed Audit Report has been signed by the team leader it shall be distributed as follows:

External Audits:

Original	Quality Manager
Copy	H.T.C. Management Auditee Management Audit Team Members.

Internal Audits:

Original	Quality Manager
Copy	Auditee Audit Team Members Project Manager/Department Manager

The Quality Manager shall maintain the audit file which shall include:

- Audit schedules
- Executed audit checklists
- Audit reports and the original CAR's

- 5.10.2 The Team Leader shall complete the following:

- Audit Report Status Log (See attachment 9)
- CAR Status Log (See attachment 8)

5.11 FOLLOW-UP ACTIONS

- 5.11.1 The Audited organisation / discipline shall be permitted seven (7) days to respond to any outstanding audit findings where Corrective Action has not been agreed at the exit meeting. The response shall include the planned corrective action and anticipated dates where such action will have been executed.

- 5.11.2 The Team Leader shall evaluate the response and, if acceptable, arrange for verification of agreed corrective actions. If the response is unacceptable, the Auditee shall be notified to that effect with the specific reasons. When eventually acceptable, the Team Leader shall complete the 'Proposed Follow-up Date' on the CAR Status Log.

- 5.11.3 If the Corrective Action Requests have not been implemented within the agreed time scale, the Audit Team Leader shall agree with the Auditee a new time scale. If the CAR is not closed out at the second follow-up date, the Audit Team Leader shall notify the responsible Project Manager/Departmental Manager for Internal Audit CAR's or the General Manager for external audit CAR'S.

5.12 CLOSE-OUT

Closed-out CAR's shall be distributed in accordance with 5.10.1. The CAR Status Log and Audit Report Status Log shall be updated by the Team Leader.

5.13 INTERNAL AUDIT FORMALITIES

Auditors shall maintain the correct professional approach during Audits of colleagues. However, the meeting times may be arranged informally and may be spread over several days for convenience; also the requirement for formal entry and exit meetings may be relaxed at the discretion of the Team Leader and the Project/Department Manager.

6.0 DOCUMENTATION

- 6.1 Audit Schedule - Attachment 1
- 6.2 Audit Arrangement Record - Attachment 2
- 6.3 Attendance Sheet - Attachment 3
- 6.4 Check list - Attachment 4
- 6.5 Audit Report Lead Sheet - Attachment 5
- 6.6 Audit Report Sheet - Attachment 6
- 6.7 Corrective Action Request - Attachment 7
- 6.8 Car Status Log - Attachment 8
- 6.9 Audit Report Status Log - Attachment 9

H.T.C.YEMEN INTERNATIONAL, LIMITED

DOCUMENT TITLE: QUALITY AUDIT

PAGE 13 OF 18

Attachment - 4

CLIENT:		PROJECT:		
AUDIT CHECKLIST QA AUDIT NO.:		AREA:	PAGE OF	
SUBJECT:		ORIGINATOR/DEPT.:		DATE:
NO.	CHECK ITEM	REFERENCE NO.	APPROVED	COMMENTS/REMARKS

ATTACHMENT 2

AUDIT ARRANGEMENT RECORD

COMPANY / DEPARTMENT:

DATE:

Proposed Nature of audit:

Reference Documents:

Audit team and their work location:

Special Notes:

Agreed:	Signature	Signature
	Name	Name
	Date	Date
	For Al-Hashedi	For Audit

ATTACHMENT 3

[illegible]

H.T.C.YEMEN INTERNATIONAL, LIMITED

DOCUMENT TITLE: QUALITY AUDIT

PAGE 14 OF 18

ATTACHMENT 5

AUDIT REPORT (LEAD SHEET)	AUDIT REPORT No. PAGE OF		
CLIENT:			
CONTRACT / PURCHASE ORDER No.			
SUPPLIER /SUB-CONTRACTOR:			
DEPARTMENT / DISCIPLINE:			
DATE OF AUDIT:			
AUDIT TEAM MEMBERS:			
SUMMARY OF AUDIT:			
CORRECTIVE ACTION REQUESTS ISSUED:			
PREP BY:	DATE:	APPROVED BY:	DATE:

ATTACHMENT 6

AUDIT REPORT (LEAD SHEET)	AUDIT REPORT No. PAGE OF

ATTACHMENT 7

H.T.C COMPANY

CORRECTIVE ACTION REQUEST

DATE

C.A.R. No

COMPANY / DEPARTMENT / DISCIPLINE

NON-COMPLIANCE

CONTROL REFERENCE:

SIGNATURE OF AUDITOR: _____

DATE: _____

ACKNOWLEDGE BY AUDITEE: _____

DATE: _____

CORRECTIVE ACTION BY DEPARTMENT / DISCIPLINE:

DATE OF IMPLEMENTATION:

SIGNATURE OF AUDITEE: _____

DATE: _____

SIGNATURE OF AUDITOR: _____

DATE: _____

ACTION TAKEN TO PREVENT RECURRENCE OF NON-COMPLIANCE:

DATE OF IMPLEMENTATION OF ACTION TO PREVENT RECURRENCE: _____

FOLLOW-UP AND CLOSE OUT

VERIFICATION OF CORRECTIVE ACTION:

SIGNATURE: _____

DATE: _____

ATTACHMENT -8

CORRECTIVE ACTION REQUEST (CAR) STATUS LOG

[illegible]

ATTACHMENT-9

AUDIT REPORT STATUS LOG

[illegible]

H.T.C. WEEKLY SAFETY INSPECTION REPORT

Item	Work Area	Yes	No	N/A
1	Is PPE available, in good condition and used correctly for all work procedures?			
2	Are work areas clear of oil, grease and trip hazards?			
3	Are walkways clear of oil, grease and trip hazards?			
4	Are all areas clear of oil, grease, chemical or other spillages?			
5	Are plans for containment of oil, chemical etc. spillages available?			
6	Are emergency exits and escape routes clear, adequately marked and clear of trip hazards?			
7	Is sufficient lighting available to enable people to work safely?			
8	Can all alarms be heard above the sound of operating equipment?			
9	Do all personnel know what actions to take if alarms sound?			
10	Are appropriate safety signs displayed and in good condition?			
11	Is appropriate fire fighting equipment readily available and adequately maintained?			
12	Are safety showers and eye baths available, in good condition and operational?			
13	Are pipes, hoses and fittings correctly pressure rated and in date for inspection?			
14	Are pipes, hoses, etc. secured such that they will not cause a hazard during operations?			
15	Is ventilation adequate to prevent build-up of fumes from exhaust systems, chemicals, etc. which could cause a health hazard?			
16	Are hazardous materials stored, mixed and used correctly and appropriate hazard warning signs posted?			
17	Are portable ladders in date for inspection and in good condition?			
18	Are portable ladders secured, in good condition, top extends 1 meter above landing point and the 4 in 1 rule observed?			
19	Are manual handling procedures being followed and have personnel been trained in them?			
20	Is all equipment in a good state of repair?			
21	Is housekeeping to a high standard?			
22	Are tools on location correct for the job in hand?			
23	Are tools being used correctly?			

H.T.C. WEEKLY SAFETY INSPECTION REPORT

Item	Work Area	Yes	No	N/A
24	Are tools in a good state of repair?			
25	Do all employees and third party contractors attend and get involved in rig safety meetings?			
26	Are minutes of safety meetings documented and a roll call taken?			
27	Are risk assessments/JSA's conducted prior to all critical or non-routine tasks and do all relevant personnel participate in the process?			
28	Are toolbox talks held with all relevant personnel for all critical and non-routine tasks?			
29	Are industry and company Safety Alerts available to all personnel?			
30	Are accident, incident and near miss reports followed up to find root cause?			
31	Do accident, incidents, near miss reports follow the standard ratio (i.e. 1:29:300)			
32	Is a copy of the Chemical hazard assessment available on the installation?			
33	Are emergency drills held regularly?			
34	Is there a de-brief following drills and is an action plan for improvement prepared?			
Totals				

General Comments:

Signature:

Name/Position:

Date:

AI-HASHEDI

QHSE AUDIT

Name :

Address :

Contact :

Audit Date :

Auditor(s) :

Location of Audit :

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Health and Safety Policy</u>	Possible Score	Actual Score
1	Is there a written statement of Health and Safety Policy?	0/40	
2	Is the policy signed off by the senior manager on site?	0/10	
3	Is the policy statement reviewed annually?	0/10	
4	Is the policy statement comprehensive (i.e. third parties, individual responsibilities, relevant legislation etc)?	PJ 0/20	
5	Are there adequate resources to implement the policy?	PJ 0/10	
6	Is the policy posted and contained in manuals?	PJ 0/10	
Scores			

<u>N°</u>	<u>Management Structure</u>	Possible Score	Actual Score
7	Is there a full time safety co-ordinator?	0/30	
8	Is the safety function adequately staffed?	PJ 0/20	
9	Who is ultimately responsible for safety and health within the organisation? (Note: the policy should state that the senior manager on site is responsible)	0/20	
10	Does the safety co-ordinator report to the highest level manager on site? (Deduct marks for each level between safety manager and senior manager)	PJ 0/10	
11	Do senior management participate in the safety effort? By letters / memos? By tours of the work areas? By attending safety meetings?	10/30	
12	Have standards been set for management performance?	0/30	
13	Are management safety skills appropriate to the risks being managed?	PJ 0/20	
14	Is safety presented as part of general management meetings on a regular basis?	0/10	
15	Are safety / loss control responsibilities clearly laid down in job descriptions for all personnel?	0/20	
Scores			

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Management Audits</u>	Possible Score	Actual Score
16	Does management participate in the safety audit of the organisation?	0/10	
17	Are managers trained in audit techniques	0/20	
18	Is there a clear cut system for conducting audits and recording the results?	0/10	
19	Has the safety system been analysed to determine which elements should be addressed?	0/20	
20	What special core elements does the company need to concentrate on (has it been established)?	0/10	
Scores			

<u>N°</u>	<u>Staff Involvement</u>	Possible Score	Actual Score
21	Is there an effective means for staff to put forward ideas or suggestions on health and safety?	0/20	
22	Are the minutes of the safety committee meeting disseminated amongst the other staff?	0/10	
23	Is each person on site aware of their safety obligations?	0/10	
24	Is there a library of safety literature which can be accessed by all personnel?	0/10	
Scores			

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Hiring of Personnel</u>	Possible Score	Actual Score
25	Are all jobs reviewed to ensure that all of the occupational demands are known?	0/25	
26	Are the job requirements laid down in terms of skill and knowledge?	0/20	
27	Is each successful candidate required to undergo a pre-employment medical?	0/15	
28	Does this medical include tests to identify any pre-existing medical conditions?	0/10	
29	Are candidates tested to ensure full visual acuity (including Ishihara test) are satisfied?	0/10	
30	Is an audiometric test conducted for all new employees	0/10	
31	Are all employees tested at subsequent medicals for audio and visual degradation?	0/10	
32	Are previous employers contacted to ensure the accuracy of references?	0/20	
33	Are agencies contacted to ensure the accuracy and validity of training and qualification certificates?	0/20	
Scores			

<u>N°</u>	<u>Training</u>	Possible Score	Actual Score
34	Is there a safety training policy with clearly defined objectives?	0/30	
35	Is there a formal safety induction course given to all new employees?	0/20	
36	Is the quality and duration of health and safety training appropriate to the risks	PJ 0/15	
37	Are learning objectives clearly set for each course?	0/5	
38	Do assessments measure attainment of stated objectives?	PJ 0/20	
39	Are training records held?	0/10	
40	Is the frequency of training adequate?	PJ 0/20	
41	Are well control records held for AD's and above or for anybody who may be required to operate the brake?	0/10	
Scores			

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Occupational Health and Safety</u>	Possible Score	Actual Score
42	Have all occupations been examined to identify and evaluate all occupational health and safety hazards?	0/30	
43	Which of the following surveys have been conducted? a) Chemical b) Noise c) Radiation d) Vibration	0/20	
44	Is health surveillance carried out where necessary?	0/15	
45	Are routine workplace inspections carried out regularly?	0/15	
46	Are hazard surveys carried out on particular topics where necessary or appropriate?	0/15	
47	How adequate are the prevention measures being used to control all identified potential hazards?	PJ 0/20	
48	What type of controls is applied to potential hazards? a) Engineering b) Administrative c) Work practices d) PPE	0/20	
49	Is monitoring of hazardous atmospheres, effluents, workplace environment carried out by a competent person?	0/10	
50	Are the results of monitoring converted into appropriate control actions?	PJ 0/20	
51	Are all hazardous materials used/stored in the workplace properly labelled?	0/5	
52	Are appropriate containers available to dispense chemicals?	0/5	
53	Are emergency procedures available for chemical releases?	0/10	
54	Are chemicals disposed of in the correct manner and in accordance with the Environmental Protection rules?	0/20	
55	Are adequate records maintained of chemicals used and stored?	0/10	
56	In areas where hazards exist, has regular monitoring of personnel taken place?	PJ 0/10	
57	Are personnel trained to identify hazards?	0/10	
58	Are personnel regularly made aware of the hazards which can accompany their work?	0/15	
59	Does the company conform to COSHH (or similar)?	0/10	
60	Have assessments been made within the workplace?	0/10	
61	Does the company have access to expert medical advice?	0/15	
62	Do all personnel know how to obtain medical attention?	0/10	
63	Are sufficient first aid locations available?	PJ 0/10	
Scores			

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Accident / Incident Investigation</u>	Possible Score	Actual Score
64	Is there a formal procedure for reporting and investigating accidents, incidents, all injuries, property damage and near-misses?	0/20	
65	Is the accident / incident form clear and unambiguous?	0/10	
66	Does the policy ensure that all accidents / incidents are reported and investigated?	0/10	
67	Are personnel trained in accident investigation?	0/10	
68	Do investigations result in clear recommendations and actions to prevent recurrence?	PJ 0/20	
69	Are investigation summaries made available to all parties?	0/10	
70	Are accidents / incidents analysed to determine the basic / underlying causes?	PJ 0/10	
71	Is the system monitored to ensure that all accidents / incidents are reported?	PJ 0/10	
72	Is there a follow up procedure which ensures that all remedial actions are put into effect?	0/20	
73	Are the results of monitoring relayed to middle / senior management?	0/10	
74	Are the results of accidents / incidents and subsequent progress on action items reported at relevant safety meetings?	0/10	
75	Is information on serious accidents and high potential incidents distributed to all levels of management?	0/15	
76	Do management participate in investigations of accident / incidents? If so, at what level are they involved?	0/20	
77	Are accident / incident reports maintained for a period of two years?	0/10	
Scores			

<u>N°</u>	<u>Planned Inspections</u>	Possible Score	Actual Score
78	Are general inspections carried out by relevant personnel?	0/20	
79	Have the areas requiring inspection been identified?	0/15	
80	Are checklists available for each area?	0/15	
81	Where deficiencies are found, is there a system for correction?	0/10	
82	Are the deficiencies classified as to hazard and prioritised accordingly?	0/10	
83	Are supervisors made responsible for correcting deficiencies?	0/20	
84	Is progress reported to senior management?	0/10	
85	Are outstanding items from audits and inspections discussed at the relevant safety meetings?	0/10	
Scores			

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Maintenance</u>	Possible Score	Actual Score
86	Does the company have a preventative maintenance system?	0/30	
87	Is all PM work recorded?	0/10	
88	Is unscheduled work monitored to check efficiency of the PM system?	0/15	
89	Is all mobile equipment checked prior to use?	0/20	
90	Are the necessary checks written down?	0/10	
91	Are inspection reports available?	0/10	
92	Does management review the system regularly to ensure compliance?	0/20	
Scores			

<u>N°</u>	<u>Rules</u>	Possible Score	Actual Score
93	Is a set of safety and health rules available to all personnel?	0/40	
94	Are the rules communicated to all personnel?	0/20	
95	Are the rules posted as appropriate?	0/10	
96	Has the company determined the need for special rules?	0/10	
97	Does the company have a permit to work system?	0/10	
98	What activities are covered? a) Hot work b) Confined space c) Electrical safety d) Working at heights e) Blasting f) Scaffolding	0/14	
99	Are work instructions available to all personnel?	0/10	
100	Are rules discussed at induction and when starting a new job?	0/15	
101	Are the rules and work instructions reviewed by the workforce?	0/15	
102	Does the company have a correction policy for abuse / misuse of rules (and a commendation policy for correct use)?	0/10	
Scores			

H.T.C. AUDIT QUESTIONNAIRE

ORGANISATION AND ARRANGEMENTS

<u>N°</u>	<u>Personal Protective Equipment</u>	Possible Score	Actual Score
103	Has the company identified the PPE needs in accordance with regulations and good practice and the identified needs of the job?	0/30	
104	Is PPE available to all employees?	0/10	
105	Are items of PPE maintained in good condition?	0/10	
106	Are employees instructed in the use of PPE?	0/15	
107	Are employees required to report deficiencies in PPE and return damaged equipment for exchange?	0/15	
108	Are supervisors required to carry out checks on PPE to ensure adequacy and condition?	0/10	
109	Are rule breakers counselled on the PPE policy?	0/15	
110	Are instances of positive use of PPE use recognised?	0/10	
Scores			

Total Possible Score

Actual Score

Overall Percentage Score

YEMEN DRILLING
A division of H.T.C Yemen International limited
P.O Box 1376,
Faj attan road, Sanaa,
Republic of yemen.

Phone: + 967 1 414166
+ 967 1 414188
Fax: + 967 1 412302
E-mail: yemendrill@y.net.ye

