

**Independent Verification of Offshore  
Installations -Regulatory Compliance –  
International Standards – Best Practice**

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# Safety Moment

Piper Alpha Disaster – 6<sup>th</sup>. July 1988

The largest single offshore accident.

167 of the 227 men on board died.

It is the responsibility of everyone involved in the industry to ensure that such an incident never happens again.

# Piper Alpha Disaster – 6<sup>th</sup>. July 1988

In less than 2 hours.....



# Deep Water Horizon

April 2010 -11 killed -4.9 million barrel of oil released



# Evolution of Regulations

- Major accidents always lead to a review and revision of regulations and practices aiming at preventing similar or other major accidents in the future.
- The old regulations were reactive and descriptive with specific technical requirements. Operators are told what they must do.
- The new regulations are pro-active with goal setting and functional /performance requirements and self regulation. Identify goals that the operators must achieve but allow them to decide how to do it.

# UK Regulations Safety Case

- Following the Cullen enquiry into Piper Alpha disaster.
- Offshore Safety responsibility was transferred from the Licensing Authority to the HSE.
- A system of regulation introduced in UK in 1992
- Replaced previous prescriptive legislation with “goal setting” regime
- Introduced concept of the safety case, requirements for identification of major accident hazards and safety critical elements and establishment of written schemes of examination
- Revised in 2005
- Methodology increasingly adopted outside UK legislative environment
- Supported by other legislation
- NOTHING ABOUT THE ENVIRONMENT

# SAFETY CASE - Definition.

The SAFETY CASE is a formal statement by the operator defining how he intends to manage an installation safely.

The SAFETY CASE should contain:

A full description of the facility with details of layout and activities which will take place on the installation.

Identify, from formal safety assessments, hazards which could result in a major accident, the assessment of the risk associated with those hazards and identify the control measures to be used to reduce such risk to a level which is ALARP (as low as reasonably practicable).

# Offshore Safety Case Regulations (OSR)

## - key features

- Concept of duty holder
- Safety Case
- Identification of major accident hazards
- Identification of safety critical elements (SCEs)
- Setting of performance standards for SCEs
- Written schemes of examination
- Independent verification requirements



# Major accident hazard (MAH) - definition

- A fire, explosion or release of a dangerous substance resulting in **death or serious personal injury** to persons on the installation.
- 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
- Any other event arising from a work activity resulting in death or serious personal injury to **five or more persons** on the installation or engaged in an activity in connection with it
- NOTHING ABOUT THE ENVIRONMENT

# Major accident hazard (MAH) - examples

- Flammable gas release
- Flammable liquid release
- Explosion
- Loss of well control
- Helicopter crash
- Failure of primary structure
- Ship collision

# Examples of MHA



# Floating Liquid Natural Gas Facility

## Shell's Prelude FLNG

Bigger Than World's Biggest Ship

marine insight

www.marineinsight.com



### PRODUCTION



300-350 crew members working in shifts



3.6 million metric tons /annum LNG Production capacity

### WHERE?

475 KM

The distance of the ship's working location from the nearest coast of Western Australia

25 years

Approx. Time the Facility would be moored in one location

### FACTS



5 Soccer Fields back to back = Ship's Deck Area

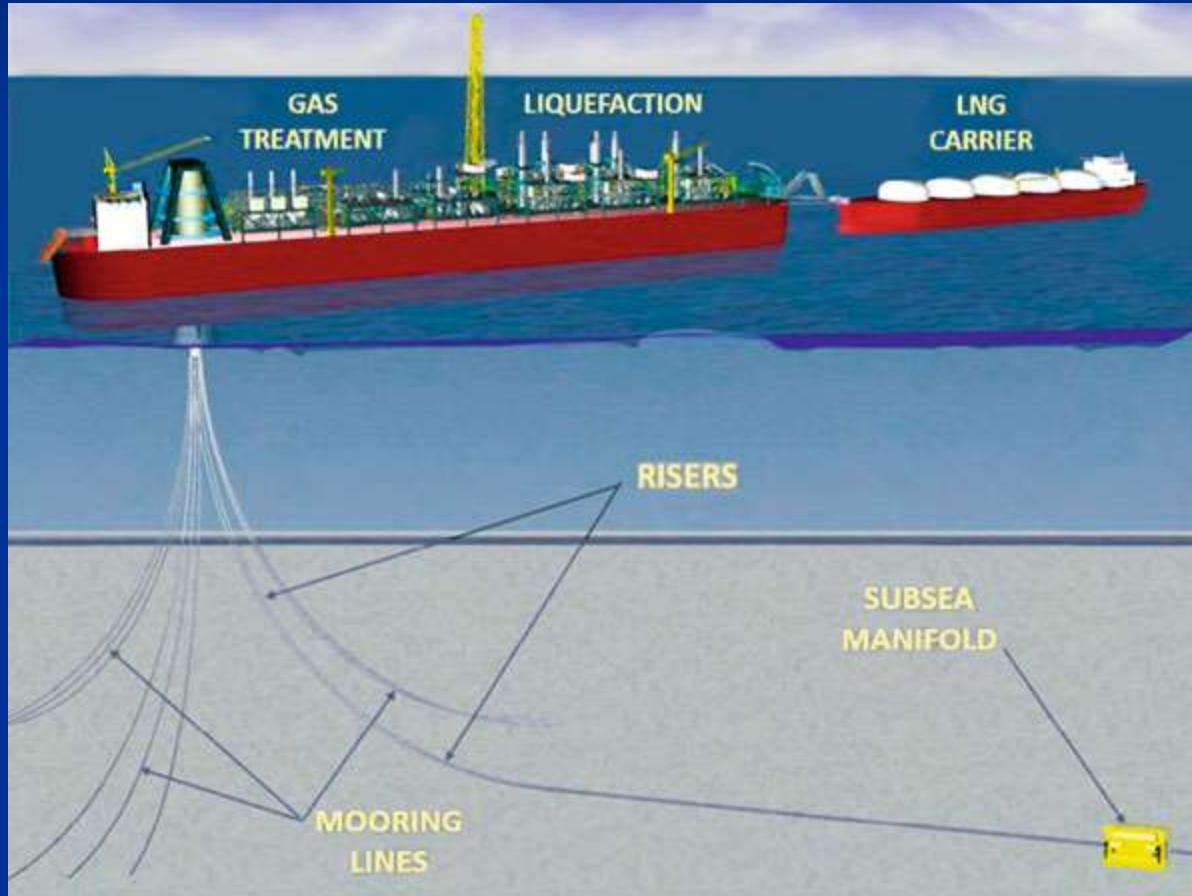


50 million ltrs. Water /hour to be used for cooling LNG

# Floating Liquid Natural Gas Facility



# SHELL FNLG



# Shell FLNG



# European Commission : Safety of Offshore Oil and Gas Operations

Following the accident in the Gulf of Mexico in 2010 the Commission decided that:

- The existing regulatory framework was divergent and fragmented
- Safety practices not fully adequate and inconsistently applied
- No Member State incorporated all of the best practices
- No integration or coordination of regulatory systems covering both safety and environment
- Responsibility for liability in the event of an accident not always clear



# Directive 2013/30/EU

## Objective

- To reduce as far as possible the occurrence of major accidents to offshore oil and gas operations and to limit their consequences
- Increase protection to marine environment
- Establish minimum conditions for safe offshore exploration and exploitation
- Improve the response mechanisms in case of accident

# Directive 2013/30/EU

- The operator should always be the entity with the primary responsibility for safety of operations.
- Operators should reduce the risk of a major accident as low as reasonably practicable.
- It is important to ensure that the public is given early and effective opportunity to participate in the decision making relating to operations that can potentially have significant effects on the environment in the Union.
- Specific legislation is needed to address major hazards specifically in process safety, structural integrity, prevention of fire and explosion, evacuation, escape and rescue and limiting environmental impact.

# Directive 2013/30/EU

- A goal setting approach to be adopted through risk assessment and reliable management systems to prevent or reduce major accidents as low as practicable possible
- Operators to have a comprehensive safety and environmental management system and emergency response plan
- Risk assessments for major accident prevention should be performed by the operator and be compiled in a report on major hazards to be submitted for approval to the competent authority.
- A scheme of independent verification of safety and environmental critical elements to be implemented by the operator and appoint an independent verifier.
- Operators to prepare internal emergency response plans and submit them to the competent authority.

# Directive 2013/30/EU

- The licensing authority in examining the technical and financial capability of the licensee examines also its capability for ensuring continued safe and effective operations under all foreseeable conditions.
- Member States should verify that adequate provisions have been or will be made to cover liabilities deriving from major accidents.
- Member States should subject all offshore exploration and production oil and gas operations of licensees to continuous regulatory oversight in order to ensure there are effective controls in place for preventing major accidents and limiting their impacts to persons and the environment and security of energy supply.

# Competent Authority

- A competent authority must be established for best regulatory practices to deliver effective regulations which ensures the highest safety standards and protects the environment.
- It should be independent and objective
- Legally empowered and adequately resourced to take effective action
- Should be completely separate and independent of other entities dealing with the economic development of the offshore natural resources including licencing and revenue management.

# Competent Authority Responsibilities

- Assesses reports on major hazards, assesses notifications on design changes, well operations or combined operations,
- Oversees compliance by the operators and owners with the EU directive, including inspections, investigations and enforcement actions
- Advisers other authorities or bodies including the licencing authority
- Making annual plans for securing compliance with the regulatory framework for major accident prevention
- etc

# Norwegian Model

- Government Administration is separated in three areas:
  1. Policy (Ministry of Petroleum and Energy)
  2. Regulatory (Norwegian Petroleum Directorate)
  3. Commercial (Statoil)
- All above three entities are state controlled.
- In the past and like in many countries the Regulatory and Commercial functions were concentrated in one authority
- The Ministry is responsible for policy making, licensing , sets goals and plans to achieve the goals.

# Norwegian Model

- The Regulatory body (NPD) sets regulations on hydrocarbon related to resource management as well as health, safety and environmental issues, is the technical/advisory agency to the Ministry, compiles data on all hydrocarbon activities and collects fees from the operators. In 2004, health and environmental issues became the responsibility of the Petroleum Safety Authority.
- The National Oil Company carries only commercial activities
- The above approach leads to better performance and enhanced transparency in revenue management and promotes good governance including clarity of goals and roles.



# Advantages of separating functions

- The National Oil Company concentrates exclusively on commercial activities enhancing its operational performance and increases financial return.
- Policy and regulatory bodies may improve the ability of the government to monitor and benchmark the NOC thus improving performance.
- Avoids conflict of interest such as NOC using regulatory and policy powers to privilege itself against competitors or gain commercial interests over the revenue goals of the state.
- State's assertion of independent control over hydrocarbons policy and regulations may put it in a strong position to prevent an NOC from capturing other state institutions and thus keep it from becoming “state within state”

# Norwegian Sovereign Fund

- Norway, which has become one of the wealthiest countries in the world mainly by refusing to spend its huge oil revenues and placing them instead in a sovereign wealth fund.
- Norway's sovereign wealth fund is the biggest in the world at £460bn. The fund generates money from its ownership of petroleum fields, taxes on oil and gas, and dividends from a 67% stake in Statoil, the country's largest energy company..
- Set up in 1990, the fund owns around 1 percent of the world's stocks, as well as bonds and real estate from London to Boston.
- The fund, equivalent to 183 percent of 2013 GDP is expected to peak at 220 percent around 2030.
- Norway has sought to avoid the boom and bust cycle by investing the cash abroad, rather than at home. Governments can spend 4 percent of the fund in Norway each year, slightly more than the annual return on investment.

SAFETY FIRST  
LIFE MATTERS  
THE ENVIRONMENT MATTERS

THANK YOU