

20180220

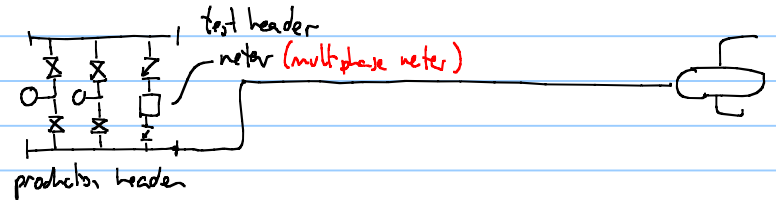
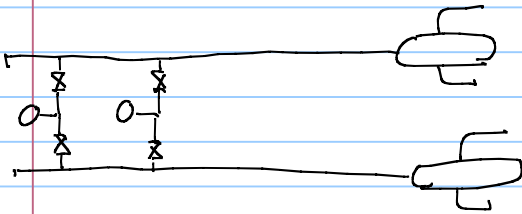
onshore systems



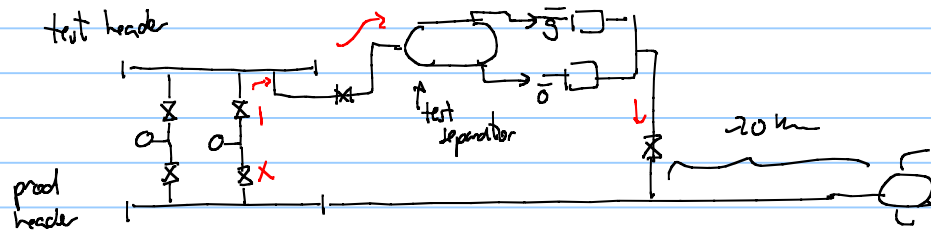
production manifold in Libya



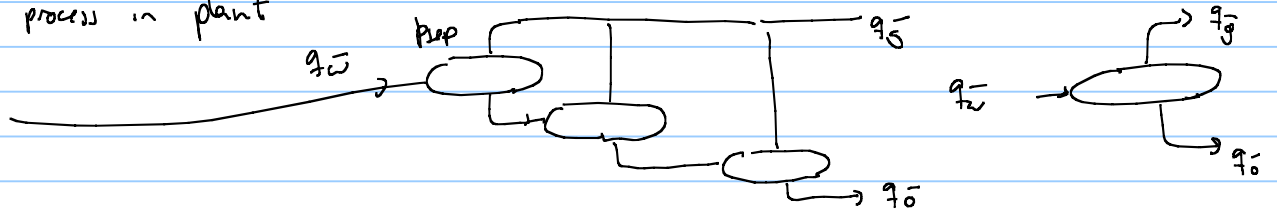
field in Colombia, production manifold and liquid flow meter



what happens if multiphase meter is too expensive and the transportation distance is far



actual process in plant



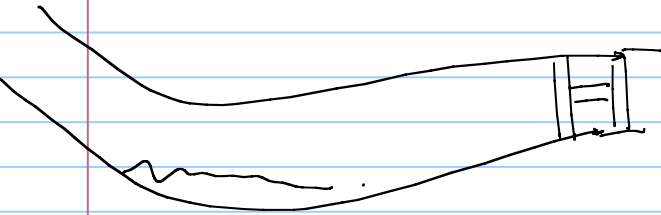
be aware! the rates won't be the same
one has to convert the rates

in subsea fields one has to take into account the need for pigging



in gas lines : remove liquids

avoid corrosion
avoid slugging
reduce ΔP

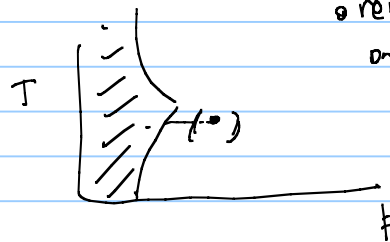


in oil lines : • remove accumulated water

avoid corrosion

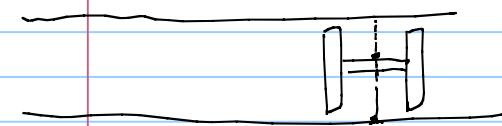


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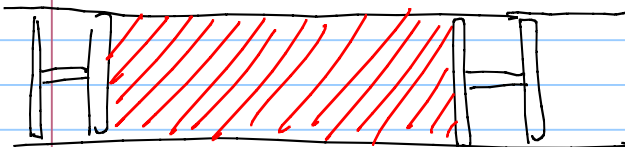
• remove wax accumulated on pipe wall

reduces pipe cross section $\rightarrow \Delta P \uparrow$
affects the operation of components in the system (valve)
block pipe

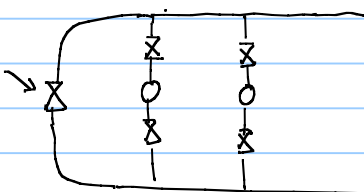


• pipeline inspection

• chemical treatment

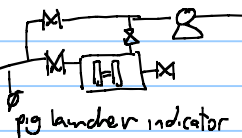


X-over pigging valve



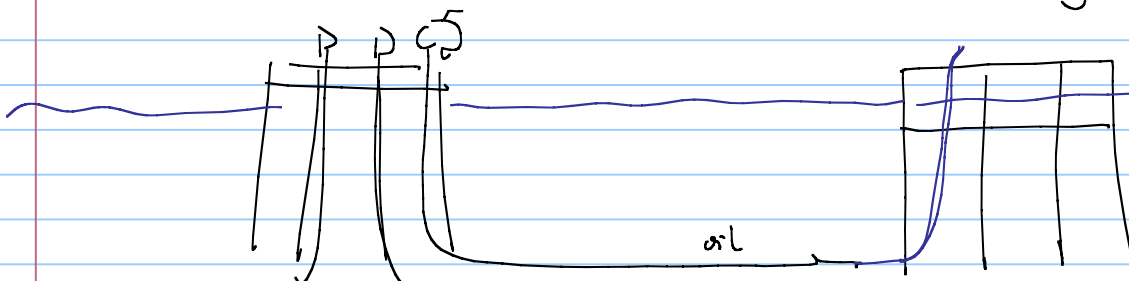
Ivar Aasen (Lundin)

Aker BP
Edvard Grieg



pig receiver indicator

platform



pigging between platforms

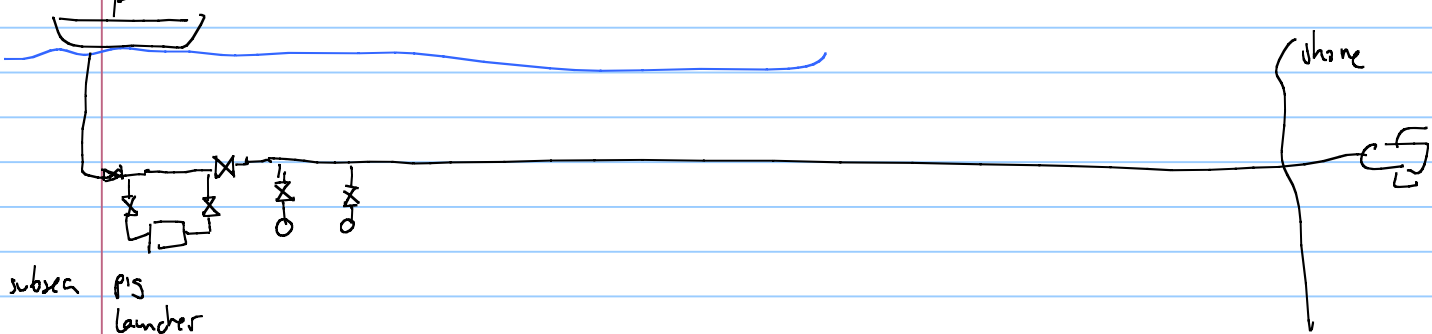
Various pig types

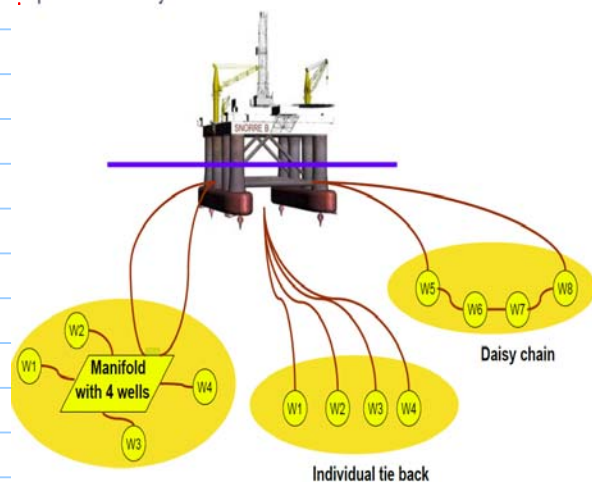


Wax plug-North Sea line pigging



Some field offshore Australia, with long transportation distance use subsea pig launcher





Offshore structures for oil and gas production

what is included in these facilities? :

NOT ABOUT

- drilling jackup
- drilling vessels { ship, semi-sub
- intervention vessels
- pipe laying vessels

- facilities for well drilling / intervention (drilling package use) hoisting system, tower, mud pump, cement pumps, storage, shale shakers

↳ mud
↳ pipe (strainers)

- processing facilities for reservoir fluids

main separation trains { 2 sep trains
1 test

↳ gas processing module
↳ water processing module
↳ oil processing module

- Gas-lift facilities

- Gas injection facilities ~ compressor (use #)

- water injection facilities ~ pumps.

- well bay (X-mas tree / wellhead)

- living quarters (helideck)

- power generation

- gas export compressors

- fire fighting system

- oil storage

- oil offloading system

- control system

- monitoring system

- system for storage, injection and recovery of production chemicals

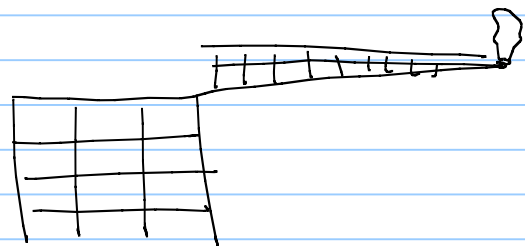
- communication system

- manifold well

- flare system

- Repair workshop

- utilities (hydraulic power fluid, compressed air, drinking water unit, air condition, ventilation)

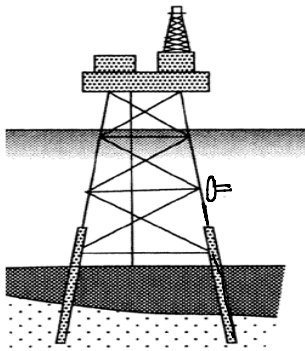


hydrate inhibitors emulsion inh.
corrosion inhibitors bacterial inh.
scale inhibitor

two categories

bottom-supported
significant part of
load weight
are transferred to
soil
have limited
movement in
the vertical
and horizontal
direction

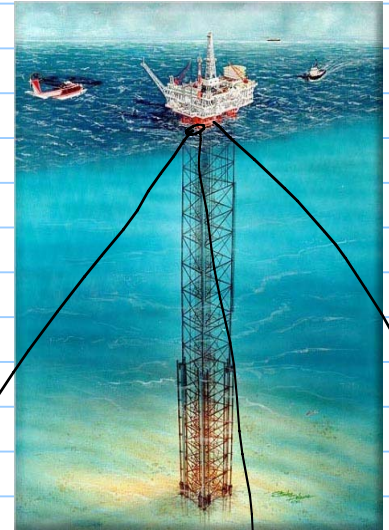
Jacket



Gravity Based structure
(GBS)



Compliant tower
(Guyed tower)



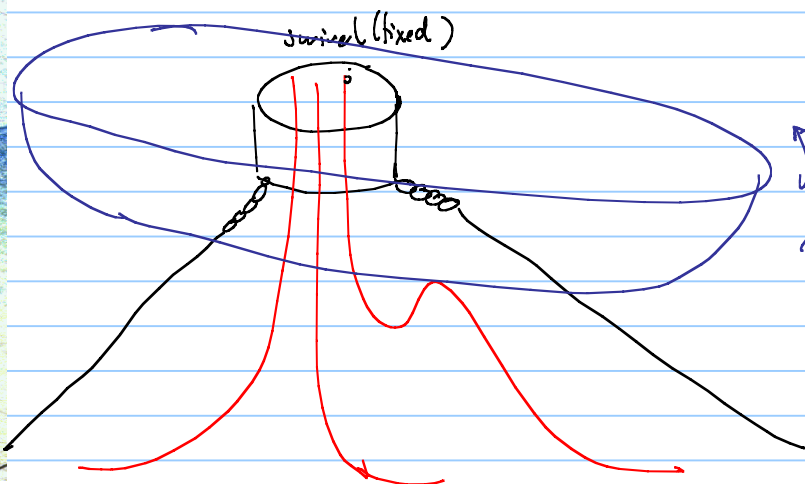
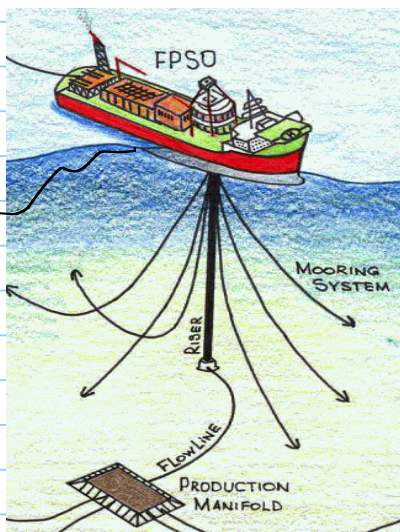
floating
(using buoyancy)
to support
its weight

FPSO



naturally bouyant

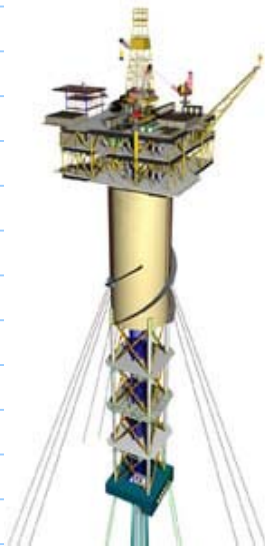
Sevan FPSO



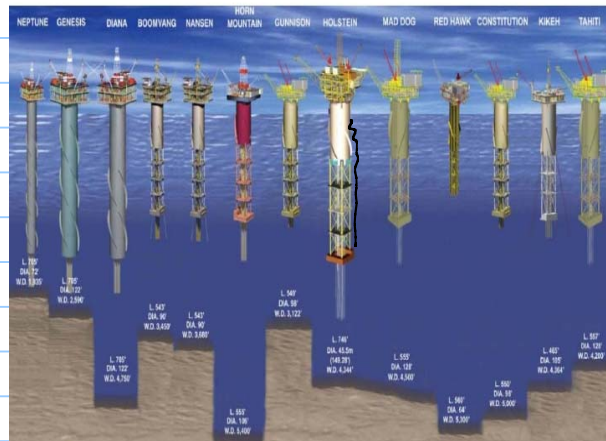
orient
depending
on wind
/ wave
direction

SPAR

Asta Hansteen

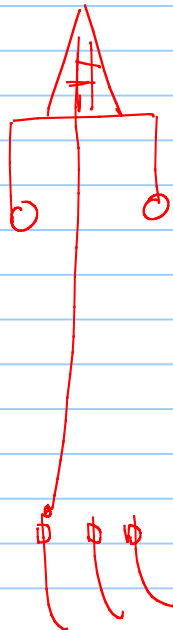


SPAR Projects



deep hull structure
(units movement
in vertical and
horizontal direction)

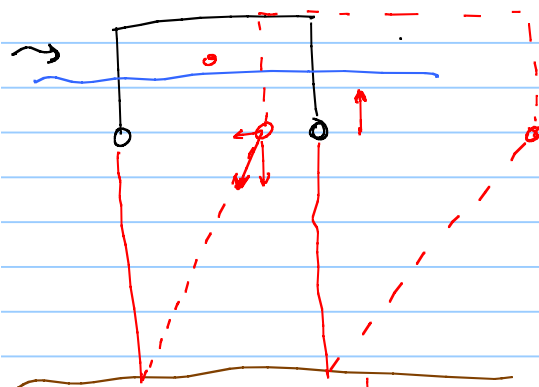
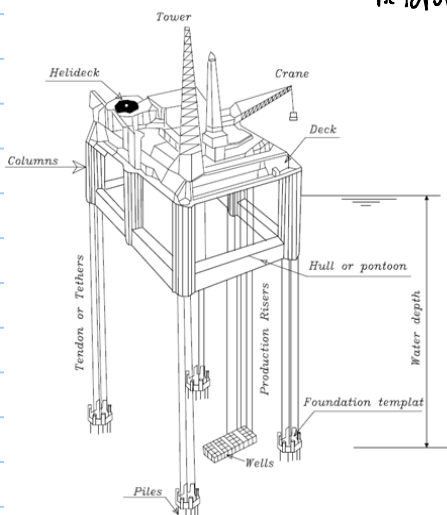
Semi-submersible



positively buoyant

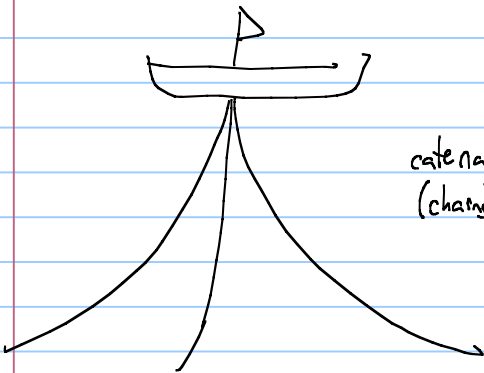
TLP tension leg platform

Heidrun



about buoyant structures } usually exhibit "relevant" movement
in horizontal/vertical direction
• require active regulation of
ballast

they require mooring



catenary mooring
(chain)

taut
mooring
(polymer
material)

