

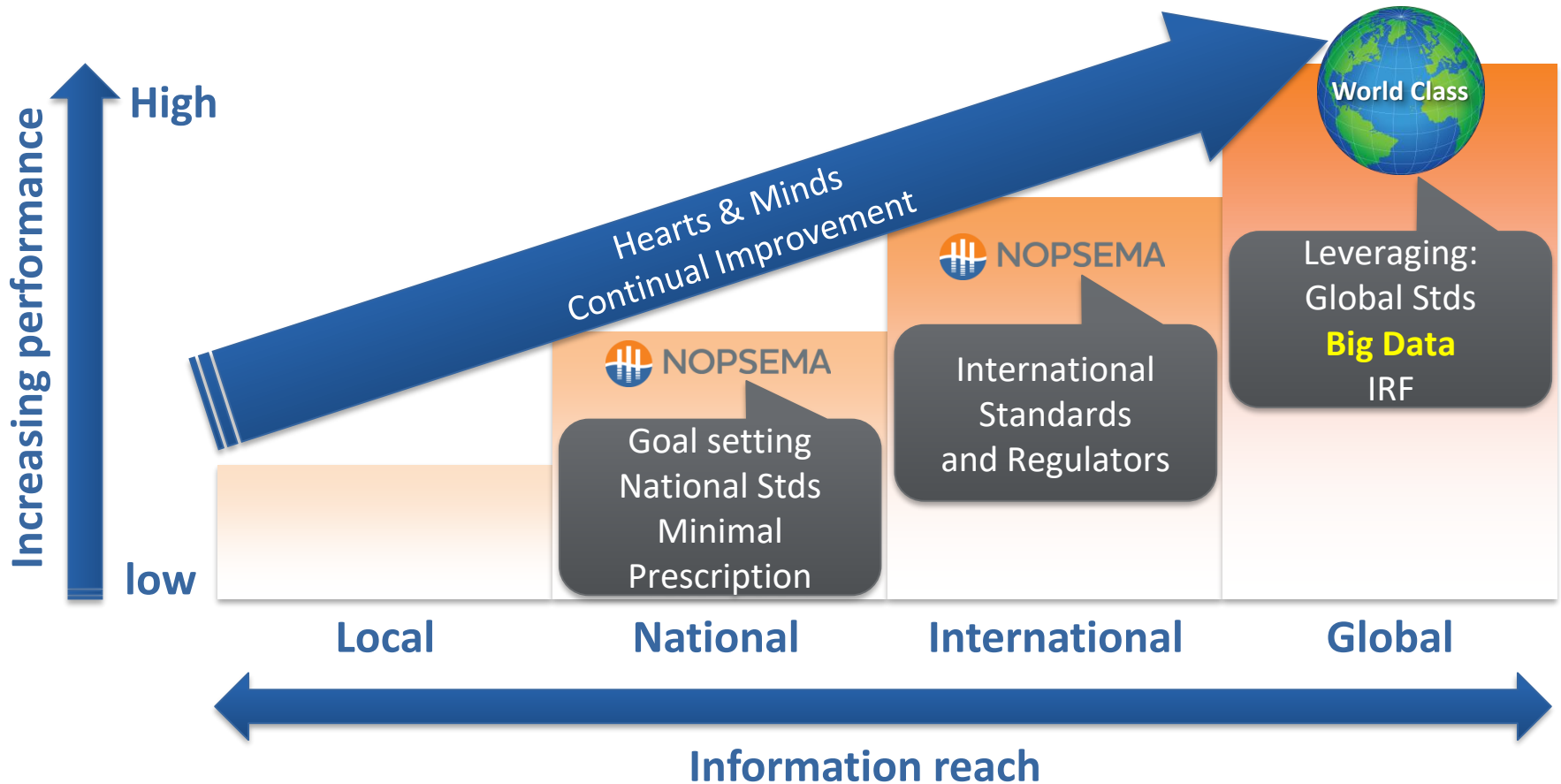


Knowledge sharing and Big Data: Are we doing enough to prevent Major Accident Events?

Chair: Derrick O’Keeffe
Head of Division, Safety and Integrity

Safety 30 Conference - Aberdeen 5 June 2018
Parallel session 1: 13:30 – 14:10

Performance improvement framework



Agenda

- **Session Aims & Big Data case study**
 - Derrick O'Keeffe, Head of Division – Safety & Integrity, NOPSEMA
- **Well integrity case study**
 - Colin Stuart, Petroleum Gas Inspector division (PGI)
DNRME also Managing Director, Stuart Wright UK Ltd.
- **Opportunities to learn**
 - Mario Alonso, Digital Solutions Product Leader,
Baker Hughes, a GE Company
- **Aerospace perspectives**
 - David Nicolaidis, Principal Field Applications Scientist
Dassault Systèmes
- **Panel session**
 - Questions welcomed

Tales from the Deep



Derrick O’Keeffe
Head of Division, Safety and Integrity

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**US CG:
Incident**

**UK HSE:
Incident**

U.S. Coast Guard Outer Continental Shelf National Center of Expertise (OCSNCOE)

Did I push the right button?

A drillship had a recent near-miss while drilling an exploratory well in the Gulf of Mexico. The event provided several lessons learned for vessels with dynamic positioning (DP). The vessel was conducting what seemed to be a simple maintenance procedure on a thruster. However, human errors with a mix of ergonomics got involved and resulted in a position loss within five feet of a "yellow" condition. The incident was caused due to the proximity of buttons to one another as well as the number of alarms a DP operator (DPO) receives.



Figure 1: The "MAN" and "DRILL" buttons are roughly 1/4 of an inch apart. Also, white lines on buttons require double press within 3 seconds.

Incident

On Tuesday night the drill crew shut in the well with the blow out preventer after detecting a "kick". The crew began to circulate the "kick" with kill weight mud. The circulating operation continued through Friday.

On Thursday a work permit was signed to take a thruster offline to perform some maintenance. The technician cleared taking the thruster offline with the DPO. When the technician took the thruster offline, the DPO received a series of alarms. The DPO silenced the alarms individually as required by the system. The DPO accidentally double-pressed the "manual" button while reaching across the console and not verifying which button was being pushed. A double-press of the manual button places all thrusters onboard in manual control. The DPO then received the alarm for manual control of all thrusters. The DPO realized the mistake and placed the thrusters back into "DP" mode, which brought the vessel back on location within about a minute after a thirteen foot excursion.

<http://www.uscg.mil/bq/qs/ncsncce/>

Lessons Learned

- Do my work permits adequately identify the risks?
- Does my well specific operating guideline take into account well control operations?
- Should certain controls on a DP system be protected from accidental activation? (A cover was later added in this case)
- Is there good communication between the drill floor and the bridge during simultaneous operations?
- When the bridge receives multiple alarms, is the DPO taking the extra second to recognize the alarm before the proper action?

Some Ergonomic Issues of DP Vessel Controls

Health and Safety Executive - Safety Alert	
Department:	Maritime Integrity Team
Name:	
Bulletin No:	ED3 2016
Issue Date:	19 December 2016
Target Audience:	Dynamically positioned vessels and offshore installations, drilling rigs, flotels etc.
Key Issues:	Human factors - Ergonomics - protection against accidental change of mode of control - Adequate display of active control mode (DP or manual)



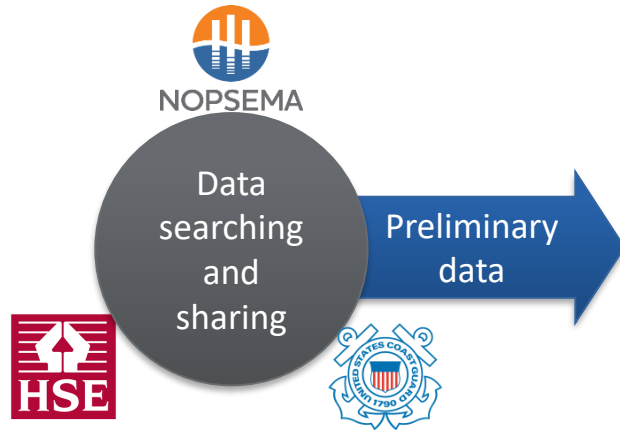
**Position control systems
prone to human error**

A Safety Alert has brought to industry's attention the necessity for control systems to be designed to prevent human error. The alert followed an incident where a vessel facility drifted off position while a diver was working on the seabed. Rather than being an isolated incident, NOPSEMA is now aware of two recent similar 'loss of position' incidents which have the potential to result in a major accident event.

A dynamic positioning (DP) system placed a note pad on the console which was not read and unintentionally deactivated the auto-position mode. With the auto-position mode deactivated, the vessel drifted off location while a diver was working on the seabed. The alert followed the vessel's arrival at the drilling vessel. NOPSEMA is now aware of two recent similar 'loss of position' incidents which have the potential to result in a major accident event.

Control of position for several minutes due to an accidental change of mode of control. Although the loss of position was immediately noticed by the DP operator, the auto-positioning system had been disconnected. The UK Health and Safety Executive (HSE) and the US Coast Guard OCSNCOE have both issued safety alerts in response to the poor ergonomic design of the DP system.





2005: *"Two pushes of the stand-by button took place within the allowed 4 seconds through a **clipboard** being put on the DP console"*

2009: *"Main Cause Human error – Placing of **logbook** on surge switch"*

2013: *"a **clipboard** was placed on the DP desk which resulted in the fore/aft surge button being inadvertently pressed"*

2013: *"DPO inadvertently pressed the joystick button with the **logbook** he was reading from"*

2014: *"Initiating Event: Auto DP was deselected when the rough DP **logbook** was placed on the DP control desk"*

Source: IMCA Database

