

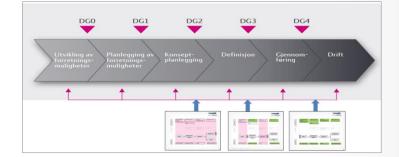
# New methods for risk management on the NCS

Enhanced Risk Management through more suitable Risk Analyses



#### Challenges

- Use the knowledge gained after 40 years with risk analyses
- Provide suitable decision support at the right time
- "Decimal-driven" risk analyses





#### ...and also meet the following requirements

- Shall provide an equal/better safety level compared to the current practice
- Shall ensure continuous improvement and risk reduction (ALARP)
- Shall be based on the new definition of risk (PSA)

cerns	Unacceptable region	
Increasing individual risks and societal concerns	Tolerable region	
Increasing	Broadly acceptable region	



### Work ongoing

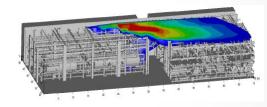
- Project established by Norwegian Oil & Gas
  - Representatives from Operators and UiS
  - Statoil, Wintershall, Engie, Total, ConocoPhillips, VNG, UiS
- Involvement of contractors
  - Workseminars to collect comments and improvement suggestions
  - Aker, Lilleaker, Lloyds, DNVGL, Safetec etc
- Meetings held with authorities
  - Proposed methodology discussed
  - Positive feedback



## Not primarily a question of new methodology

- End the quest for a perfect and accurate description of the risk level
- Decisions/choices/solutions that affect risk are numerous and complex.
  - Some have been captured in risk analyses, whereas others have been left out
  - In other words; a Total Risk Analysis (TRA) has never been a total risk analysis
- Concentrate on providing decision support at the right point in time
  - After 40 years we know enough about causality to recognize the most important factors
  - The exception being new/unknown concepts/solutions where our collective basis of knowledge is not yet sufficient









# Future of (enhanced) risk analyses – not primarily a question of new methodology

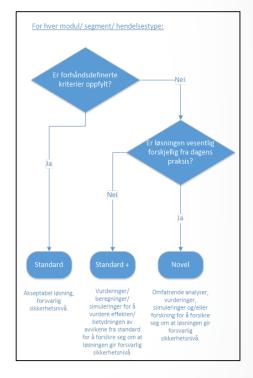
- Therefore; review «all» decisions affecting risk
  - Many of these are regulated by detailed requirements/minimum requirements
  - A limited number of decisions need risk analyses as basis for decision
    - E.g. dimensioning accidental loads for explosions and process fires
- For these remaining decisions, well founded and available methods and data must be developed
  - Available to the entire industry
  - Developed in cooperation with authorities and contractors
- Main emphasis; barrier management through the installations' lifecycle

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- 34	Passiv brancheskyticke av bovodbærestraktaren	Lites								



#### Proposed methodology

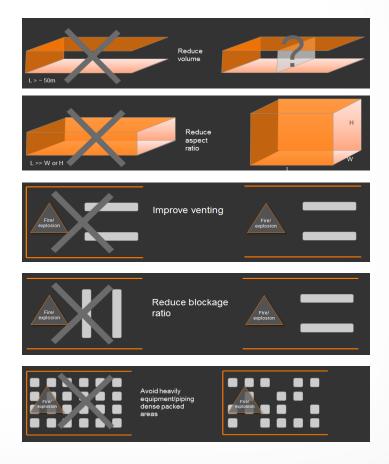
- Define scenarios as basis for well documented concepts
- Establish key parameters needed to decide whether a concept/system can be regarded as "standard" or "novel"
  - No need to start all over each time
  - Requires that results and experiences are shared
  - Define scenarios as basis for well documented concepts
- Provide operations with a foundation for further risk management
  - Barrier strategy/performance
  - Knowledge of design accidental loads/scenarios
  - Awareness of incidents not designed for





### Explosions: Layout and design

- Examples of relevant parameters:
  - Module volume
  - Possible flame accelleration path
  - L/W relationship
  - |, | |, |\_|
  - Ventilation
  - Density of equipment
- DG2: Possible to estimate approximate pressure
- DG3: Verify/adjust estimates through assessment/refinement of specific parameters
- DG4: Detailed calculations





#### **Concerns and questions**

• How can ALARP be maintained with this approach, and will all future installations be identical blue-prints?

• Risk analysis experts will share faith with dinosaurs?

• How can the industry develop knowledge and competence further if analyses are reduced to being a reference check?

• What will the authorities say...?





#### Project's conclusion

# It is possible

....and we think we now how it can be done



### What is needed to further develop this

- Common industry approach
  - Norsk Oil & Gas as key participant
- Key aspects
  - Cooperation between operators, contractors and authorities
  - Development of well founded and available methods and data
- Innovation, cooperation and transparency



#### Summary

- End belief/desire to provide a complete risk picture
- Concentrate on providing decision support at the right time.
- Risk analyses are needed as decision support when we are in doubt. We do not need risk analyses to confirm the things we already know.

