



Statoil



HF Experience transfer from incidents

HFC Trondheim, Oct 14-15 2015

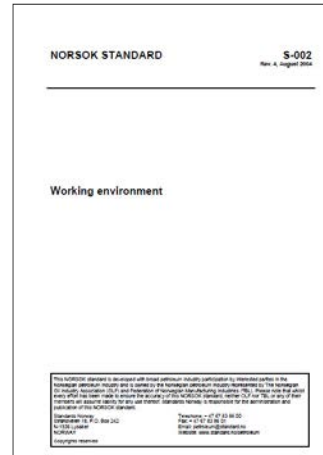
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Classification: Internal 2015-10-13

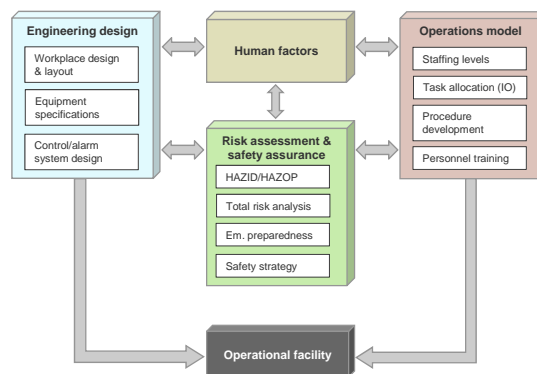
Overview

- How do our current design and operations standards function in real-life events?
 - Current design principles
 - Assumptions made during design and operations planning
 - Safety and operational philosophies
- Where can we improve?
 - Design standards
 - HF activities
 - Other issues

How we work



Human Factors integration in projects



Learning from incidents

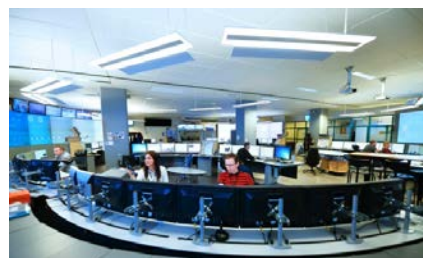


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Some key topics

- HMI and other design principles for control facilities
- Work organisation, procedures and training
- Human factors integration in major accident risk management



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Critical incident method

Working Minds (2006). Crandall, Klein and Hoffman

Four-sweep interview technique

- 1 – Incident selection
- 2 – Timeline construction
- 3 – Deepening probes
- 4 – «What if» queries

Table 5.3
CDM "deepening" probe questions

Cues	What were you seeing, hearing, smelling, noticing etc.?
Information	What information did you use in making this decision or judgment? How and where did you get this information, and from whom? What did you do with the information?
Analogs	Were you reminded of any previous experience? What about that previous experience seemed relevant for this case?
Standard operating procedures	Does this case fit a standard or typical scenario? Is it a type of event you were trained to deal with?
Goals and priorities	What were your specific goals and objectives at the time? What was most important to accomplish at this point in the incident?
Options	What other courses of action were considered or were available to you? How was this option chosen or others rejected? Was there a rule that you were following in choosing this option?
Experience	What specific training or experience was necessary or helpful in making this decision?
Assessment	Suppose you were asked to describe the situation to someone else at this point. How would you summarize the situation?
Mental models	Did you imagine the possible consequences of this action? Did you create some sort of picture in your head? Did you imagine the events and how they would unfold?
Decision making	What let you know that this was the right thing to do at this point in the incident? How much time pressure was involved in making this decision? How long did it take to actually make this decision?
Guidance	Did you seek any guidance at this point in the incident? How did you know to trust the guidance you got?

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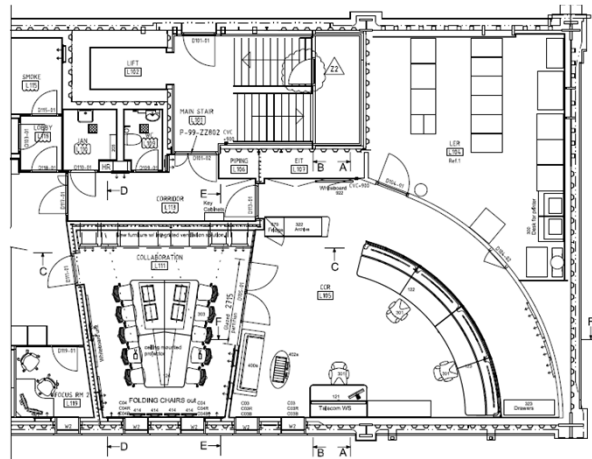
Control suite design



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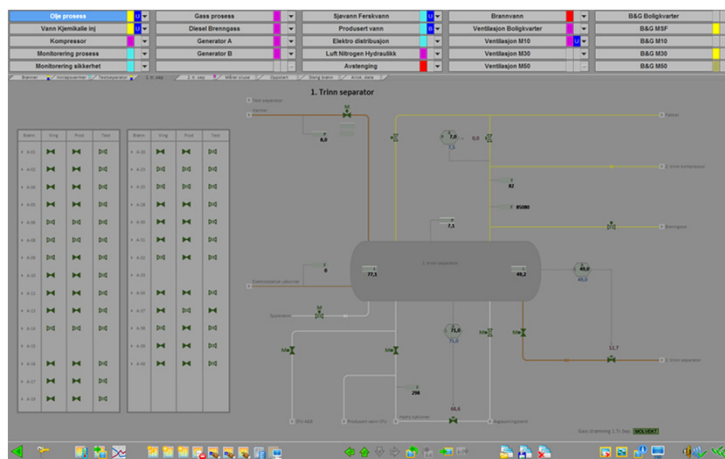
Control suite design



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Overview- and task-based graphics



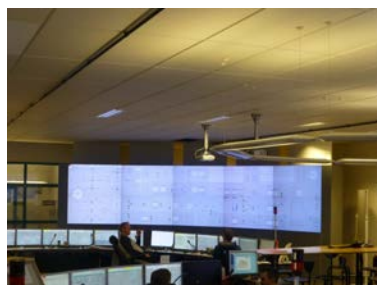
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Alarms and alarm lists



Large screen displays



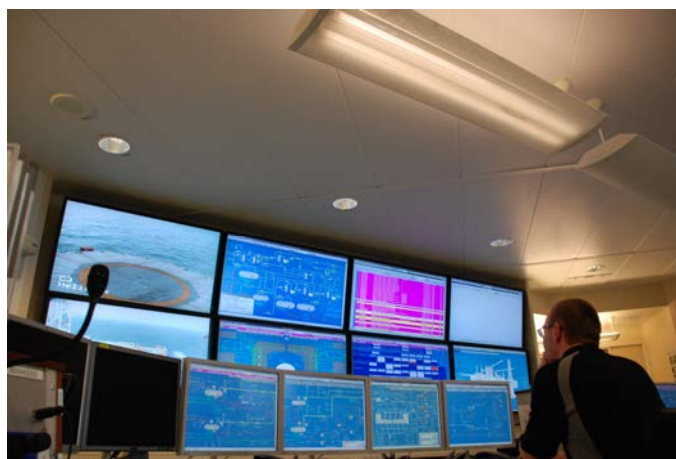
Critical action panels



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CCTV systems



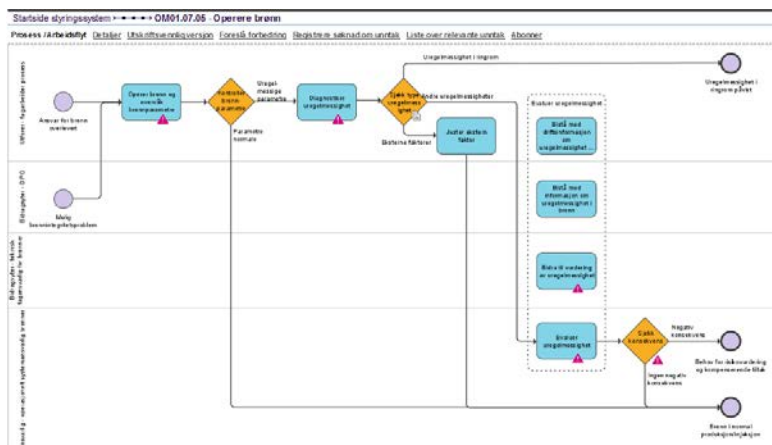
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Work organisation



Procedures



Competence



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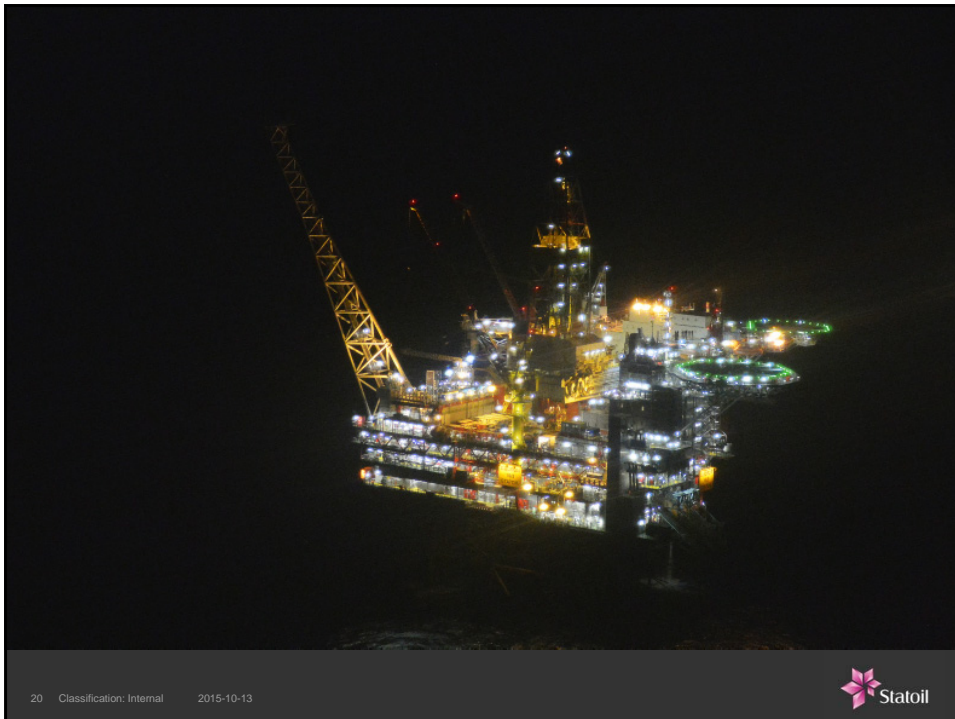
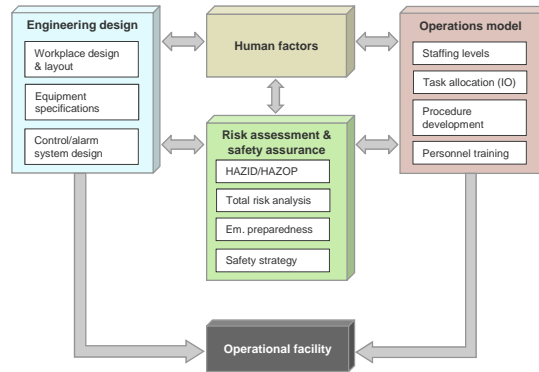
Training

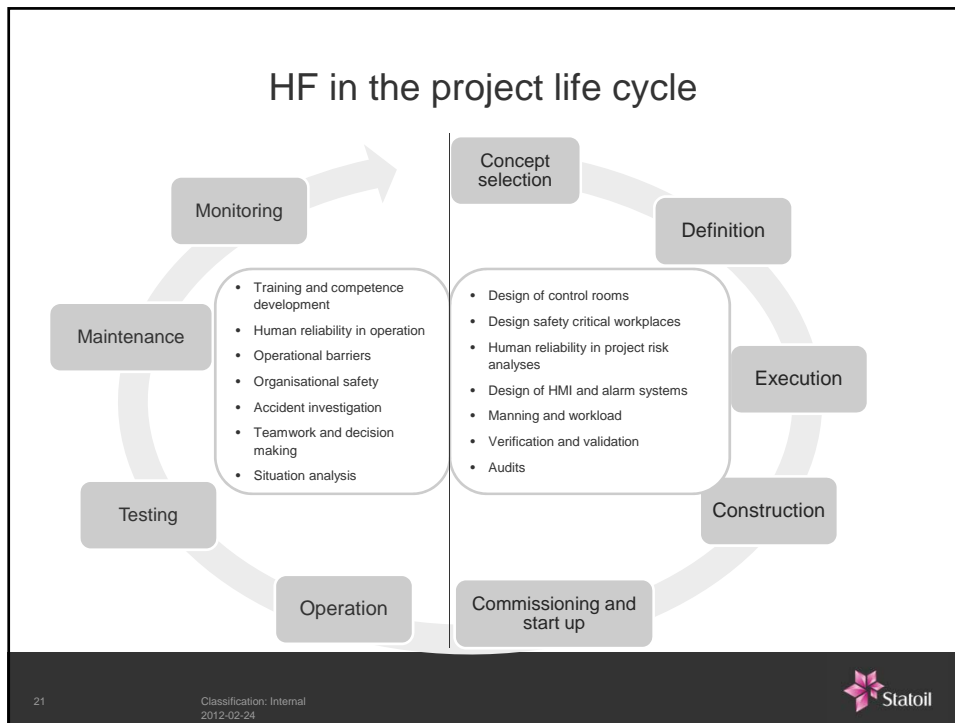


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Where do we focus our efforts?





Room for improvement?

- What should have priority?
- Analysis versus integration
- Normal operations versus emergencies
- Tacking on
- Following through
- Documentation and language
- The importance of HF expertise
- The importance of domain expertise

Performance standards (PS)	Barrier	Valid
PS1	Containment	on- and offshore
PS2	Natural Ventilation and HVAC	on- and offshore
PS3	Gas Detection	on- and offshore
PS4	Emergency Shut Down (ESD)	on- and offshore
PS5	Open Drain	on- and offshore
PS6	Ignition Source Control	on- and offshore
PS7	Fire Detection	on- and offshore
PS8	Emergency Depressurisation and Flare/vent System	on- and offshore
PS9	Active Fire Protection	on- and offshore
PS10	Passive Fire Protection	on- and offshore
PS11	Emergency Power and Lighting	on- and offshore
PS12	Process Safety	on- and offshore
PS13	Alarm and Communication System for use in Emergency Situations	on- and offshore
PS14	Escape, Evacuation and Rescue (EER)	on- and offshore
PS15	Layout Design Principles and Explosion Barriers	on- and offshore
PS17A	Well Integrity (wells in operation)	offshore
PS17B	Well Integrity (drilling, completion and intervention)	offshore
PS18	Ballast Water and Position Keeping	offshore
PS19	Ship Collision Barriers	offshore
PS20	Structural Integrity	offshore
PS22	Human Machine Interface & Alarm Management	on- and offshore
PS23	Safety & Automation System Security	on- and offshore
Total		offshore
		onshore



There's never been a better
time for **good ideas**

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