Multiple marginal fields and challenges in future allocation agreements

HCM Workshop June 12th 2025

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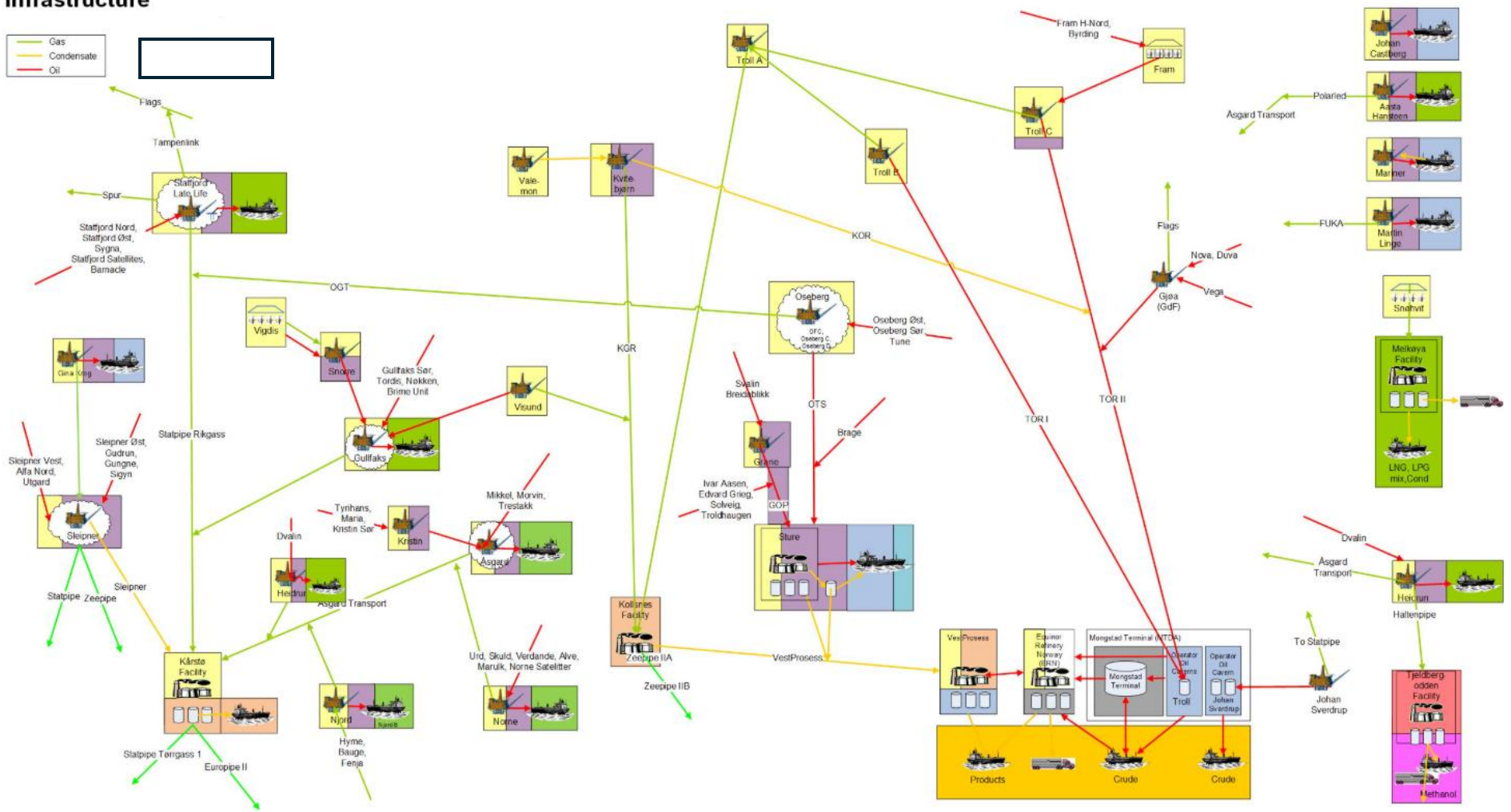
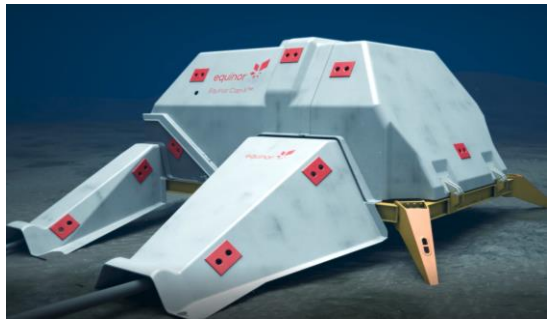
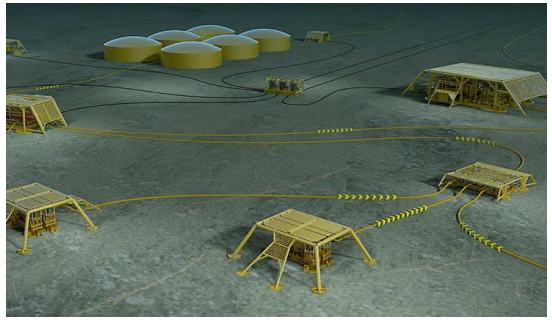
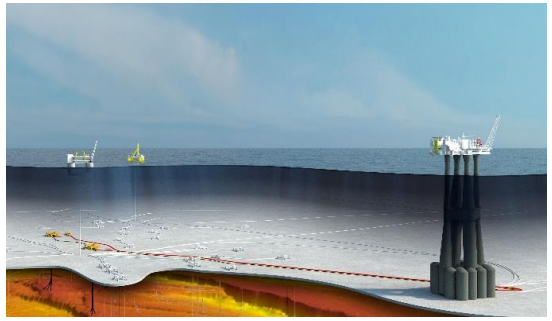
Infrastructure



Longevity O&G | Marginal fields share similar characteristics







Overarching criteria

Marginal volumes **-** the business case not sanctionable without implementing simplification and radical cost reducing measures

Additional considerations

- Expected volumes should be on the lower side (**~15mmboe**)
- **Including unproven segments in the expected value** according to internal requirements (>=50%)
- Project development is based on **limited topside modification scope**
- Reservoir characteristics (water depth, pressure, temperature) should allow for **use of a standard SPS equipment and standard drilling/completion solution**

Delivering breakthrough in marginal fields

(~15 mm BOE, limited brownfield topside scope)

Always safe

(No compromise on safety)

Faster execution

(2-3 years from discovery to production for fastest projects)

Capex reduction

(20-30% short term, 40% long term)

Solutions

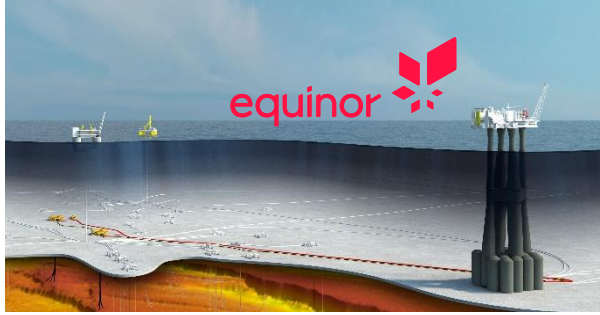
Standard modular concept based on Equinor's Cap-X technology

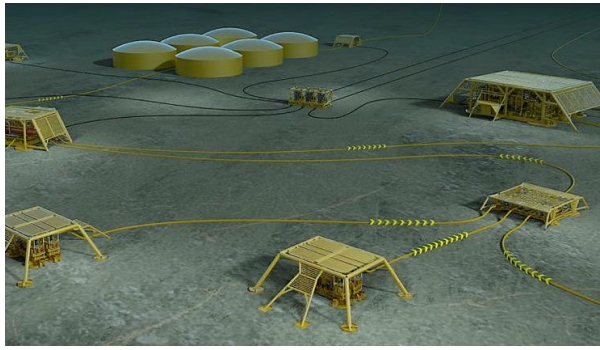
Standard keeper wells planned for production, drilled in continuous **drilling campaigns**

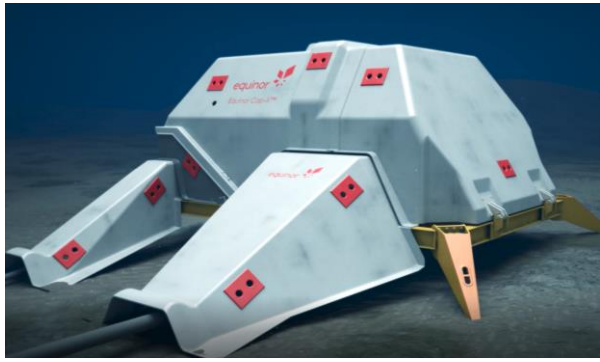
Re-use of equipment enabled by **equipment marketplace** and **tool sharing**

Fit-for-purpose project model, **concept, D&W and subsurface frontloading** for faster execution

Continuous project team repetitively executing a **portfolio of projects**







Allocation in the future

- Will we be able to have allocation agreements according to requirements in Metering regulation?
- Minor developments of small fields with short lifetime
  - 1-4 years
- What about uncertainty and follow up of uncertainty budgets
  - Typical playing with the figures and based on experience
  - Guesstimate on uncertainty due to limited knowledge og production profiles and composition/quality
  - Realistic value of cost/beneficial analysis, uncertainty and risk for loss calculations
- Risk when sizing multiphase meter(s)
- Connected to nearby templates and included in existing flowlines?
  - Commingled production with other licensees
  - Different ownership
- Connected to host with established production from fields with existing allocation agreements
  - Commercial challenging
  - Licensees/partners willing to accept high uncertainty and uncertain income
  - Who shall take the risk or is licensees willing to share a higher risk

Allocation in the future con't

- Metering regulation
  - Chapter 15 Section 101 – Exemption
    - (1) The Norwegian Offshore Directorate may in particular cases grant exemption from the requirements of these regulations.
    - (2) Applications for exemptions pursuant to the first paragraph shall be substantiated

  - It may be that Section 101 will be more frequent used in the future
    - Due to licensee economics
    - Multiple fields limited production metering, verification and fluid sampling
    - Commingled production
      - Shutdowns of wells/fields against deferrals up against field economics
      - Deduction testing versus flowrates and uncertainty in composition/technical quality
    - No or very limited verification possibilities topside of subsea metering
      - No test separator
      - Will downhole P/T gauges be of value to detect changes in reservoir/GOR in combination with multiphase meters for better PVT information
      - Need for temporary equipment for testing?
    - Need to simplify and consequence might be higher uncertainty in metering and allocated quantities for new marginal field / existing fields

Allocation in the future con't

- Operator receiving request for new third-party tie-in is committed to respond within reasonable time of receiving the request
  - Are allocation responsible ready to evaluate possibilities to a reasonable allocation principle according to "Regulations relating to the use of facilities use bye others" (Section 6)
  - Are allocation responsible sufficient familiar with existing agreements to give advice in concept select
  - Do we have a situation where new tie-in must be given an estimation of uncertainties and risk for loss securing that existing licensees are within what is agreed
  - Harmonizing or unitization should be discussed
  - All about exploiting capacity of existing production facilities when production decreases
- Are the operator imposed to request for unitization for giving positive answer to request
  - Should Sodir and/or Energy Department impose licensees to agree if partners are reluctant?
  - If not, allocation responsible has a big challenge to propose an allocation agreement to all involved licensees
- After nearly a lifespan within fiscal metering and allocation it is clear that challenges are to come within the next years to come
  - Battle for finding new production and maintain production level
  - Answer may be more pragmatic solutions