

The development of petroleum industry management essay

[Business](#), [Management](#)



In the light of the complexity of offshore activities highlighted in the case study, critically analyze the significance of risk management and other HSE tools you may consider necessary as crucial tools for an international Oil Gas Company operating within the United Kingdom Continental Shelf (UKCS) in promoting HSE as required by the UK Health and Safety Executive (HSE) and other legislative requirements.

SOLUTION

Introduction

The development of petroleum industry during the past years has created bigger demand, bigger market on both size and scale. The North Sea field is a field with enormous oil and gas resources. These opportunities have attracted international oil and gas companies to invest in the oil and gas sector in these fields. Most International Oil and Gas Company promote Health Safety and Environment in their operations in accordance to the international standard. Production of oil and gas is probably the most demanding aspect of offshore operation, as most International Oil and Gas Company promote Health Safety and Environment in their operations in accordance to the international standard to deliver the project safety, smoothly and profitably. In order to improve quality, safety and commercial issue of an oil and gas project, service companies continue to investment lots of new equipment including multiple offshore support vessel, accommodation barge, heavy crane barge, anchor handling tug and towing tug vessel as reported in (PPM, 2009). However, in term of safety, technical and commercial aspect, the oil and gas service company now is dealing with

some problems in offshore platform installation and the production well activities such as heavy investment in offshore platform installation and production wells project and the need in a very careful risk management to ensure that the offshore project can be successful implemented. Accidents in general and especially those with catastrophic impacts are not unpredictable or say an Act of God. Accident does occur as human error technological and arrangement (Roason, 1998). The introduction of a very good risk management system would identified and prepare for such an unforeseen situation to either prevent or mitigate the impact it may occur as major stake holders with successful HSE records were able to achieve their feat by establishing robust regulatory regimes with enough enforcement powers and competent personnel, to win investment for new projects. As indicated in PPM, 2009. Mr. Do Hong Hai made a case study to: Identify the risk factors in the offshore platform installation project; and Conduct a risk management study for offshore platform installation project. He found out that the offshore platform installation is normally performed by Contractor to ensure that the work is completed successfully before handover to first oil activities and put project into operation stage. Risk factors in offshore platform installation project are Politics, Economic, Health and Safety, Commerce, Environment, Financing, Natural Events, Contract Condition, Software.

Production platform

The Offshore platform installation is one of the very important stages of exploring and exploiting petroleum activities in the continental shelf with much money in total investment. The Oil platform is a large structure with

facilities to drill wells, to extract and process oil and natural gas, and to temporarily store product until it can be brought to shore for refining and marketing. Most Oil and gas production platform are fabricated from welded pipe and rest on steel support called the jacket's pinned to the sea floor with steel piles. The platform provides accommodation and house various facilities include human, gas turbine generating set, piping structure and other activities such as drilling, prepare water or gas for injection into the reservoir, processing the oil and gas before sending it ashore, and cleaning the produced water for disposal into the sea. Studies also, indicated that first oil wells were drilled from platform built on piles in the fresh water of the Grand Lake St. Mary's in Ohio just as in the case study, and others submerged drilling activities occurred in salt water in the portion of the summer land field. The 1920s, when drilling on concrete platform was done in Lake Maracaibo, Venezuela. Other platform, in the 1937 Pure Oil Company (Chevron Corporation) and its partners Superior Oil Company (Exxon Mobil) also built a fixed platform to develop a field in 14 feet (4.3m) of water, one mile (1.6km) drilling platform of water 18 miles off Vermilion Parish Louisiana. However, as time goes on and more reform been made and considering operational safety, then brought the modern offshore platform that are pre-constructed in show very short time and are flouted to their location and placed on the shallow bottom of thame estuary. Considering, the nature of operation, that extracting of volatile substances sometimes under extreme pressure in a hostile environment, would mean the tendency of accident and tragedy occurring is high as reported by the U. S. Minerals Management Services 69 offshore deaths, 1,349 injuries and 856 fires and

explosions on offshore rigs in the Gulf of Mexico from 2001 to 2010.

Therefore given the number of grievances and conspiracy theories that involve the oil business and the important of gas and oil platform to the economy, it is believed that when the necessary risk management is put in place accident could be prevent or avoid. In the light of the complexity of offshore activities highlighted above, the need to work in a safe environment to eliminate or reduce risk are needed to be considered, since this industry is one of sectors that have high risks. It can range from minor to major events as reported by MPM, 2009. For instance: oil leaks, gas leaks resulting to catastrophes like explosions, fires and oil spread. These disasters might cause fatality, injury, pollution, economic loss and even disruption of business.

Risk management

Risk management is a very important sector using particular method to achieve the best practices in the project of company. Risk management is to reduce different risks and also a systematic approach to managing unexpected related to a threat, through a sequence of human activities including: Risk identification, Risk classification, Risk control, Risk monitor, Risk evaluation as cited by Mr. Do Hong Hai (PPM, 2009). Most organization, have their ways of dealing with risk such as transfers the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk. Risk managements in a way may be focused on risks stemming from physical or legal causes (e. g. natural disasters or fires, accidents, death and lawsuits). It

may refer to numerous types of threats caused by environment, technology, humans, organizations and politics. On the other hand it involves all means available for humans, or in particular, for a risk management entity (person, staff, and organization). A successful risk management should involve the various stake holders such as client, contractors, and subcontractor.

However, for an organization to achieve a comprehensive risk management there is a need to take in to consideration Quantitative Risk Assessment, which is a mean of objectively measuring the risks from hazardous activities of a facility or operation. The risks are qualified in terms of their probability and consequences. By comparison with a suitable risk criterion, the results can be used to help decide whether the facility is unacceptable or whether the improvements are necessary as reported in MPM, 2009. Mr. Nguyen Van Thanh made a case study on " Quantitative Risk Assessment for the Process System on an Offshore Platform" as cited in MPM, 2009. He concluded that: To evaluate and calculate the level of risk of a project, a factory or an offshore platform, the general formula that can be used is: $R = F \times C$ (where : $R = \text{Risk}$; $F = \text{Frequency}$ and $C = \text{Consequence}$). Based on the formula of risk, reduction of the consequence and reduction of the frequency are the two ways to reduce the risk. To reduce the consequence or frequency of risk, mitigation measures will be proposed if the risk value is higher compared with the risk criteria. The process system should be divided into the segments based on the properties, functions and working place. To assess the risk, the process system of platform RP-3 (Vietsovpetro Joint Venture) was divided into 8 segments based on their function, working condition and

location. Comparing to the risk acceptance, the calculated risk in the process system of platform RP-3 is lower. Therefore, the risks are acceptable.

Conclusion

In conclusion, for organization within the oil and gas sector to achieve their goals, there is a need to abreast itself with reform and to meet the international standards such as HAZID, HEMP, HAZOP and the reliability of human solutions to accident. Many industry are use to the terms like ALARP, the acronym for 'as low as reasonably practicable', which refers to management processes whereby a risk is reduced so low that any further risk reduction would involve time, trouble, difficulty and cost which are unreasonably disproportionate to the additional risk reduction obtained. As in UK, assessing the tolerability of risk, the ALARP principle is not a part of any UK law, but bears a similar acronym SFAIRP (so far as is reasonably , practicable) principle. In short, ALARP and SFAIRP are considered to be broadly equivalent, for example by the Health and Safety Executive (HSE), but it is not seen that this equivalence has yet been demonstrated in law as reported by SPE, 2011. However, in 2010 the HSE's Offshore Division in UK launched the KP4. This report is to run until 2013, it is an inspection programme aims to improve the management of the consequences of the ageing of UK offshore installations, especially given the growing demands to extend their use beyond the original design life as reported in KP4, 2010. Other regulation as reported in HSE, 2012 introduce Offshore oil and gas sector strategy 2012-15 as regulation or a strategy to covers the working activities associated with the exploration and extraction of oil and gas

offshore in the United Kingdom Continental Shelf (UKCS). The major role in ensuring the security of energy supplies for the nation. Ghana as an up and coming oil and gas industry need to take HSE very serious, since without HSE our found industry could grounded, and our hope of joining the oil giant like the Saudi Arabia, Qatar, UK, US, Nigeria etc. could not be achieved. So therefore, Ghana as country would have to come out with HSE policy in the oil and gas industry to regulate and to help achieve the aims of HSE which is to reduce work-related death, injury and ill health. Ghana as matter of policy or regulation can institute, ALARP, SFAIRP, KP4, the Offshore oil and gas sector strategy 2012-15, as primarily policy or strategy and amend it as we develop. These policies are practicable because countries like UK; US etc had practices it and had made reforms to their system.

SECTION B: (Report Format 2000 words + or – 10%)

Management of most organizations do not usually see the need to spend so much on HSE as it does not have any direct relationship on return on investment. In view of this posturing from management, critically assess the significance of HSE to a company operating in an oil and gas industry, particularly how expenditure on Health, Safety and Environment affects the profitability or otherwise of the company.

Introduction

In principle a safety case can be developed for any activity. However, in practice as reported by Cullen (1990) they are generally only prepared for large, complex industrial or technical systems such as nuclear power plants, military and civilian aviation and offshore oil and gas installations. Such

systems are complex, and, in the event of an accident, the consequences could be very severe. A safety case is simply the case that the management of a facility makes to demonstrate that the facility is as safe as can be reasonably expected. It is analogous to the case that management may have to make to a court following a serious accident. If the safety case is accepted then a safety case regime is implemented. The UK Ministry of Defence (MOD 2004) also defined safety case as: A structured argument, supported by a body of evidence that provides a compelling, comprehensive and valid case that a system is safety for a given application in a given operating environment. Such high consequence events are sometimes referred to as Major Accident Events, or MAEs. For offshore work the UK Health and Safety Executive states that an MAE would generally involve one or more of the following events as reported by (MOD 2004). A fire, explosion or the release of a dangerous substance involving death or serious personal injury to persons on the installation or engaged in an activity on or in connection with it; Any event involving major damage to the structure of the installation or plant affixed thereto or any loss in the stability of the installation; The collision of a helicopter with the installation; The failure of life support systems for diving operations in connection with the installation; or Any other event arising from a work activity involving death or serious personal injury to five or more persons on the installation or engaged in an activity in connection with it. Therefore in principal, the reason for developing and implementing a safety case is, of course, to ensure that the people on a facility are safe. However, safety does have additional justifications, as discussed by Maguire (2006).

Significant of HSE

HSE's Offshore Division (OSD) as reported in (HSE, 2009) is responsible for the offshore oil and gas industry. Our mission is to protect people's health and safety by ensuring risks in the changing workplace is properly controlled. The priorities[1] are: leadership; asset integrity; safety culture; and Workforce Involvement Group. For instance, a target of a 50% reduction on the 2009/10 total of hydrocarbon releases (HCRs), which is to end 2012/13, is to be achieved in principle as detailed in SPC/TECH/OSD/48[1]. The objective is to encourage a greater focus on identification of root cause for such releases, and ensure industry as a whole shares and learns lessons to help in minimizing future similar releases. The recent occurrence like that of the Macondo blow out incident in the Gulf of Mexico has contributed to the need of the oil and gas industry to effectively identify and manage the risk. Since over the years as reported by RSP (2010) averagely within two to three years there has been a major accident associated with oil and gas offshore operations which include: 2001 - P36, sinking of semi-submersible, 11 fatalities; 2005 - Bombay High, ship collision with platform and riser fire, 22 fatalities; 2007 - Usumacinta, jack up collision with platform, 22 fatalities. Similar events: 2003 - Chongqing, sour gas blow out, 243 fatalities; 2004 - Skikda, explosion on LNG plant, 27 fatalities.

Some Desasters and Cost Implementation

Chevron Nigeria Limited

Chevron Nigeria Limited KS Endeavor Rig, experience one of the worst gas blow-out in Nigeria with scores of personnel on board, as the rig caught fire,

killing two persons and leaving several others seriously injured and traumatized as reported in METRO, 2012. According to the report METRO, 2012. Six days before the explosion, the oil well they were working in was "under-control situation". Where the Chevron representative, and other personnel on board attention were drawn to, having drilled up to 12, 945 ft with 3, 845 holes. In spite of this, the company ignored the basic HSE and insisted that work must continue as they kept asking unnecessary technical questions about how they came by the problem and therefore failing to apply tenet number 8 which admonished that any abnormal condition must be addressed. Sadly, as the report indicated the rig eventually caught fire and the workers jumped into the water which was a fishing trawler, it took Chevron five to six hours before their first rescue helicopter came to rescue about 80% of the affected workers and one hour ten minutes for the helicopter to get to the location, these however raise serious questioning as to the compliance level of HSE by Chevron as at that period.

BP oil spill

The BP oil disaster in the Gulf of Mexico (BP, 2010) is primarily the direct result of a well blowout. With the exact cause clearly not known, this is mostly described as a series of failures, which may not have been identified. BP indicated that the catastrophe occurred because a series of measures and HSE culture, that should have prevented a blowout, failed. Therefore causing uncontrolled high pressure flow of oil and gases, to gush out causing explosions and fire on the rig floor occurring at approximately 9: 51 pm on April 20, 2010. Due to the fire or the explosion, 11 workers were killed, a

wellhead was damaged, the drilling rig collapsed, breaking the piping that connected the drill to the well approximately 5000 ft below sea level. This allowed oil to begin to surge directly into the ocean. Failure to comply to HSE culture lead to significant effects on the environment, ecologically, socially. In view of these two scenarios, the Organizations must invest in the safety of their employees as they owe a 'duty of care' by providing a safe work environment as reasonably as practicable. Employees in the same vein owe it to themselves and their employers to perform 'safe acts' and not to put their lives in jeopardy. As multinational companies, partnerships and SME's to enterprises and one-man businesses. They are those whose lives would be impacted by any hazardous exposure, as accidents are not caused by things but rather by human activities. For this reason, it is important for this group to conduct business in such a manner that lives and property would be protected under both local and international laws.

Health safety and Environmental system

Understanding the nature of the oil and gas industry, a comprehensive Environment, Health & Safety (EHS) policy are sustain through these basic principles: Strong leadershipVisible supportClear guidanceImplementing these three principles provides the best mechanism for building a strong and safe culture and ultimately supports Cal Dive (2010) in its mission to create an Incident and Injury Free (IIF) workplace without environmental impact. Cal Dive, 2010. EHS management system like many other bodies such as SGS, HP'S ISO 14001 and Endeavour international cooperation is designed to define establish and incorporate EHS responsibility and accountability

through every level of the organization. They strive to apply open, honest and clear communication throughout the organization to engage the employees in every aspect of safe operations, by considering the relevant international standards: ISO 14001 for environmental management systems and OHSAS 18001 for health and safety management systems. These certifications as indicated by Endeavour, 2012 confirm that the company has identified and assessed the health and safety risks and environmental impacts of its operations and has a management system in place to manage those risks and impacts. It also attests that Cal Dive aims to achieve a reasonably continuous improve environment performance is attain.

Companies with Long-standing commitment to HSE

Schlumberger

Schlumberger as reported in SLB, 2013 has a long-standing HSE commitment to the highest standards for the health and safety of its employees, customers, and contractors as well as to the protection of the environment in the communities in which we live and work. Management applies HSE policies and rigorous standards throughout the company. The principle as reported in SLB, 2013 captures its own performance data via QUEST, an online system that provides immediate consolidation of HSE information. Accessible by all employees, QUEST monitors reporting of HSE events and Risk Identification Reports (RIRs), facilitates investigations and records audits, manages remedial work plans (RWPs), shows improvement suggestions, posts recognitions, tracks HSE training, and facilitates HSE reports and data analysis. Some many years ago there had been the concern

in this industry to cut costs and increase efficiency. Some sectors in the industry like Schlumberger invested in new technology such as the via QUEST which has given the opportunity for growth in this industry. This new technology has several economic benefits, since assessing report and data from the QUEST and acting rapidly will minimize losses and maximize the opportunity to increase recovery: Improving safetyAvoiding penaltiesMinimizing lost or deferred productionImproving efficiency

Wärtsilä Finland

Wärtsilä Finland was imposed a fine of EUR 30, 000 due to a personal injury which took place in 2009, as a result of an employee gashing his arm when conducting manual lifting, and the court of justice stated that Wärtsilä Finland had not provided adequate lifting tools for this specific operation. Since then several corrective actions have been taken after this case as indicated in Wärtsilä, 2013. Wärtsilä companies obtained OHSAS 18001 certifications. These certified occupational health and safety management systems which covers roughly 80% of Wärtsilä's total workforce. In addition to the management system, Wärtsilä companies complied with the local legislation of HSE, which is to develop committees on occupational health and safety with representatives of the companies' management and personnel. The indicators used to measure OHSAS performance include the number of accidents, the time of absence due to sickness and the frequency of accidents as reported by Wärtsilä, 2013. The company's target is to achieve zero lost time injuries, with a long-term commitment to strengthen safety culture, this was to be complied by all Wärtsilä companies and

employees. As the safety performance are monitored on a monthly basis and the results are reviewed in the Board of Management. In 2012, Wärtsilä launched a global Zero Injury training program comprising a 4-hour e-learning and 4-hour practical training session, targeting groups were front-line personnel working in the factory, workshops and customer premises. By the end of 2012 over 3, 200 employees had completed the e-learning. However all this reforms was to reduce lost time, which Wärtsilä achieved good result in 2012 with a lost time frequency index of 12. 7%, were no work fatalities were recorded in 2012. An internal safety training video published by Wärtsilä a year ago won the 2012 intermedia-globe Gold Award and intermedia-globe Grand Award at the World Media Festival. The award ceremony took place on the 9 May 2012, in Hamburg, Germany as reported in Wärtsilä, 2013.

Conclusion

Management of health and safety is therefore crucial and a must for business continuity as losses from a major incident could ruin a company. Accidents at work and occupational ill-health are costly to employers, employees and their families in particular and the nation at large. In view of the two scenarios', working personnel, drilling rig and piping connections were all lost which also lead to major effects on the environment, ecologically and socially due to poor HSE culture. In the case of Schlumberger and Wärtsilä Finland, it is interest that when due HSE culture are followed as indicated in their policy minimal degree or zero degree of accident could be achieve, and works would have the confident in working is

such environment. The Oil and Gas industry has many technical and business Health, Safety and Environment (HSE) challenges. As an upcoming Oil and Gas exploration country like Ghana, there is the need to take HSE culture very serious as anything apart from that will ruin our industry. We need a system that will ensure a safe, secure, healthy and environmentally sound performance in the oil and gas industry, which will comply with international standard, and also come out with local policy like that of Wärtsilä Finland to help improve the safety and environmental aspect of the people of this country.