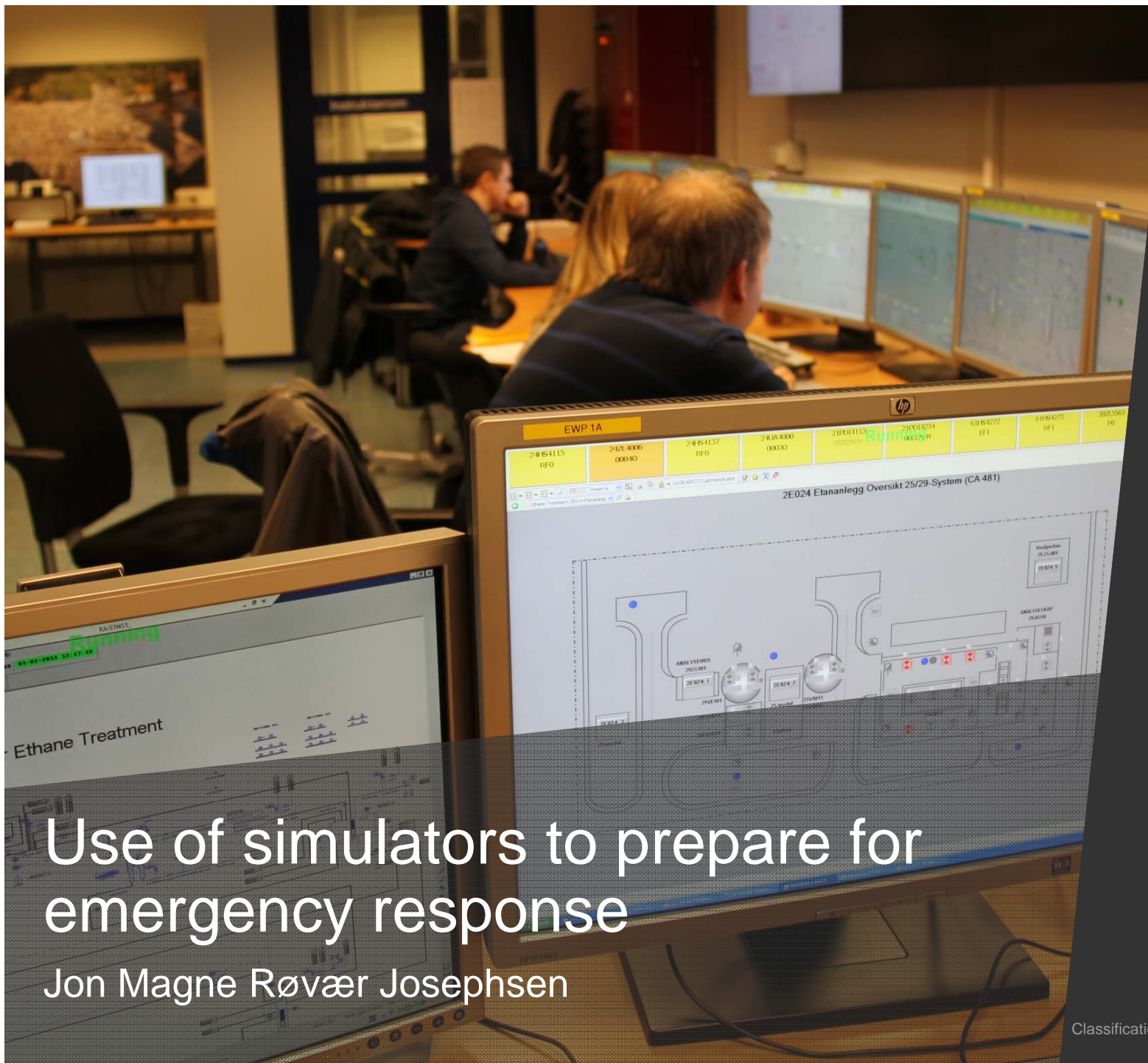




Statoil

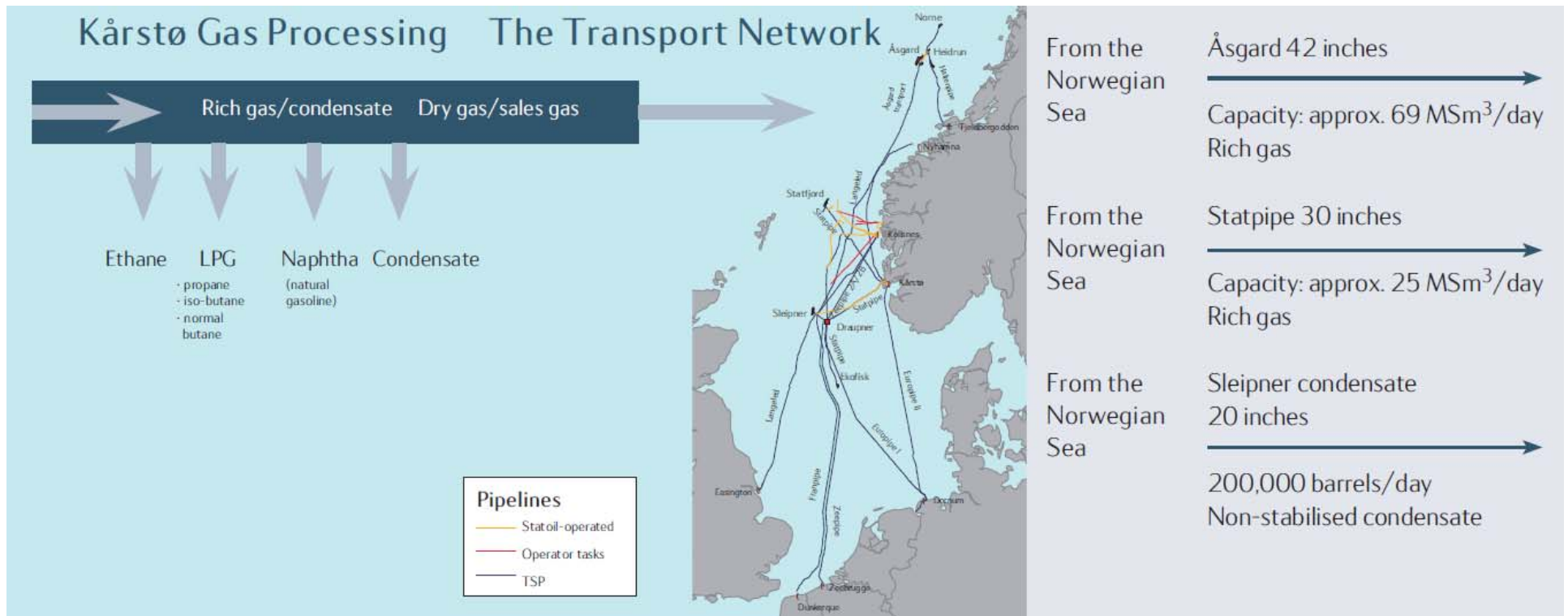


Use of simulators to prepare for emergency response

Jon Magne Røvær Josephsen

Kårstø gas processing plant

Kårstø plays a key role in the transportation and treatment of gas and condensate (light oil) from important areas on the Norwegian continental shelf. Thirty fields are linked to Kårstø via pipelines. Every day millions of cubic metres of gas and non-stabilised condensate flow into the plant, where the heavier components are removed by separation. The remainder, known as dry gas or sales gas, is exported by pipeline to the Continent.



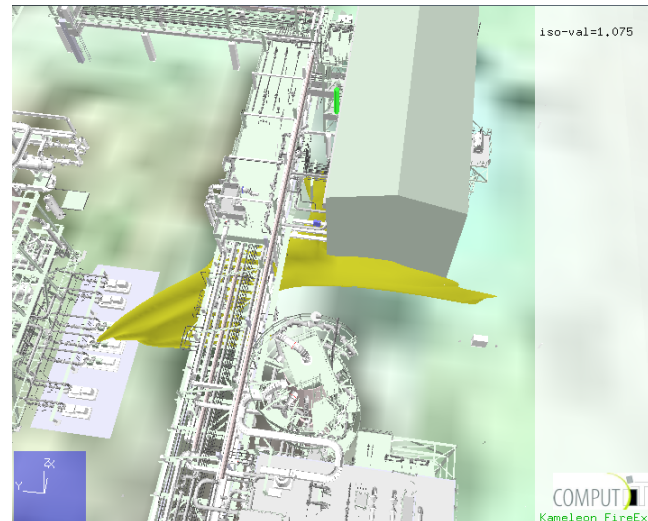


- **The Kårstø gas processing** plant is the largest of its type in Europe
- 120 CCR-operators on 6 shifts
- Important with right competence and knowledge
- Yearly training in emergency response and process handling



Preparation of the case

- Decide location and simulate case
- Create script for execution of fire and gas alarms to ensure same timeline in all exercises
- Prepare process simulator to required conditions
- Decide evaluation targets for the exercise



```
{S23|ResEmu_KETMA1:ana_indicate[1]} = 0
{S23|ResEmu_KETMA1:ana_indicate[2]} = 0
{S23|ResEmu_KETMA1:ana_indicate[3]} = 0
{S23|ResEmu_KETMA1:ana_indicate[4]} = 0
{S23|ResEmu_F06_20ZC102:ana_indicate[149]} = 0
{S23|ResEmu_F06_20ZC102:ana_indicate[150]} = 0
{S23|ResEmu_F06_20ZC102:ana_indicate[151]} = 0
{S23|ResEmu_F06_20ZC102:ana_indicate[154]} = 0

wait(5)
!25GD0205 går til 50 LEL i løpet av 5 sekunder
ramp({S23|ResEmu_KETMA1:ana_indicate[1]}, 50, 5, 2)

wait(5)
!25GD0206 går til 50 LEL i løpet av 5 sekunder
ramp({S23|ResEmu_KETMA1:ana_indicate[2]}, 50, 5, 2)

wait(5)
!25GD0207 går til 50 LEL i løpet av 5 sekunder
ramp({S23|ResEmu_KETMA1:ana_indicate[3]}, 50, 5, 2)

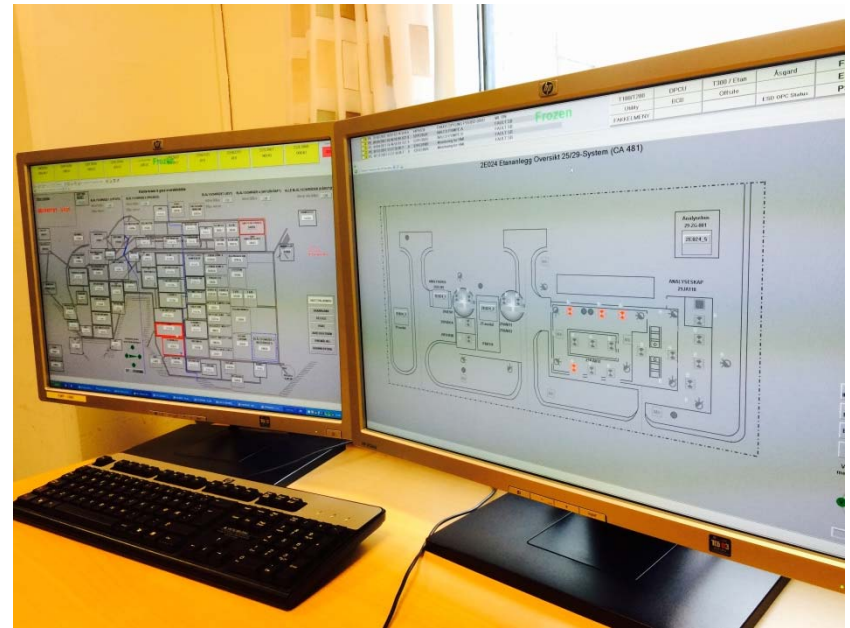
wait(5)
!25GD0208 går til 50 LEL i løpet av 5 sekunder
ramp({S23|ResEmu_KETMA1:ana_indicate[4]}, 50, 5, 2)

wait(300)
!venter her 300 sekunder, dette bør justeres etter hvordan øvelsen går, når scriptet
iførst er startet, kan man ikke endre det
wait(20)
!27-GD-3434 går til 30 LEL etter 20 sekunder
ramp({S23|ResEmu_F06_20ZC102:ana_indicate[150]}, 30, 20, 2)

wait(60)
!trigger så 27-GD-3435, 27-GD-3433 og 27-GD-3440R etter ytterligere 60 sekunder
ramp({S23|ResEmu_F06_20ZC102:ana_indicate[151]}, 30, 20, 2)
ramp({S23|ResEmu_F06_20ZC102:ana_indicate[149]}, 30, 20, 2)
```


Simulation

- Identical exercise for six emergency response teams
- Gas alarms is announced by audible and visual alarms
- Communication by radio and phone
- The CCR-operators are required to manage process difficulties in addition to emergency response

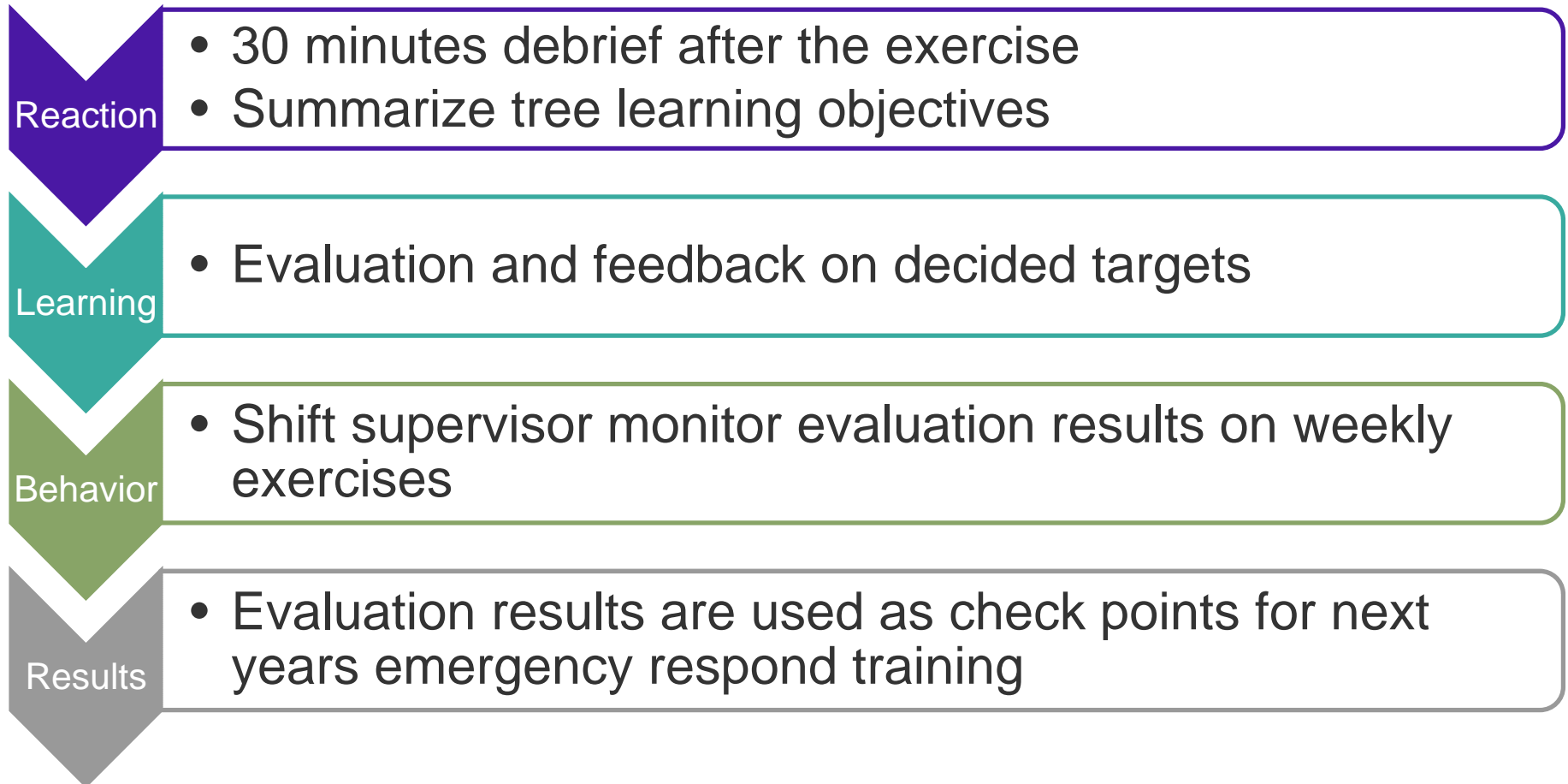


Benefits by use of simulator in emergency response training

- Use of Fire&Gas alarm system to practice response to alarms
- Practice emergency shutdown and blow down of process equipment
- The exercise gets an time aspect while waiting for depressurizing of systems
- More roles to be played during the exercise gives more interfaces in communication



Effects of the training



Effects

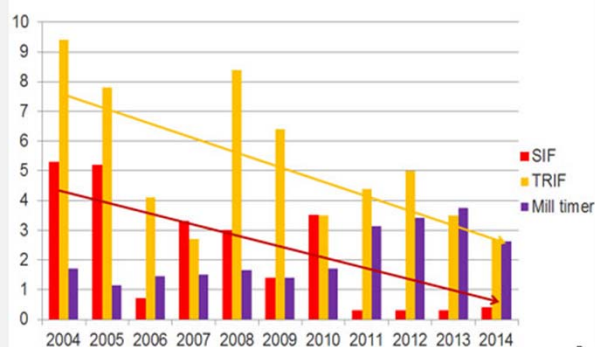
Safety

Kårstø viser vei

Kårstø har de siste ti årene hatt en fantastisk utvikling innenfor HMS. Når en ser tilbake på hva som er gjort disse årene, ser en at tiltakene har vært vellykket. Kårstø har over tid levert veldig gode HMS-resultater.

LOCATION / ORGANISATION:
MPR

HMS historikk 2004 - 2014, Kårstø

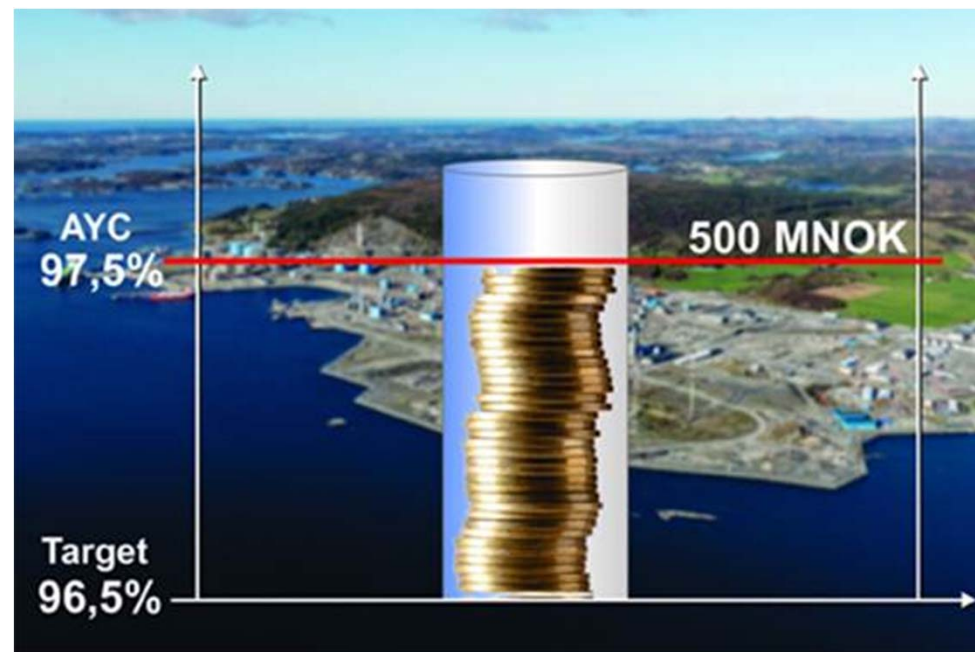


Kårstø 2004 - 2014

Prosjekter i 10-års perioden:
KEP 2005 - Kårstø Expansion Project
CY2007-08- Contract Year 2007-08
KEP 2010 - Kårstø Expansion Project
ISO- Isolasjon, Stillas og Overflate
RS 2010 - Revisjonsstans 2010
KDP 2013 - Kårstø Development Project
OGS - Onshore Gas Security

HMS tiltak i 10-års perioden:
Blåjakker - HMS "rådgivere" i felt
HMS24 - Atferdstrening
DROPS - kurs fallende gjenstander
ÅSS - Åpne sikkerhetssamtaler
Flensetrekking
Risikoverktøy
Simulatortrening
C&L - Compliance & Leadership
LSR - Livreddende sikkerhetsregler
Observasjonsrunder

Operational



There's never been a better
time for good ideas

Use of simulators to prepare for
emergency response

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