

*Far Grimshader - Songa Dee collision: 18<sup>th</sup> Jan 2010.*  
*Incident findings and lessons learnt*



MSF AMM: 27<sup>th</sup> May 2010

**Marathon** 

# Introduction

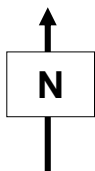


- ◆ Substitute supply vessel supporting the Alvheim FPSO and Songa Dee anchored drilling rig on the NCS.
- ◆ Norway adopted the NWEA Guidelines in 2009. OLF 61 + 61A removed
- ◆ Vessel had legitimate reason to be in 500m zone
- ◆ Potential to have been another Bourbon Dolphin
- ◆ Human error – easy to apportion blame but....
  - **A number of potential preventative barriers failed both on the rig, vessel and in the management systems.**
  - **Guidelines and procedures were not followed and in some cases not understood by all parties – not unique to this incident**
  - **Collectively all of us involved in the process of operating, chartering and auditing vessels should bear some responsibility**
- ◆ Lessons are there to be learnt!

# Incident Overview



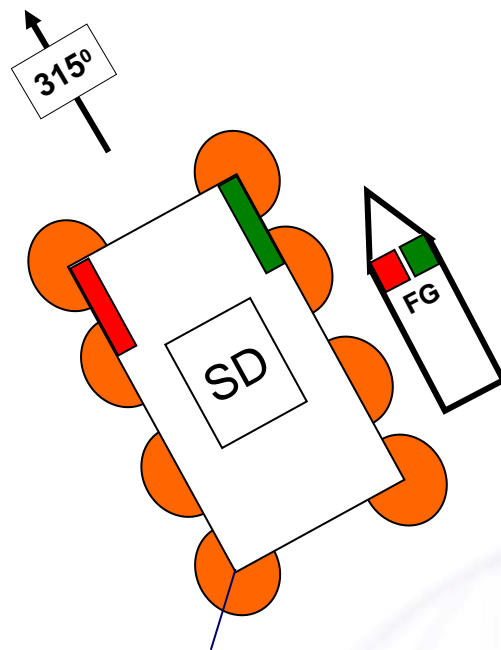
- ◆ Vessel:
  - Built 1983. Non DP. Excellent condition
  - Standard 80m long PSV, 6000BHP, twin bow and stern thrusters
  - Five crew in excess of minimum safe manning
- ◆ First run to field. Periods of adverse weather stand by
- ◆ Shared operations with FPSO (day crane)
- ◆ Called into rig leese side crane (history of problems, certified, ongoing repairs)
- ◆ Weather
  - Wind ~30kts from South. Decreasing forecast.
  - Seas/swell up to 4m from South.



**Time:**  
21:20

**Manoeuvre:**  
Holding position

**Event:**  
Songa Dee starboard crane suffers a hydraulic leak and is out of service.  
  
Crane driver asks FG to assess port side to discharge tubulars.

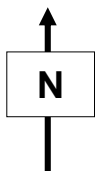


Weather according to ship's log

Wind:  
28 to 33 kn

Swell  
Direction

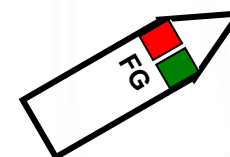
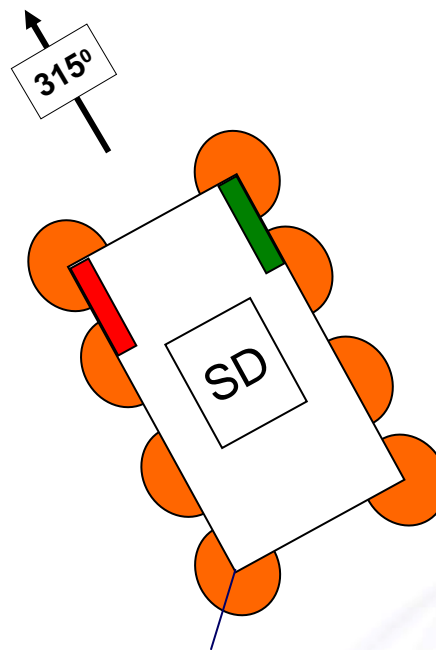
4m



**Time:**  
21:28

**Manoeuvre:**  
Thrusting starboard  
then reversing.

**Event:**  
Master decides to go  
around to the other  
side to take a look.

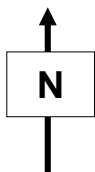


Weather according  
to ship's log

Wind:  
28 to 33 kn

Swell  
Direction

4m

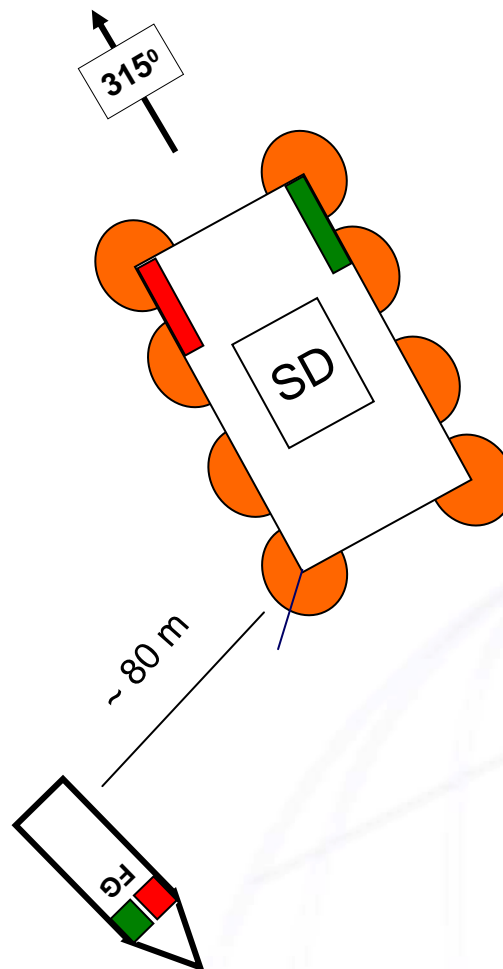


**Time:**  
21:30

**Manoeuvre:**  
Turning

**Event:**  
Setting up vessel to assess.

Distance to rig:  
~ 80 meters.

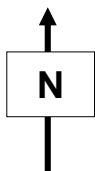


Weather according to ship's log

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Swell  
Direction

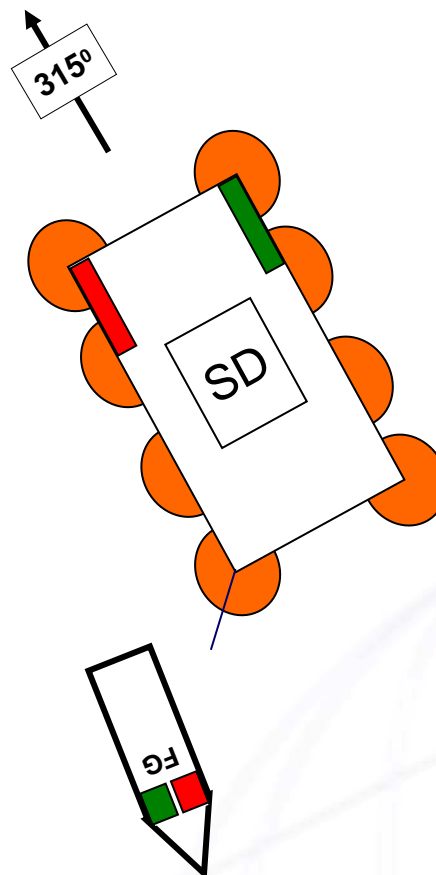
4m



**Time:**  
21:32

**Manoeuvre:**  
100% on thrusters  
and full ahead

**Event:**  
Master intended to  
give the vessel a  
push forward.  
  
Deck lights went out  
due to heavy  
consumption of  
electrical power.

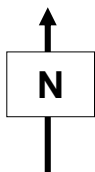


Weather according  
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Wind:  
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Swell  
Direction

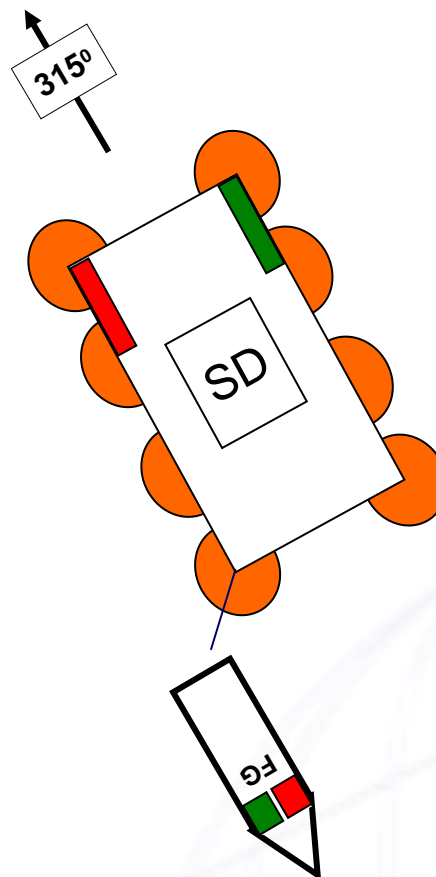
4m



**Time:**  
21:32

**Manoeuvre:**  
Pitch is off main  
Full SB thrust

**Event:**  
Master zeros pitch  
on main propellers.  
  
Engine room asked  
if OK to use main  
engines. Confirmed  
OK. Lights come  
back.

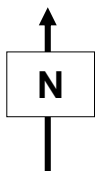


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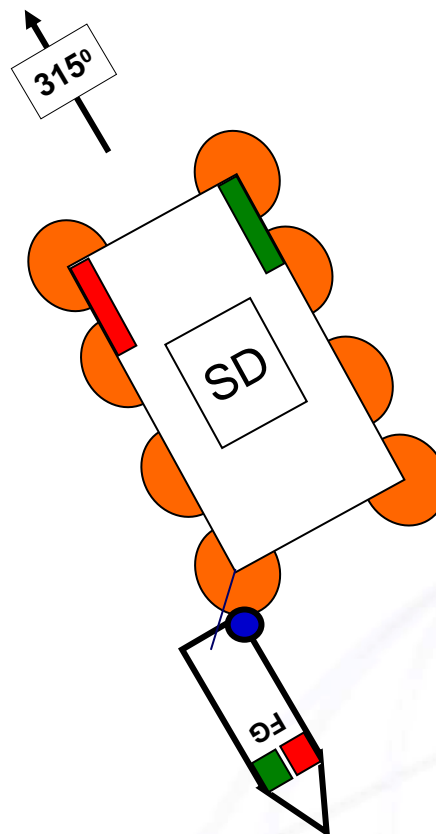
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**Time:**  
21:33

**Manoeuvre:**  
Full ahead –  
Full SB thrust

**Event:**  
Hits aft port leg

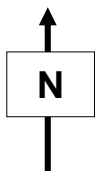


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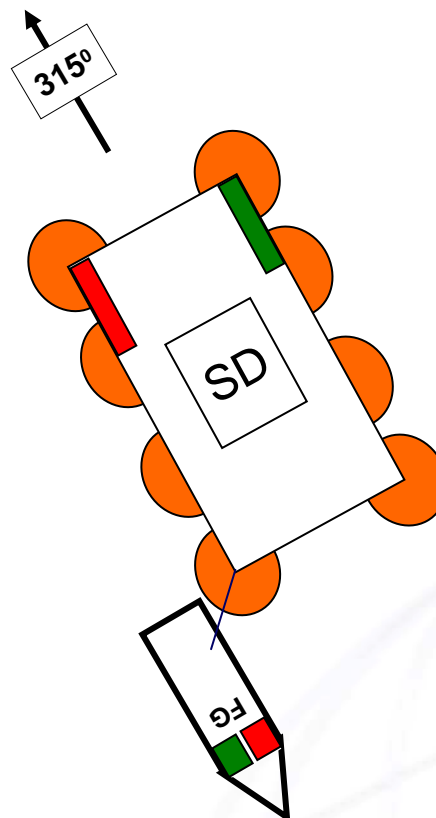
4m



**Time:**  
21:34

**Manoeuvre:**  
Trying to pull away  
From the rig.

**Event:**  
  
Port engine stops  
as port propeller  
tangled into the PCP.  
  
Fire alarm sounds  
when gear box  
breaks down.

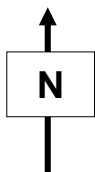


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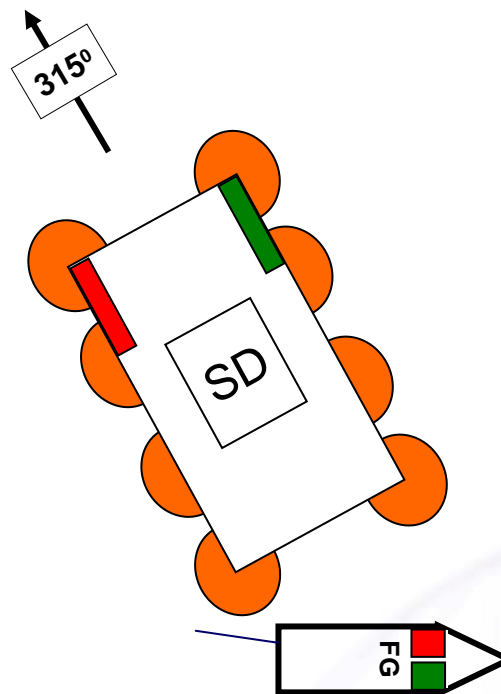
4m



**Time:**  
21:34

**Manoeuvre:**  
Thrusting away from rig.

**Event:**  
PCP (#5) pulled loose from Songa Dee's deck.

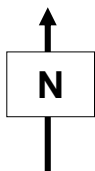


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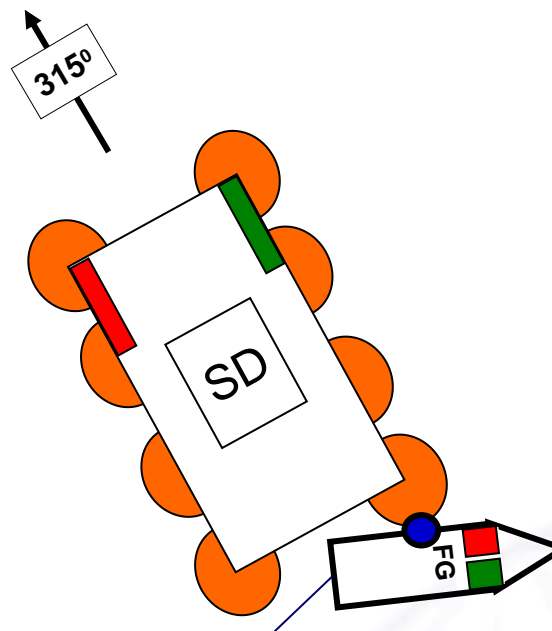
4m



**Time:**  
21:35

**Manoeuvre:**  
Thrusting away from rig.

**Event:**  
Vessel drifts into Songa Dee's aft SB Column.  
  
Not enough thruster power to stay away from column.  
Focus on minimizing damage.



Weather according to ship's log

Wind:  
28 to 33 kn

Swell  
Direction

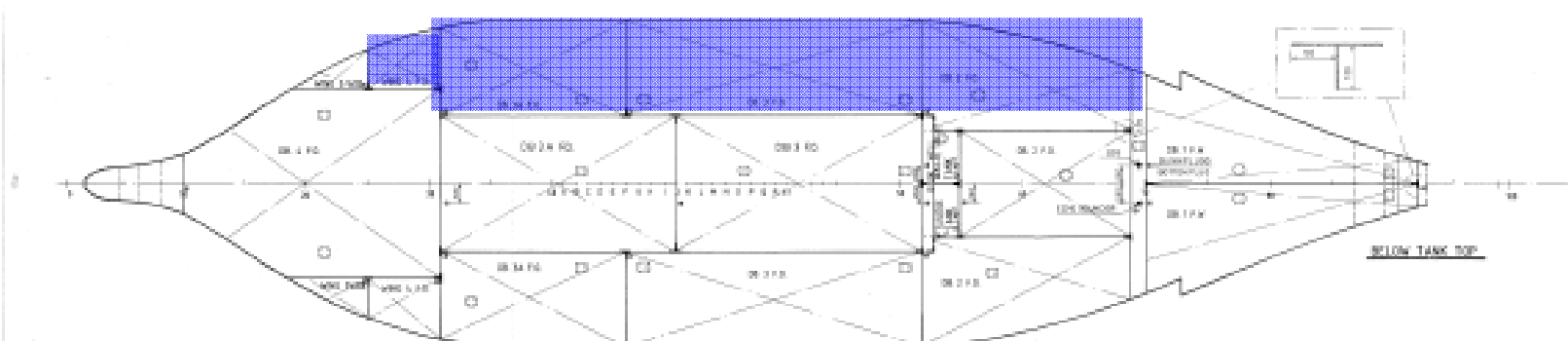
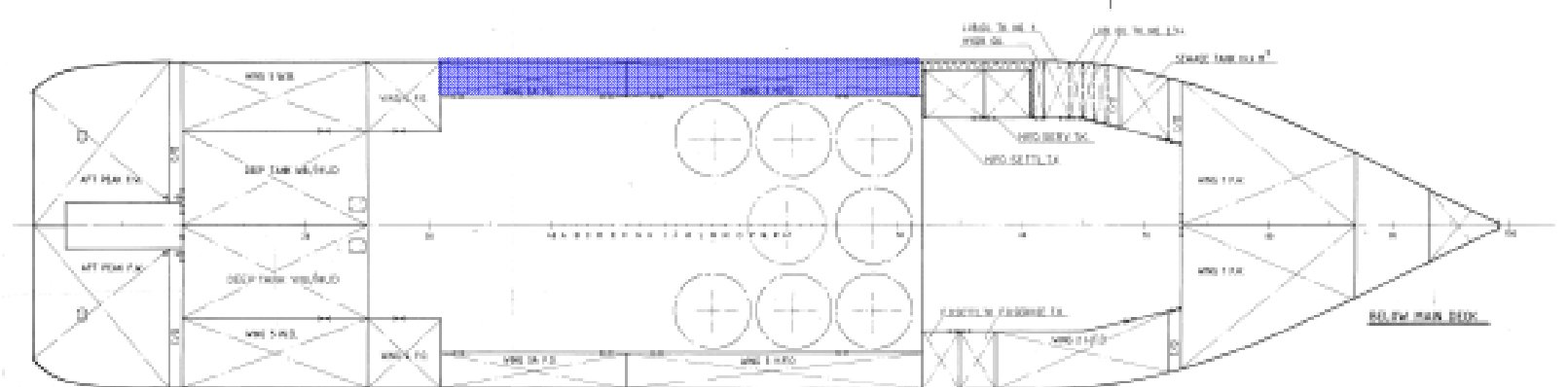
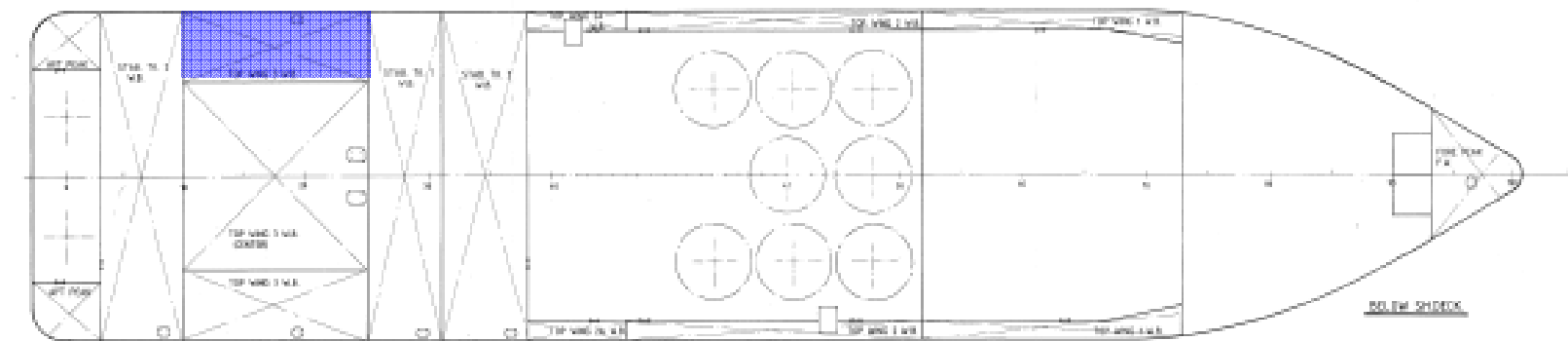
4m

# Aftermath



- ◆ Vessel trapped alongside rig for ~2hrs
- ◆ Contacted rig leg ~60 times
- ◆ Captain used remaining propulsion/thrusters to maintain station and prevent vessel from going under rig
- ◆ Drillers coming out of hole at time. Well quickly secured.
- ◆ Partial down man of rig
- ◆ ERRV attempted tow but lines failed
- ◆ Tugs used to pull clear to limit allowed by chaser
- ◆ Rig ROV cut chaser wire with hydraulic cutter flown from beach.
- ◆ Emergency response by all parties was professional and well organised







# Potential Consequences



- ◆ Vessel: further hull breach - flooding cement room spaces causing:
  - Loss of remaining propulsion
  - Free surface, stability loss leading to possible capsize and sinking
  - Increased risk to crew members
  - Pollution
  
- ◆ Rig: damage from vessel (going under rig) causing:
  - Loss of cross bracing and impact on structural integrity
  - Superstructure and bridge command centre damage to vessel
  - Leg/hull flooding causing rig list and stability issues
  - Loss of position due to damaged mooring system
  
- ◆ Template:
  - Well control and potential pollution problems
  - Vessel tubular cargo impact following capsize damaging template and associated infrastructure. Pressurised pipeline.

# Investigation Findings (1)



- ◆ Transfer between rig faces:
  - Weather side route used
  - Excessive speed
  - Close distance to rig
  - 100% power use on thrusters and main engines throughout
  - No check points: vessel underway, turning and manoeuvring into position simultaneously
  - Misinterpretation of loss of flood lights – perceived blackout
  - Lack of understanding of main propulsion power reduction when thrusters operational
  - Vessel under 'no pressure' to work weather side

# Investigation Findings (2)



- ◆ Barriers that failed:
  - Alternative safe route around lee side of rig.
  - Clear sea room outside 500m zone
  - Two additional persons on the bridge at the time
  - No risk assessment or change management process i.e. the operation was not planned or discussed either on the vessel or installation.
  - NWEA Guidelines (including Norwegian Addenda) not followed nor fully understood on vessel.
  - NWEA Guidelines not known on the rig
  - NORSOK R 003 App K checklist – not known about or used by either party
  - Rig crane: history of breakdown and maintenance issues
  - Lack of collective responsibility taken by the rig/OIM – decision to work and assessment of risk fully devolved to the vessel

# Other Findings



- ◆ Vessel assurance:
  - A more rigorous vessel intake process would not have affected the outcome
  
- ◆ DP:
  - The lack of DP had no bearing on this incident. Standard practice is for these manoeuvres to be done in manual control.
  
- ◆ Use of PCP's:
  - No indication of the PCP being too far out. However, had the wire been stoppered further down it would have been located closer to the leg.
  - Safe bridle system had been evaluated but considered higher risk to sub sea infrastructure
  
- ◆ Emergency towage:
  - Had not been drilled. Problems with securing tug towing equipment on vessel.
  - Kevlar tow lines easy to handle and safe to work with.

# NWEA Guidelines



- ◆ Application
  - Use, acceptance and understanding of NWEA is not universal on vessels or installations.
  - The need for risk assessments and robust change management processes is clearly stated throughout. Not found in practice.
- ◆ Norwegian addenda
  - Dated references to withdrawn OLF 61
  - Confusing: conflicting statements between addenda e.g. NO 3 and NO 4
- ◆ Technical redundancy
  - 3.3.4.3 Definition. What does a ‘single technical failure’ mean? For example: how many of Owners and Charterers of non DP 2 vessels have agreed vessel specific weather side working limitations?
  - Norway is more specific. DP 2 or Class issued ‘Declaration of Compliance’ with the specification for redundancy in position keeping ability’. In effect DP2 compliance for non DP 2 vessels.
  - In Norway unless DP2 – a vessel cannot work unless leeward and less than 25kts wind.
- ◆ Weather side working
  - Operations cease: UK **25kts** Norway **35kts** of wind

# Offshore Working Practices



- ◆ Collective responsibility:
  - Should an installation leave the decision to work weather side/marginal conditions solely to the Captain?
  - Does this create a tangible but unintentional pressure on the vessel to work?
  - Captain's decision is final. However a formalised process involving the installation would introduce a safety barrier and also a physical time delay in the process
- ◆ NORSOK R003 Appendix K Checklist – marginal weather operations
  - Excellent concept, little known and not used
  - Jointly completed and signed off by the installation and the vessel
- ◆ Weather side working - risk assessment:
  - NWEA specific in requirement for an RA but ambiguous. Advocates consultation with the installation but no joint responsibility.

# Vessel Management



- ◆ Learning from the Aviation Industry:
  - Cockpit resource management training: the Captain's decisions can be challenged/debated without removing 'his' absolute authority
  - Bridge team management training is proven to work: development and use of team skills. Team more empowered and involved.
  
- ◆ Competency:
  - Competency shouldn't be assumed. A number of factors are involved which ensure an individual remains fit to carry out his responsibilities - these need to be regularly verified.
  - As in aviation all, including the most senior pilots, must follow formal training programmes and undergo regular practical assessments to maintain their certification.
  
- ◆ Risk Taking:
  - Is there a higher acceptance of risk taking in these types of vessels? Is this age/experience related?
  
- ◆ Other Considerations
  - Routine: When does long service and 'ownership' become complacency?
  - Onboard administration. Removing unnecessary paperwork

# Final thoughts.....



- ◆ Owners
  - Need for senior officer competency assessments
  - Proven benefits of Bridge Team Management programmes
  - Review and reduce onboard administrative burden
- ◆ Charterers:
  - Need to better understand the NWEA and promote their use
  - Installations need to take more ownership of vessels operations in the 500m zone
  - Review audit deliverables
- ◆ Auditors
  - Ticking a box doesn't verify compliance.
  - In particular: NWEA understanding, onboard RA and change management processes need to be looked at in detail
- ◆ Industry
  - NWEA review - e.g.: definition of technical redundancy, Norwegian addenda
  - Benefits of check lists such as NORSOK R 003 App K



- ◆ **Guidelines for Ship/Installation Collision Avoidance: Version 2 - February 2010.**