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Potential barriers to the competence assessment of Offshore Installation Managers: A hermeneutic perspective.

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ABSTRACT

The Offshore Installation Manager (OIM) performs one of the most critical roles within the UK offshore Oil and Gas Industry. The OIM is responsible for the safety and well-being of all persons on-board and within 500 m of the installation whilst operating within a complex environment where multiple organisations and stakeholders interact. The persistence of major incidents in the industry highlights the importance of OIM competence in controlling emergencies, consequently the research aims to identify the potential barriers that can limit or prevent the proficient competence assessment of an OIM in this situation. The OIM role is investigated by qualitative analysis of key documents using hermeneutics to interpret text and to identify the potential barriers to effective competence assessment. Such analysis has historically been used within the domains of theology, business and law. Hermeneutics takes into account the cultural, historical and social environment at the time of issue of the document, and semiotics, i.e. the study of signs and symbols, their use and interpretation.

Analysis is ongoing, however the six potential barriers to the effective competence assessment of OIMs in controlling emergencies identified to date are discussed. These barriers are associated with the multiple definitions of competence that exist in the UK and worldwide; the current predominance of competence assessment by observation; the lack of definitive competence requirements for trainers and assessors; the complexity in UK legislation and the interaction between UK Government departments and concerns associated with goal setting legislation when applied to competence assessment.

The output from the research will assist industry Duty Holders improve the competence assessment of their appointed OIMs and allow safety engineers to consider the probable competence of an OIM in a given environment at a given point in time.

1. Introduction

This is a study being carried out at the University of Aberdeen into the effectiveness of the current competence assessment of Offshore Installation Managers (OIMs) within the UK Oil & Gas Industry. The motivation for the research originates from 33 years experience within the industry, including 15 years involved with the competence assessment of OIMs.

To date little research has been undertaken into the knowledge, understanding and technical skills required to be an OIM. However a number of major incidents, resulting in loss of life and pollution of the environment, have indicated that lack of technical competence contributed to the incident and the outcome. The continuance of oil export by the Claymore platform and gas export from the Tartan platform to the Piper Alpha whilst both platforms were aware of an incident on Piper Alpha (The Hon. Lord Cullen, 1990) must question the technical competence of both the Claymore and Tartan OIMs at the time of the incident. In addition, key personnel on Tartan, including the OIM, were not aware that a pipeline pressure indicator on their own installation was upstream of their riser Emergency Shutdown Valve (ESDV), consequently its readings did not indicate the pressure in the pipeline once the ESDV was closed (The Hon. Lord Cullen, 1990); i.e. key personnel were not aware of facilities on their own installation. The Piper Alpha disaster led to the loss of 167 lives.

Without detailed and validated assessment of an OIM's knowledge and understanding of hazards on their installation, the potential for future erroneous judgements by OIMs must be considered high. Following the Macondo well blowout in April 2010, 11 people lost their lives, thousands of marine animals and birds perished and the uncontrollable flow of oil from the well (that

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continued until the well was capped in July 2010) resulted in major pollution to the environment. A study group (known as the Deepwater Horizon Study Group) set up by the Center for Catastrophic Risk Management in 2010 noted the incident had similarities with the BP Texas City refinery incident including a *'lack of appropriate selection and training of personnel'*. Subsequent to the Macondo well incident, the United States of America (United States District Court, Eastern District Of Louisiana, 2013) sought an agreement with Triton Asset Leasing GMBH, Transocean Holdings LLC, Transocean Offshore Deepwater Drilling Inc., and Transocean Deepwater Inc. to improve performance and prevent recurrence of the incident. One of the requirements within the resultant '*Performance Plan*' was that all offshore management within these companies, '*specifically the OIM, Senior Toolpusher, Toolpusher and Driller*' shall now complete '*at least*' 40 h training each calendar year relating to well control operations, principles of process safety and risk management. The European Commission's response to the Macondo well incident was to launch a review of offshore oil and gas operations. This led to the issue of the Directive 2013/30/EU of the European Parliament and of the Council of 12 June 2013 on safety of offshore oil and gas operations and subsequent changes in UK legislation.

The OIM needs to have sufficient understanding of their installation and associated pipeline networks to be able to independently determine when a change in status necessitates emergency response. Advice and support from others might not be available when needed. The production supervisor, driller, or other key personnel, who might be deemed subject matter experts, might themselves have insufficient knowledge and understanding (the Production Supervisor on the Tartan was also unaware that the pressure indicator on the Tartan was upstream of their ESDV (The Hon. Lord Cullen, 1990)); or could themselves be casualties and therefore unable to muster and advise the OIM. The inability of key personnel to muster has also been raised as a concern by others (e.g. Woodcock and Au, 2013). Even when competent and mustered, there might be insufficient time for the expert to explain a system and the reasons why a critical situation exists. The OIM must therefore understand enough about the situation to determine, with or without experts and in a very short time, whether there is a problem and the remedial action needed to make safe the situation or to organise evacuation.

Following the Piper Alpha incident, Flin and Slaven (1992) stated that there existed:

> *"no statutory criteria of suitability for an OIM in terms of character, skills, qualifications or experience".*

The situation remains the same in 2016. There still exists no standard selection or training procedure for OIMs, and whilst many companies have their own selection criteria and designated training programmes, the only 'tests' of competence are limited to well control (for restricted OIMs) and observation of performance in pre-written simulated emergency response scenarios on courses designed by external training providers.

Key questions are therefore

- why are there no statutory criteria for the selection of OIMs? and
- why is there such little apparent attention to the technical competence of OIMs within the UK Oil and Gas Industry, i.e. the assessment of their knowledge and understanding?

Similarly there are no statutory criteria for the competence assessment of associated trainers and assessors. The existing assessment of OIMs in controlling emergencies predominantly involves observation of performance via simulated emergency response exercises in accordance with the offshore industry standard OPITO Approved Standard 7025. The Standard states that trainers should have '*sufficient knowledge*' to contribute to scenarios but gives no further detail on how such shall be measured and confirmed. Associated OPITO guidelines state that assessors should be '*technically competent in the discipline area of the Standards they are assessing against*' (OPITO, 2013a), but again gives little detail on how such shall be demonstrated. Further, OIMs need to be competent across multiple disciplines (e.g. operations, drilling and ballast control), hence the trainers and assessors need to be technically competent in multiple disciplines.

In order to investigate further, it is important to first discuss the OIM role and to highlight the complex environment in terms of knowledge requirements and interactions the OIM has with other organisations and stakeholders in both normal and emergency states.

1.1. The OIM environment and emergency response

The UK offshore Oil and Gas Industry is involved with the exploration and extraction of hydrocarbons (as oil, condensate and natural gas) to meet the energy demands of the UK, and to produce the raw feedstock to other industries. The majority of this oil and gas production (99%) occurs within an area known as the UK Continental Shelf (UKCS).

Offshore installations are predominantly defined as either fixed or mobile. Most fixed installations are associated with the production and stabilisation of reservoir fluids (oil, condensate, gas). Under the Offshore Installations and Pipeline Works (Management and Administration) Regulations 1995 floating production storage and offloading (FPSO) installations are also considered as fixed installations. Mobile units (anchored but not permanently fixed to the seabed), defined under the same legislation as an offshore installation '*which can be moved from place to place without major dismantling or modification, whether or not it has its own motive power*' are, in the main, associated with exploration.

With respect to fixed production installations, oil and gas is produced onto the platform where it is stabilised and conditioned prior to export. Export of the stabilised and conditioned fluids is via pipeline or oil shuttle tanker. The majority of these installations are manned. Given their remoteness, such installations need to provide living accommodation to all personnel on-board, power generation and other utility services such as potable water, service water, and effluent disposal. In addition fire and gas detection systems (which includes the detection of fire, hydrocarbon gas, smoke, heat and hydrogen sulphide), safety systems (which includes executive response to confirmed fire and gas detection), and evacuation facilities to enable the rapid evacuation of personnel in response to an incident on command by the OIM are also required on the installation. These systems are in addition to the facilities for the processing of produced oil and gas; storage and export of hydrocarbons; drilling facilities (where applicable) and well services (services associated with the maintenance of existing wells). On FPSO installations and mobile installations such as drilling rigs, in addition to the above systems, there is a system for maintaining the stability of the installation.

Each manned installation, whether fixed or mobile, has an OIM on-board 24/7, every day of the year, who is responsible for the health, safety and welfare of all persons on-board and within 500 m of the installation. There are approximately 192 manned installations (including drilling rigs) in the UKCS and 132 periodically manned installations. Each manned installation requires at least 2 OIMs to man the installation every day of the year, i.e. there are at least 384 OIMs in the UKCS. Each manned installation can have up to 150 persons on-board. The number can exceed 150 in certain