

# Medical and psychological challenges in the offshore petroleum industry

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## INTRODUCTION

This article is based on the experience of the author gained during 22 years of work as a senior medical officer in a Norwegian oil company. Close cooperation between the offshore medical services of the UK, the Netherlands, and Denmark and the interaction with many multinational companies involved in the business add to the base of experience.

## THE OFFSHORE PETROLEUM INDUSTRY. CHALLENGES A HUGE INDUSTRY BUT A SMALL FAMILY

The offshore oil industry is an important industry employing a huge number of employees, involving a huge amount of money, having a huge influence on national and international economies, and thereby representing a huge political impact and influence.

Despite being a huge industry, it has many characteristics of a small family. The number of operators, service-companies, and contractors is relatively low and most companies operate worldwide. Leaders and seniors from different companies often know each other well and have developed close cooperation.

The offshore communities have very stable workforces that have developed close relations through living and working together 24 hours a day 14 days in a row. Many offshore workers describe their colleagues as their second family. Serious illnesses or accidents and deaths involving offshore workers or their families will therefore often have a greater impact on the offshore community than normally expected.

The group of offshore workers is characterized by effective group dynamics. They are well aware of the importance

of regular and stable production and a good economy. The trade unions play an important role and have a high degree of influence on conditions related to working and economy. There is an expectation for "speed and service delivery" from persons and organizations serving the offshore workforce.

## OFFSHORE PETROLEUM INDUSTRY. INSTALLATIONS AND SHIPS. MULTINATIONAL COMPANIES AND CREWS

There is a wide variety of installations and ships involved in the offshore petroleum industry. The size varies from relatively small ships to immense constructions. Examples are fixed installations resting on the seabed, floating installations, production ships, drilling ships, ships for supply, standby, anchor handling, subsea intervention, subsea construction, diving, seismology, and pipelaying.

The crews vary from around 10 to 350 persons. Crews and companies are multinational and multicultural.

The diversity of installations, ships, and culture represents a challenge. The rules and regulations are different depending on nationality, company, and ship or installation.

## HIERARCHY

There is a hierarchy among the companies, which, in turn, applies to the employees. The operators and the employees of the operators are superior in the hierarchy to contractors, followed by subcontractors and so on. The ideal integration is a challenge, as are the differences in job security, welfare, conditions, work schedules, and compensation.

## STABLE WORKFORCE

The offshore workforce is very stable. Very few go to a job onshore. The reason for this is partly the extra econo-

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mical compensation, but most relevant is the schedule that allows a great deal of time off work and the possibility to live in areas not in the vicinity of the workplace. The stability of the workforce gives a rising mean age that in turn increase the frequency of medical emergencies and medical unfitness for work offshore.

### **OFFSHORE SCHEDULE 14/28**

The majority of offshore workers spend 14 days offshore followed by 28 days at home. This schedule represents a psychosocial challenge. It affects family life, social lifestyle, and leisure activities in many ways. Persons living alone without regular duties may suffer a risk of alcohol and drug abuse.

### **“CONTINUOUS IMPROVEMENT BY CHANGE”**

In industry, in general, there is a strong belief in the need for continuous improvement and the belief that this will be achieved by change. In turn, it is believed that this will give better economic results. The fluctuations in the oil prices seemingly generate an urgent need for change and reductions in costs. A move towards giving priority to the revenue of today and less priority to long-term revenue is evident. These conditions lead to frequent changes of the work organization, reductions in crew numbers, reductions of investments, and postponed projects.

This in turn leads to uncertainty within the workforce, changes of colleagues and leaders, loss of local experience, and possibly a change of focus from safety to organization.

### **SAFETY RATING**

The offshore petroleum industry is considered to have a high focus on safety. A goal of zero harm to people, the environment, and installations is clearly expressed. The safety rating is an important topic in the process of prequalification when contractors are applying for contracts. Companies may lose contracts if safety statistics develop in a negative direction.

A consequence of this focus on safety ratings may encourage the “hiding” of accidents/injuries. Lack of reporting and avoidance of consulting the medic/nurse has also proven to be an undesired consequence.

### **RISK PERCEPTION**

The very high focus on safety raises the perception of risks. The same consequence may result from safety training both onshore during training and offshore during emergency drills and exercises where worst-case scenarios often play a part. During operations offshore, the personnel experience many alarms causing mustering. The frequency of such alarms rises due to the lowering of thresholds for alarms and the automated surveillance of processes.

Accidents happen and have a great impact on the colleagues of those affected. Travel to work involves car driving, fixed-wing flights, and helicopter flights known to represent safety risks.

The personnel are also well aware of the fact that they work and live on a potential “hydrocarbon bomb”.

Emergency evacuation is via helicopter (strong winds/turbulence, free gas in the helideck area, fire, and smoke may all represent a challenge) or via lifeboats or life rafts entered via “evacuation stockings” (strong winds, heavy seas, oil spills, gas in the area, fire at sea level, and gas in/from the sea affecting flotation represent important factors).

The challenge is to maintain psychological wellbeing despite the perception of risk.

### **WORLDWIDE OPERATIONS AND EMERGENCIES**

The socioeconomic conditions, the safety and security, hospital facilities, and medical emergency services vary greatly among the areas where the offshore oil industry operates. All these aspects have to be taken into account when planning operations. Compensatory measures must be instituted before starting operations. Such measures include prequalification of hospitals and emergency preparedness procedures and organizations to cope with medical emergencies, evacuation of personnel, hostage taking situations, and handling of next of kin in case of accidents.

### **ORGANIZATION AND TRAINING OF PERSONNEL (MEDICAL, PARAMEDICAL) AND EMERGENCY PREPAREDNESS**

A detailed medical contingency plan including psychological debrief must be established, and training of medical doctors, nurses, medics, and first aid personnel must be a continuous process.

A detailed plan for the handling of evacuated personnel and next of kin is of great importance and regular training/exercises must be performed.

### **OCCUPATIONAL HEALTH**

The challenges in relation to occupational health comprise the following:

- exposure to chemicals (solids, liquids, vapours, aerosols);
- exposure to noise and vibration;
- temperature stress (high, low, wind-chill);
- environment (strong winds and rough seas);
- shift work;
- man-machine interface;
- psychosocial factors;
- simultaneous activities;
- ergonomics.

## **CONCLUSIONS**

A variety of medical and psychological challenges is present in relation to the offshore petroleum industry. A short description of those challenges has been made in this article, based on experience.

Many of the challenges are also of high relevance to the shipping industry and seafarers.

Independent scientific research in this field is largely missing.

This article can be used as a base for the generation of research hypotheses in the maritime industry in general.