

FIRE WATER PUMP SYSTEMS



By Kenneth Samuelsen & Dagfinn Thunestvedt

FRAMO



Selection of fire fighting systems

Main Strategy

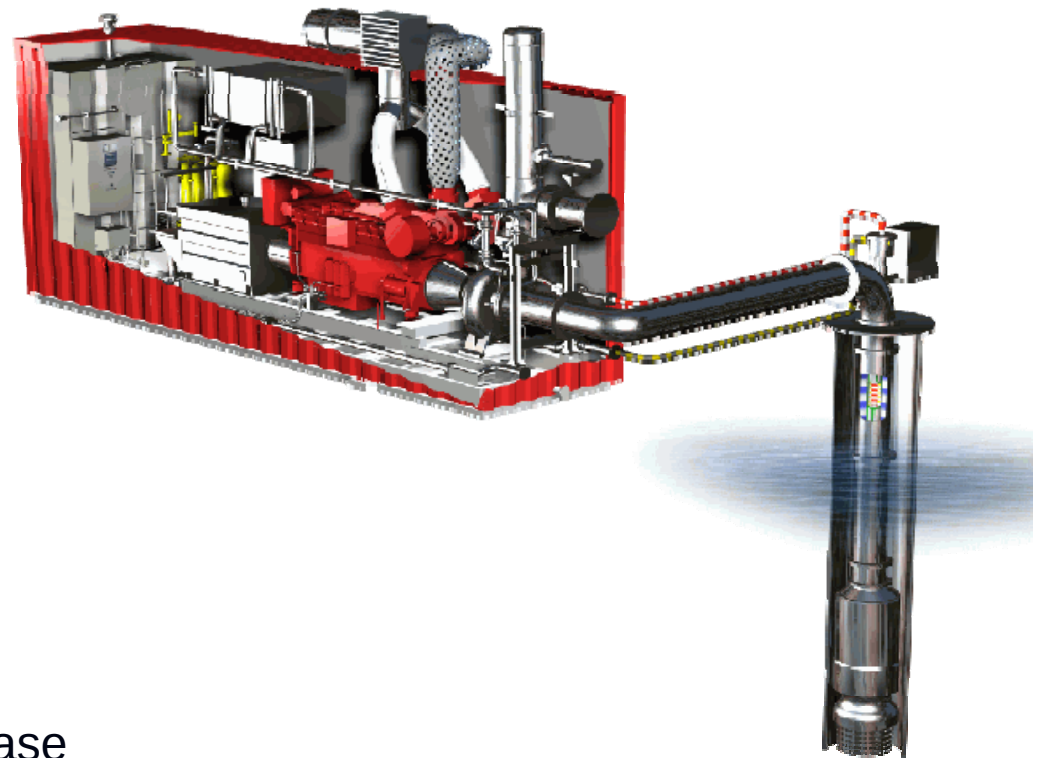
- Extinguish fires
- Control Fires
- Prevent Ignitions
- Reduce Explosion Loads

Robustness

- Pump and driver system design
- High availability and reliability

Safety System

- Safety for personnel during release
- No ignition source
- Environmental friendly





ISO 13702:1999(E)

Control and mitigation of fires and explosions on offshore production installations

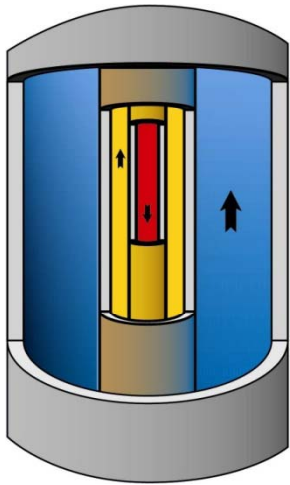
Important topics concerning Fire Water Pumps:

- Capacity and number of pumps identified by FES study. (Fire and Explosion Strategy)
- Pumps shall have dedicated power systems
- The Firewater pump system should be located, or protected so that it is able to supply water in a fire emergency. Protection against damage of associated power cables, hydraulic/piping and control circuits should be considered. .
- Fire water pump units required to operate when gas is present, should be designed to be suitable for such operations.

Submersible Pump



Hydraulic Drive



- Hydraulic power transmission
- Concentrically arranged within pipe stack
- Mechanically protected
- Insensitive to mis-alignment
- Independent of caisson support
- Independent of area classification
- No "media" exposed bearings
- No line shaft, no alignment
- End suction design, optimum NPSHr conditions



Submersible Pump



Hydraulic drive

- Continuous rotation of impeller in FWP standby mode
- Reduced marine growth
- Continuous lubrication of bearings and mechanical shaft seal during FWP operation and stand-by
- Ideal preservation for stand-by conditions and
- Ready to start

Submersible Pump



Marine growth on pump suction strainer

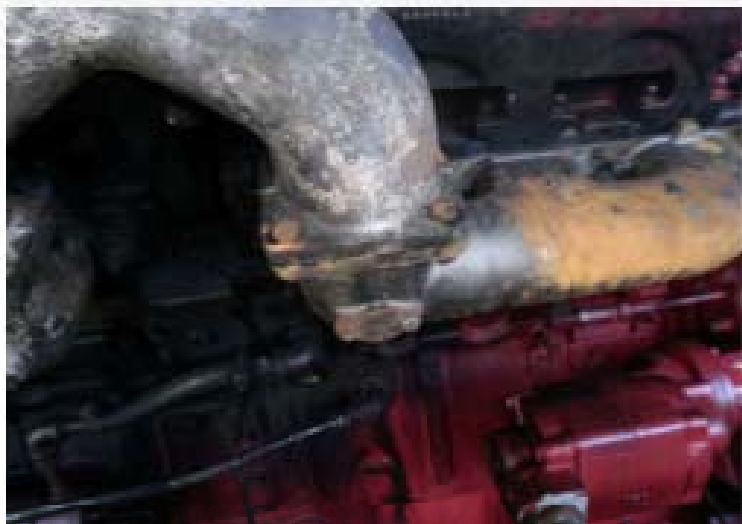
Fire Water Pump



Open skid Unit



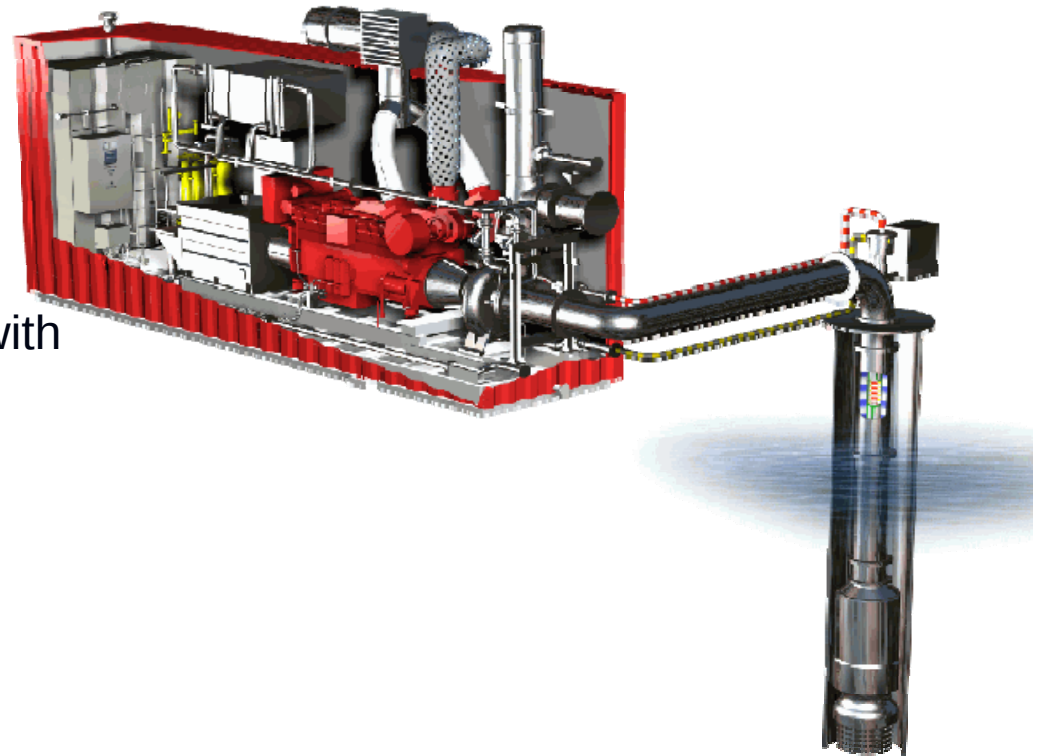






Advantages, Containerized Diesel Hydraulic Fire Water Pump Systems

- Corrosion protection.
- Protection against gas ingress
- Designed for installation and operation in hazardous area and with presence of gas
- Reliable start
- High lay-out flexibility
- Safe and reliable hydraulic power transmission

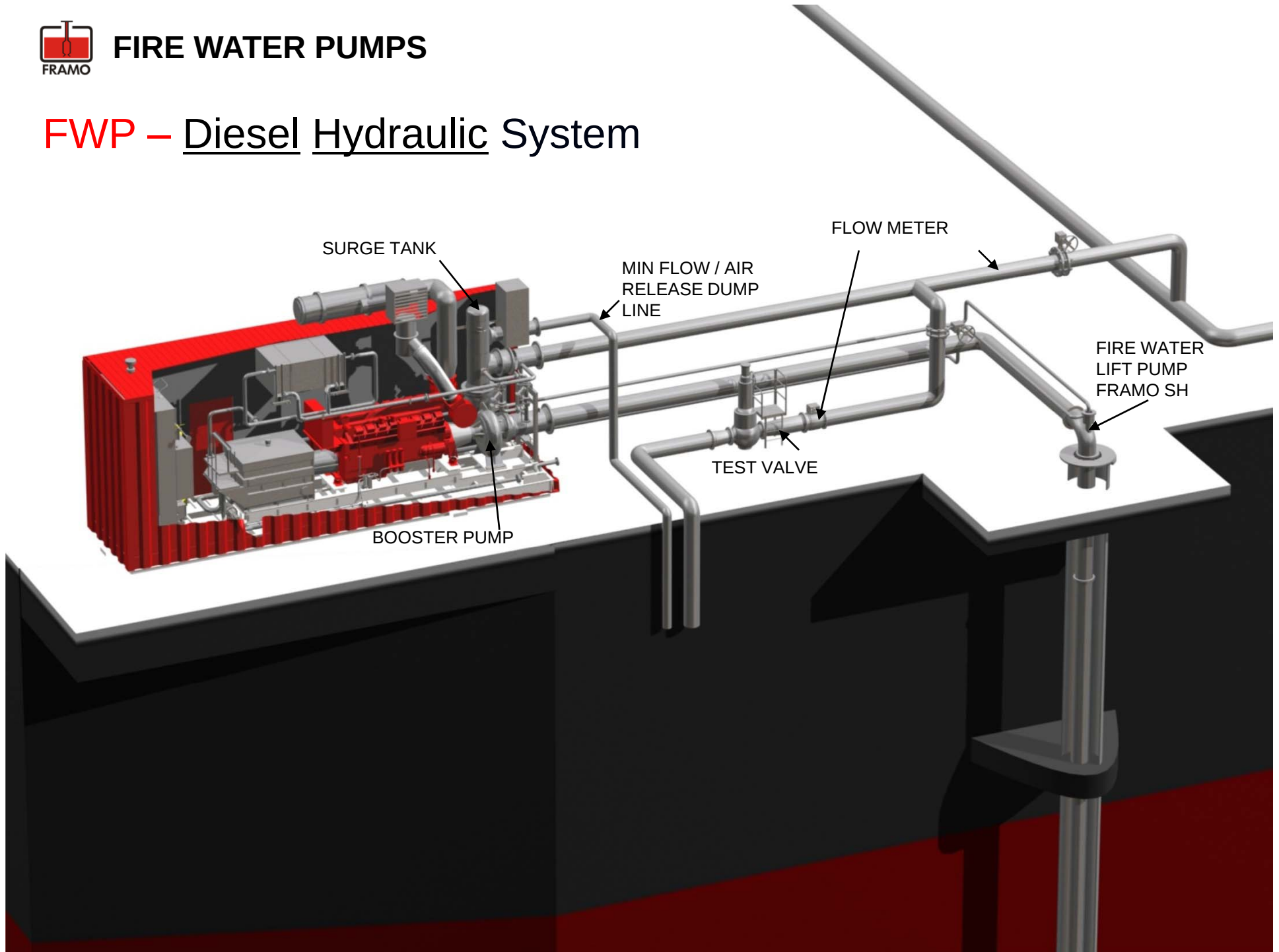


Improved availability and increased reliability



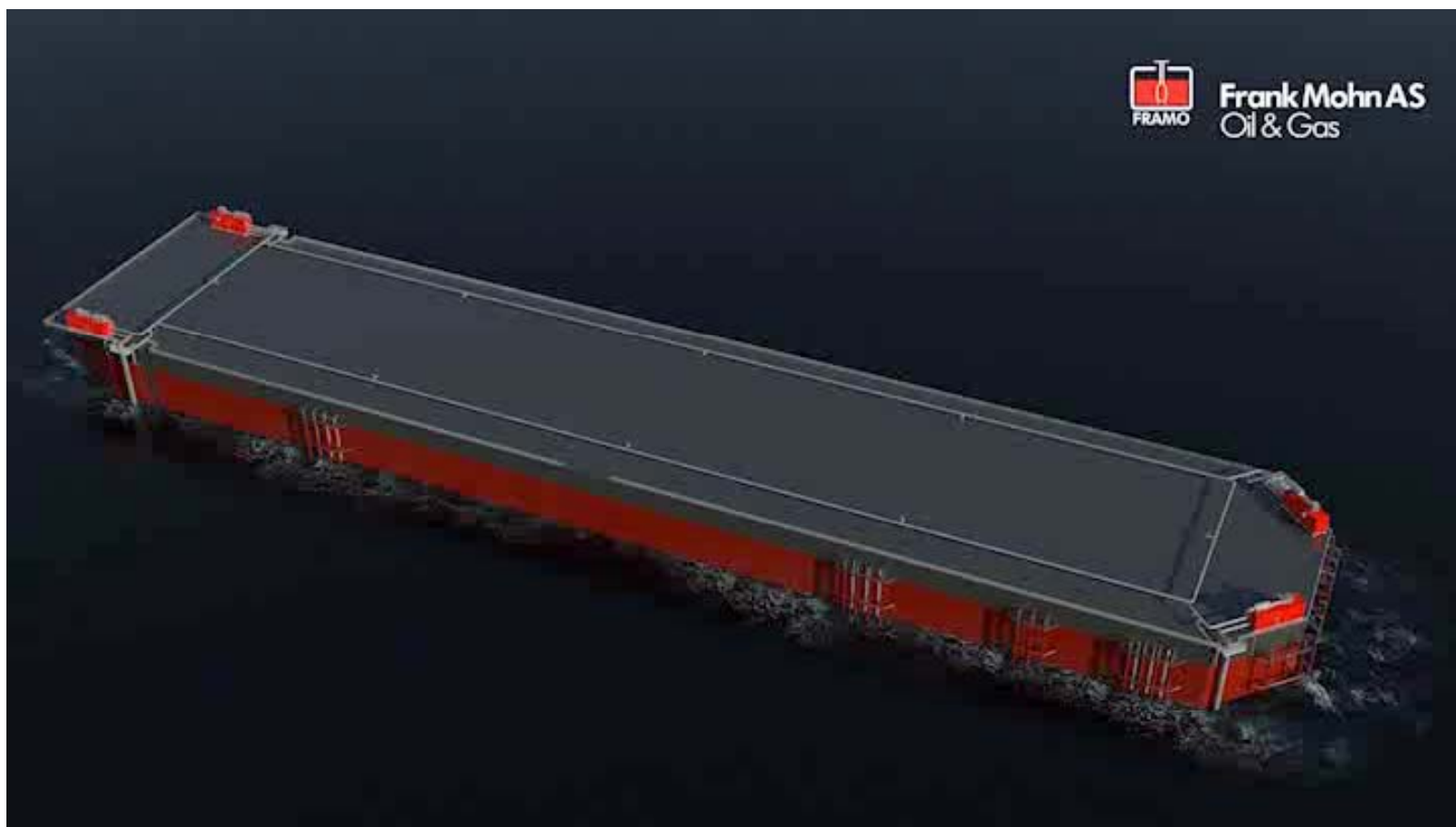
FIRE WATER PUMPS

FWP – Diesel Hydraulic System





Frank Mohn AS
Oil & Gas





HAZARDOUS AREA DEFINITIONS **WHAT IS SAFE AREA?**

- Hazardous area classification does not take into consideration big or catastrophic releases.
- Area classification is not valid in an emergency situation
- Firewater pumps shall be available in an emergency situation



- Firewater pumps must be designed to operate when gas is present (?)



WHEN SHIT HAPPENS.....





.....better be prepared

FPU “GJØA” (GdF Suez/STATOIL)

- FWP and deluge test at tow out.





TOPICS

- **Floating Facilities (FPSO / Drilling Rig / Accommodation)**
 - **Safety Hazard – How to avoid incidental flooding**



“Thunder Horse” FPU - BP

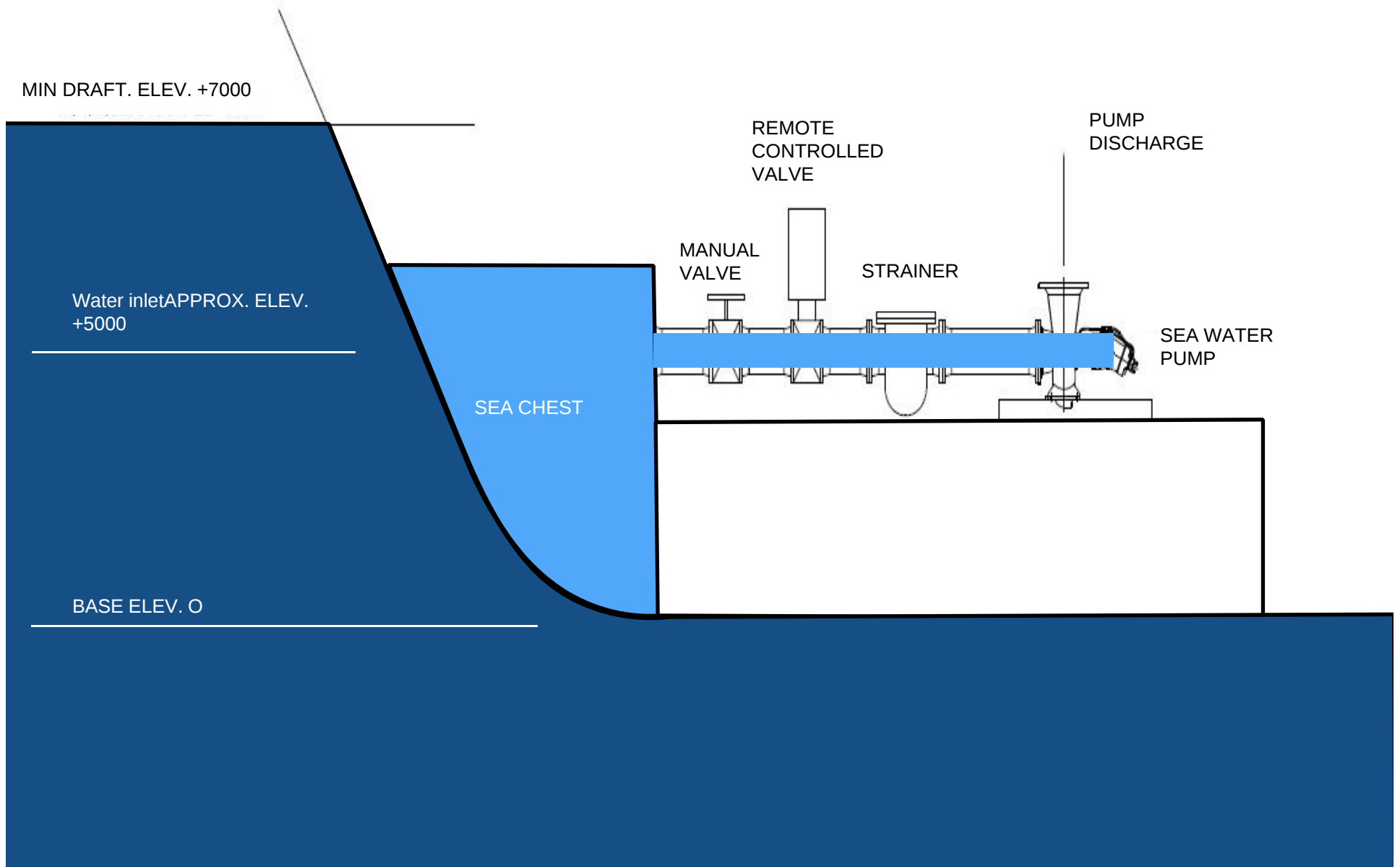


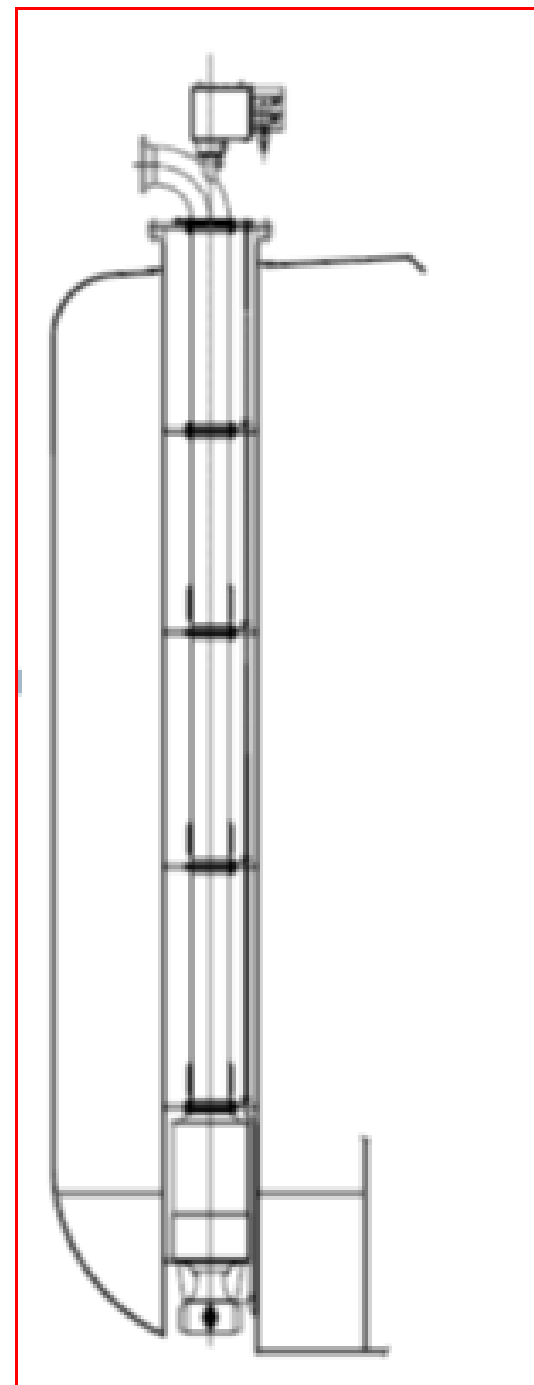
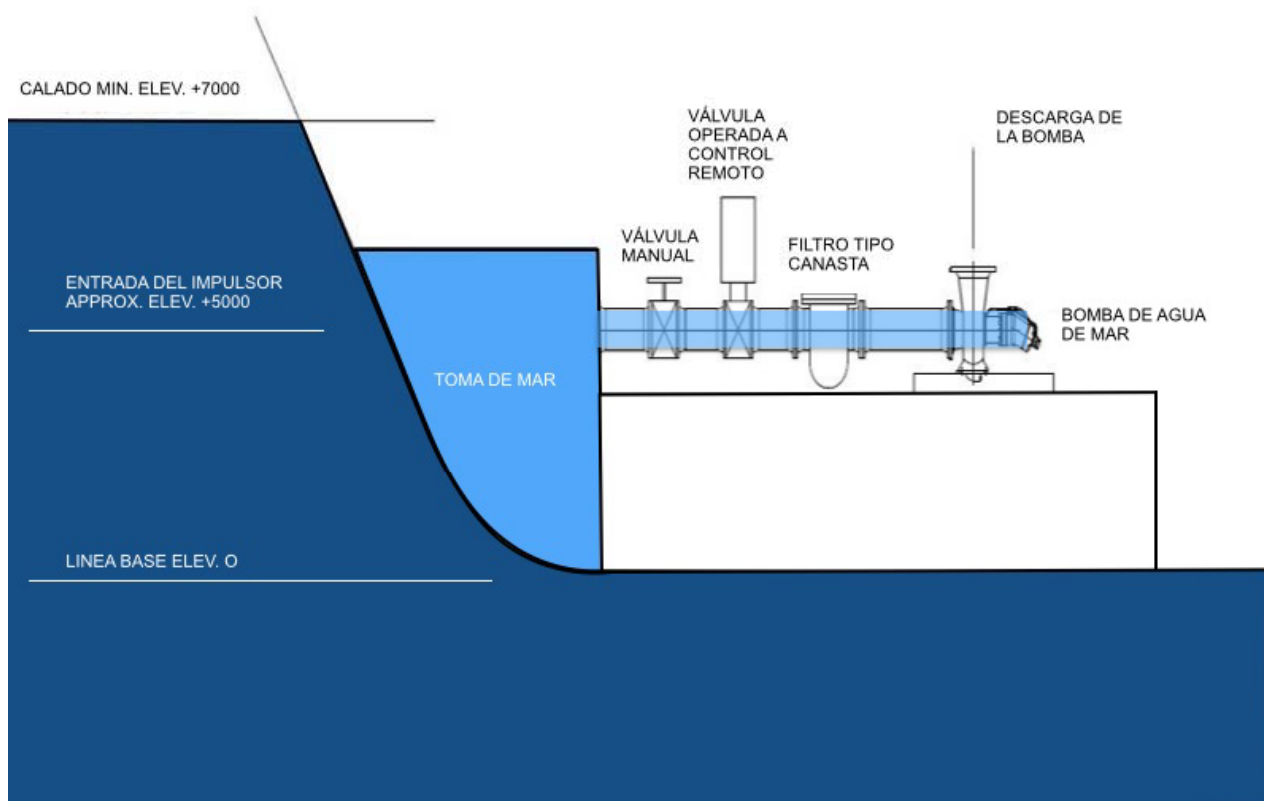
Incident Background – April 12, 2011

Mexico's state-owned oil company Pemex, said Tuesday it evacuated 638 workers from a semi- submersible dormitory platform after it began to lean to one side when water entered a pontoon.



"P34" FPU - Petrobras







Sea chest maintenance



Ballast water operations

Safe Operations, a dream only?





**We thank you for your time and for
your interest.**