

An Overview Of Some HSE Issues Related To Occupational Safety(ISO 14001:1996) and Health (OHSAS 18001:1999)In Geophysical Operations Of ONGC

Ghosh D.N

Geophysical Services, A&AA Basin,oil and Natural Gas Corporation Limited, Jorhat, Assam

Summary

QHSE has been implemented in Geophysical Operations. This paper deals with some issues related to occupational safety and health in Geophysical Operations. Although the points are simple and we are following /practicing them in our organization for long time it has been an endeavor to write some important points for brushing up our mind. Some salient points have been discussed after the implementation of ISO14001:1996 and OHSAS 18001:1999.All the points discussed below have already been incorporated in our documents.

Introduction

In our organisation safety plays an important role, which is of prime importance. ONGC is Promoting the conviction that all accidents can be avoided. We are fully prepared to respond to any QHSE emergency. We educate our employees on the safe and environmentally responsible use of our services and products, and how their actions can influence QHSE performance Communicate openly with interested parties about our QHSE policy, programs and performance and carry out Systematic audit enforcement by qualified auditors. HSE has become a part of our business culture. We recognized the importance of reducing risks and we are striving for a zero defect culture we understand that losses of people and property are preventable. My note covers only a few points related to HSE and may not cover all aspects.

It is needless to mention that it always ensures that radio communication is maintained with all vessels and platforms in the vicinity of the operation and with a shore-based station.The safe working practice is followed. Whatever is written here is my perception/knowledge gained during my service in ONGC. It has been an endeavor to jot down some of the important points which be followed as far as their safety and health is concerned. The topic is vast however only few relevant points are indicated. All are aware that all equipment and materials that are used during a geophysical operation are handled, operated and maintained in accordance with the manufacturers' specifications. Also proper training is identified and internal audit on the performance is arranged by qualified auditors.

Some important points on HSE management system as far as Geophysical work is concerned:

Party Chief /Safety Officer shall provide strong,visible commitment,leadership and personal involvement in HSE

- Our HSE culture gives equal importance to seismic data acquisition for exploration of oil. They are responsible for maintaining a culture of HSE awareness so that prevention of accidental risk is a recognized and become integral part of our daily activities;
- Already defined our responsibilities and make available the resources necessary to achieve our HSE objectives;
- To provide HSE training for all employees.
- Communication of Policies, standards and procedures and the effectiveness of the communication shall be verified on a continuous basis duly audited by competent and knowledgeable auditors/experts on the subject and to carry out comprehensive risk assessment to reduce HSE risks and mitigate the impact of operations on HSE matters ;
- Contractors also be asked to ensure that their products and services to meet applicable HSE standards.
- Active employee participation. is very important. This is achieved through performance review, incident/near miss reporting, investigation and review, inspections, corrective actions and their records. Monitoring of near misses and lessons learnt through them and corrective actions taken. Monitor its performance using audits and management review, taking necessary corrective measures



- Audits and reviews shall be regularly conducted to verify the effectiveness of the HSE Management System which is inevitable after QHSE accreditation at regular interval.
- Assuring a safe and healthy workplace
- Reporting
- To follow industry standards and local and international regulations relating to HSE .
- Allocate sufficient resources;
- Define the HSE responsibilities of every employee and provide the appropriate training;
- Evaluate hazards, assess associated risks and establish controls and recovery measures;
- Define and develop procedures to work safely in all circumstances, and minimize the impact of its activity. Our endeavor should be to protect the health and safety of our people at all times and in all circumstances Eliminate QHSE accidents and events.

Managing HSE

- **Human Safety**
- **Material Safety**
- **Environment Protection**
- **Investment safety**

Some safety measures

1. While conducting a geophysical operation it is normally ensured that every member of the geophysical crew carry out there job in such a way that accident does not occur. That they are all aware if not Then they should identify hazards on land/board and should identify risk involved and should minimize consequence of exposure and use personal protective equipment.

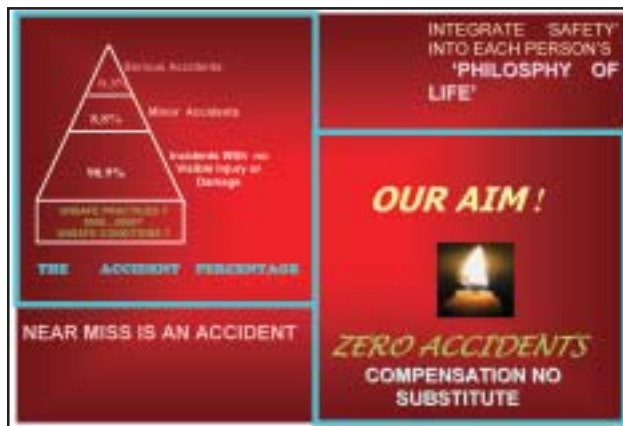


Fig.1 : Showing our aim zero accident

While working for offshore data acquisition we see that they should :

- a) Wears a suitable personal flotation device at all times when the member is working on back deck;
 - b) They are equipped with a safety belt and a safety line whenever the member is positioned or working near the cable reel or working on the back deck during this periods when there is a possibility of the member falling or being thrown or swept overboard;
 - c) Does not work alone on the back deck; and
 - d) Wears high visibility clothing.
 - e) Constant monitoring of the crew working in back deck through video camera by in charge/shift in charge.
 - f) It is also ensured that an evacuation route is set up and defined from each work station and that the route is accessible to every member of the geophysical crew who is working at that station.
 - g) A person shall not smoke near a marine recording cable or in an area where inflammable materials or explosives are being used or stored in the course of a geophysical operation.
 - h) Smoking is strictly prohibited and should keep a sign prohibiting smoking.
 - i) No member of the geophysical crew is required to work
 - (i) A shift of more than 12 consecutive hours; or
 - (ii) Working continuously successive shifts without having at least 6 consecutive hours of rest between those shifts.
 - (iii) However under extreme exigency an officer/ official may be required to work however this should be avoided and should not be a practice for which written /verbal approval of higher authority may be obtained to keep a check on the subject.
 - (iv) Regularly safety mock drill is carried out on board at regular interval of time.
 - (v) has successfully completed survival course
2. As far as training of geophysical crew both for onland and marine is concerned it is ensured that every member of the geophysical crew is familiar with the safety equipment that the member may use, and with the safety procedures that the member may have to carry out during the operations. And undergoes the instructions, training and drills necessary to enable the member to cope with both normal operations and emergency situations.

3. Safety officer should ensure that all employees on board/onland have adequate level of knowledge of the

hazards and emergencies that are likely to be encountered on a vessel/working onland that is engaged in a geophysical operation and of techniques for surviving those hazards and emergencies; and

4. It is always ensured that those members of the geophysical crew who are trained in the operation and maintenance of the seismic energy source and the components of seismic energy systems will be responsible for their handling and maintenance. While working onland proper care should be taken for storage/handling/transportation of explosives and detonators following all rules and regulations.
5. Safety Instruction and Guidance: The Company Safety Manual carries detailed information and instructions on health and safety matters. Copies of the Manual are available for consultation at all Company sites and will be issued to employees and contractors, together with appropriate revisions and updates

Points relevant to health

Pre employment medical check-up

Have PME

Health hazard analysis on the deck/onland.

Workplace should be clean and must undergo regular inspection.

Remove hazardous material from the work place.

Have First aid policy on board/on land.

People should be jubilant and endeavour should be to keep them happy so that untoward incident should not occur on board/onland.

Field personnel are issued individual personal safety and protective equipment. Hard Hat, Safety Glasses, Safety Gloves, Safety Clothing. This equipment is to be carried at all times when proceeding on project, is to be kept in good condition, and worn or used in the manner for which it is intended. Any loss or damage is to be rectified by the employee at the earliest opportunity. The equipment is also to be used when onshore if the nature of the work makes this prudent.

A record of equipment issued to individuals is to be kept by the Operations Manager/Supervisor. Field Staff are to sign the record upon issue of equipment.

The Operations Manager/Supervisor and Party Chiefs are to carry out spot checks of personal safety equipment.

Posting of persons addicted towards drug and/or alcohol should be avoided on board since they are not allowed on board.

If required urine test to detect the presence of drugs or alcohol may be carried out in the interest of the employee. The Party Chief/Safety officer will further delegate day-to-day safety matters to the various Sectional heads who will supervise and guide their own staff on all health and safety matters.

It is also our obligation that **employees of catering dept to participate** in maintaining a healthy, safe and clean work environment. Employees are responsible for completing the job safely. If unsure of the safe way to proceed, they must ask for assistance from their supervisor, and must report any unsafe situation that they feel they are not able to handle. Emergency plan shall be disseminated to all parties involved with the operation including the client, vessel, shore representative local operations office. Each party is responsible for ensuring that its staff or agents are aware and understand these procedures. This procedure shall be open to both internal and external auditing.

During onland surveys we must give due attention to following points and must achieve the following targets: Accident free operation in the course of storage, handling and transportation of explosives. This Storing the explosive in at a place built as per guidelines of Chief Controller of Explosives after obtaining the license from Government. We must apply/plan early for portable magazines to receive licenses before field season starts. Handling of explosives

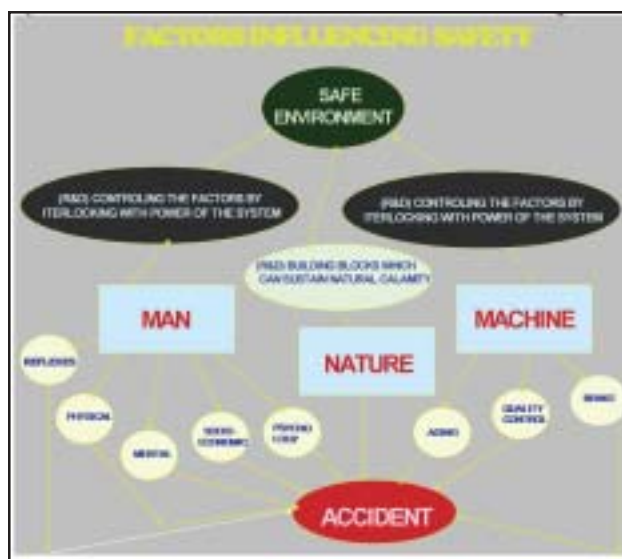


Fig. 2 : Factors influencing safety

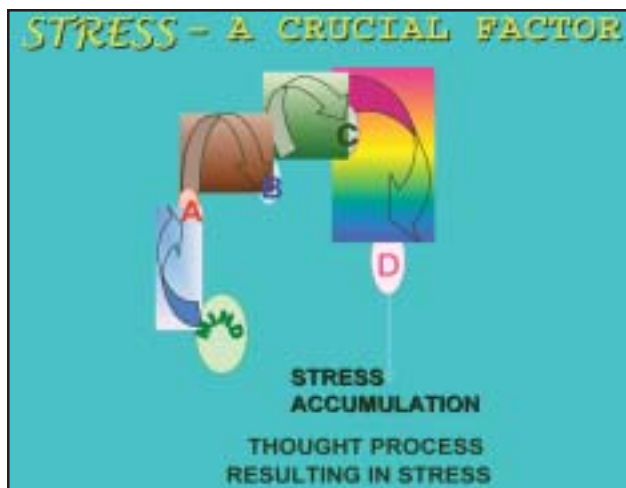


Fig. 3 : Impact of stress on mind which must be taken care of to avoid accident(a person should not be overloaded with work or stressed)

by licensed workforce. Transporting the explosives in specially built trucks / jeeps as per rules and regulations of the land. Posting of armed guards at explosive magazine, work place and during transportation and try to achieve our target of zero accident .Otherwise accident if happens may be fatal. No person should be affected by hearing loss. Zero percentage of people affected by electrical shock. We must take proper care.

Some important practical suggestions

Party Chief and party personnel are some times overstressed. It is therefore suggested that regular Yoga classes may be conducted in the party to reduce stress particularly in the areas having adverse environmental condition.

Regular monitoring of noise ,ambient air etc must be done by outside professional agencies since we do not have sufficient expertise and equipments of our own other wise equipments may be procured and proper training be giving to officers/officials who will be carrying out the job. We have made it mandatory to measure noise level in our work. Noise-induced hearing loss occurs randomly. All exposed persons are not affected equally. Some highly susceptible people lose their hearing ability faster than others. Auditory effects include hearing impairment resulting from excessive noise exposure. Noise-induced permanent hearing loss is the main concern related to occupational noise exposure. It is possible to determine the risk of hearing loss among a group of noise exposed persons. To do this we need the following data:

- A measure of daily noise exposure level
- Duration of noise exposure (months, years) ,Age of person

Most hazardous material in seismic exploration is explosives. We must take proper care. .Its a well known fact that getting explosive license is a difficult job because of different formalities including permission of police and different civil authorities. Suggest frequent active co-ordination of senior level officers with their counterparts in police and civil authorities which may facilitate early processing of cases .In our organization we have police personnel deputed in our Security and vigilance section whose services also may utilized for our assistance which may facilitate and reduce work load of geoscientists till work is started and after that field party will completely take over from them. However they will act as per instructions of the party only. Time thus saved may be used for scientific and innovative work by them. This will definitely reduce work load and mental tension of party personnel.

PME is a must for all ongoing field going field staff/officers posted on board or land party. We can not take any chance since personnel are aging and most of them around 45 years. Officers/officials should be motivated to proceed to field and or sailing with PME which should be done minimum once in a year if not twice a year. It will be ideal if an ONGC doctor visits the field Party otherwise a doctor in the local area must be empanelled to look after our officers/staff. However in remote areas where local doctor is not available it will be better if a doctor(regular/ on contract basis) is posted in the party. We work in snake infested area also it is suggested that antivenum injection must invariably be available in the local hospital/camp otherwise risk of life may prevail and there may be loss of life at the time of emergency.

Regarding PPE nobody should be allowed to work without proper safety equipments if we wish to attain zero accident level. Management must provide adequate safety kit. Procedures for procurement must be simplified and Geophysical services may be permitted to procure the equipments of their own with simplified procedures and if required proper amendments in procurement manuals may be done. First Aid facility shall be provided and maintained and to be readily available for all the working hours. It is needless to mention that QHSE has been implemented in all the field parties in ONGC. It is suggested that our endeavor should be to keep an ambulance at the site of blasting so that it can take care at the time of any exigency.

In some of the remote places of operation where hiring of ambulance is difficult from local area our endeavor should be to have our own and deploy wherever necessary. Leveling and fencing and electrification in the camp should be done properly to avoid hazards. For **electrical wiring**: Good workmanship and proper material should be used. All conductors should be insulated and safeguarded to prevent danger. Quality of electric components must invariably be maintained. We are aware that electrical hazards are dangerous therefore no compromise in quality of material used in the camp lighting. Efforts should be made not to mix up material of different make to avoid electrical hazards..In offshore and onland areas where line crosses the river safety jackets must invariably be given without which laying of cable may wait since life of a human being is precious. It may always be remembered that there is no shortcut on safety.In field parties , quality, occupational health and safety and environment management system must be implemented and continually improved so that its effectiveness are in accordance with the requirements of Integrated management system of ISO standards as documented in our QHSE documents. The use of alcohol and drugs increases the risk of accidents and hence be avoided Shot holes are filled after blasting.

Conclusions

Recently one the example of BHN in Mumbai offshore indicates how mock drill helped in saving lives of a large no of officers/officials.In this paper it has been my attempt to jot down some points which are to be taken care of at the time of both offshore and on shore data acquisition.We know that fire hazard must be addressed to and date of last inspection must be written on the body of fire extinguishers which are to be distributed uniformly in the all corners of the vessel/camps/instrument vans/explosive jeep etc. Proper care must in variably be taken at the fuelling point and where helipad exists in the case of offshore operations..It is needless to mention here that human factors such as its psychology, socioeconomic, mental, physical and its reflexes plays a vital role to avert any accident.

Our endeavor should be to encourage employees to improve health and safety awareness in their own sphere of activity, to prevent injury to themselves and to other people, and to report accidents and hazards to their

superiors. Any incident in offshore operations should never be underestimated in its severity, as these situations can deteriorate extremely rapidly. It is therefore essential during the initial phases of an incident that as much relevant information as possible be passed from the vessel to the shore-based personnel in order that a correct assessment of the situation can be made .It is needless to mention here that emergency and contingency plans be invariably made and all such emergency plans shall be agreed to and approved by seismic staff. It may please be ensured that all work places are suitably equipped and free from recognized hazards which are liable to cause death, injury or illness; Whatever are written above are simple but if obeyed may be helpful in averting many accidents.As far as food for crew in operations is concerned it should be prepared with due care like proper cleaning of vegetable ,cleaning hands etc.We must remember that safety is round the clock practice and there should be no shortcut of safety. **A robust working culture is a key element in order to avoid incidents and accidents. Proper Sanitary system in the camp is a must.**

Elements of surprise also be watched. By practice operators develops shortcuts which should be avoided .For one mistake there is no second chance while handling explosives. It is the responsibility of management to provide employees with suitable safety equipment and where appropriate and to hold all supervisory personnel responsible for developing and maintaining safety consciousness among their staff and to seek ways of improving health and safety in the work environment for carrying out our job fearlessly and generate more seismic data for discovery of hydrocarbon.

Acknowledgement

The author is thankful and express gratitude to Shri B.K.Deb, DGM (Gp), Shri Ajeet Kumar Deshwal, DGM (GP)-Seismic Acquisition Operatons Manager and Shri G Sarvesam,GM (GP)-Head Geophysical Services for guidance and encouragement for writing this paper.

Views expressed in this paper are that of the author only and may not necessarily be of ONGC.

Reference

Unpublished reports and personal communication