

Newsletter August 2015

# RISKOP – Managing Risk in Offshore Operations



STORD/HAUGESUND UNIVERSITY COLLEGE



PETRO MARITIME RESEARCH TEAM  
HSH, HAUGESUND

The RISKOP project studies how risk is identified and managed in order to increase safety in offshore operations. This knowledge will be converted to teaching programs at HSH, our partners and SIMSEA. The project is running for a period of four years from June 2013 and is financed by the Norwegian Research Council, Lundin Norway, Odfjell Drilling, Knutsen OAS, Solstad Offshore, Østensjø Rederi, Eidesvik Offshore, Farstad Shipping, Deep Ocean and Westcon Løfteteknikk. The project includes SINTEF, POLYTEC, SIMSEA and Kongsberg Maritime as research partners and a resource group of the professors: Helen Sampson, Rhona Flin, both UK, Erik Hollnagel, Denmark, Ole Andreas Engen, Norway and Richard Bagozzi, USA.

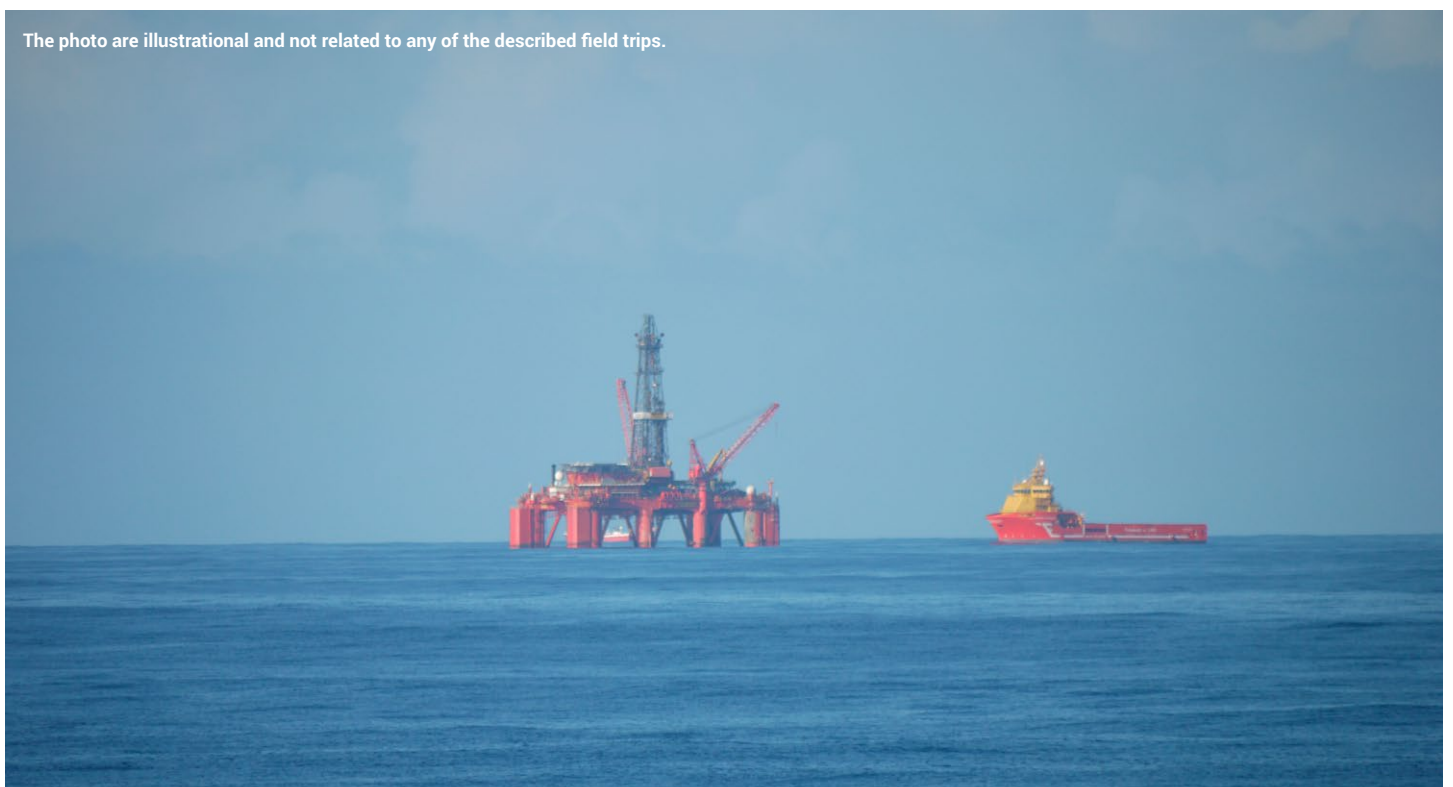
The project is organized in three work packages; the first is studying risk management in anchor handling, rig move and lifting operations offshore. The second work package is studying work relations, leadership and the participant's evaluation of operational results. In this issue of the RISKOP newsletter, however, we will present the third work package group, consisting of associate professor Helle Oltedal, associate professor Sturle Tvedt and PhD fellow Guro Fjeld. One of their main areas of interest is bridge officers' risk perception and risk identification. The other main area is the non-technical skills of bridge officers (the cognitive, social and personal resource skills that complement technical skills).

# WP3's Visit to the University of Aberdeen

In February 2015, the WP3 team visited the University of Aberdeen to meet with one of our RISKOP partners, Professor of Applied Psychology Rhona Flin. During the two-day meeting, we became acquainted with the maritime city of Aberdeen, and had a chance to discuss important themes in our ongoing projects.

Professor Flin is well known for her work on non-technical skills in operative industries (among other areas, she has done research on aviation, anesthesiologists, scrub nurses, and the oil industry). Thus, she had good advice and questions to raise on how to proceed with our ongoing project to identify and assess non-technical skills in the maritime industry. Another key subject for the meeting was our project in risk-identification.

The photo are illustrational and not related to any of the described field trips.





## Excursion to the Opening of the Maersk Training Center in Aberdeen

During our visit to Aberdeen February 2015, WP3 was invited to the official opening of the Maersk Training Center in Aberdeen. The impressive new facilities housed a host of training courses centering on offshore rig drilling. The facilities are used for technical training, CRM (Crew Resource Management) training, to practice and assess human-factor skills.

Visitors were given a grand tour of the simulators for the fully remotely operated drilling floor, well control, crane operation, and emergency management facility. Ample opportunity was given to try out the simulators, while the instructors gave the contextual background for the different stations and introduced the Maersk training philosophy. The visit to Maersk gave us an inspiring opportunity to meet instructors, and to look at the training and simulation practices of a training institution that was new to us.

Although any simulation scheme is set in the context of a specific sector, looking at practices from other sectors helps trigger reflection about those we know. Some of the knowledge can be applied to effective skill training for bridge duty.

## Safety Management and Risk Perception

**We study if and how risk is perceived onboard offshore vessels.**

The ISM code and Norwegian legislation requires all shipping companies to have a safety management system in place with procedures to make sure deviations, accidents, and dangerous situations are reported, investigated, and analyzed. The purpose is, in part, to improve safety in operations. Put simply, safety management is about the prediction and prevention of incidents



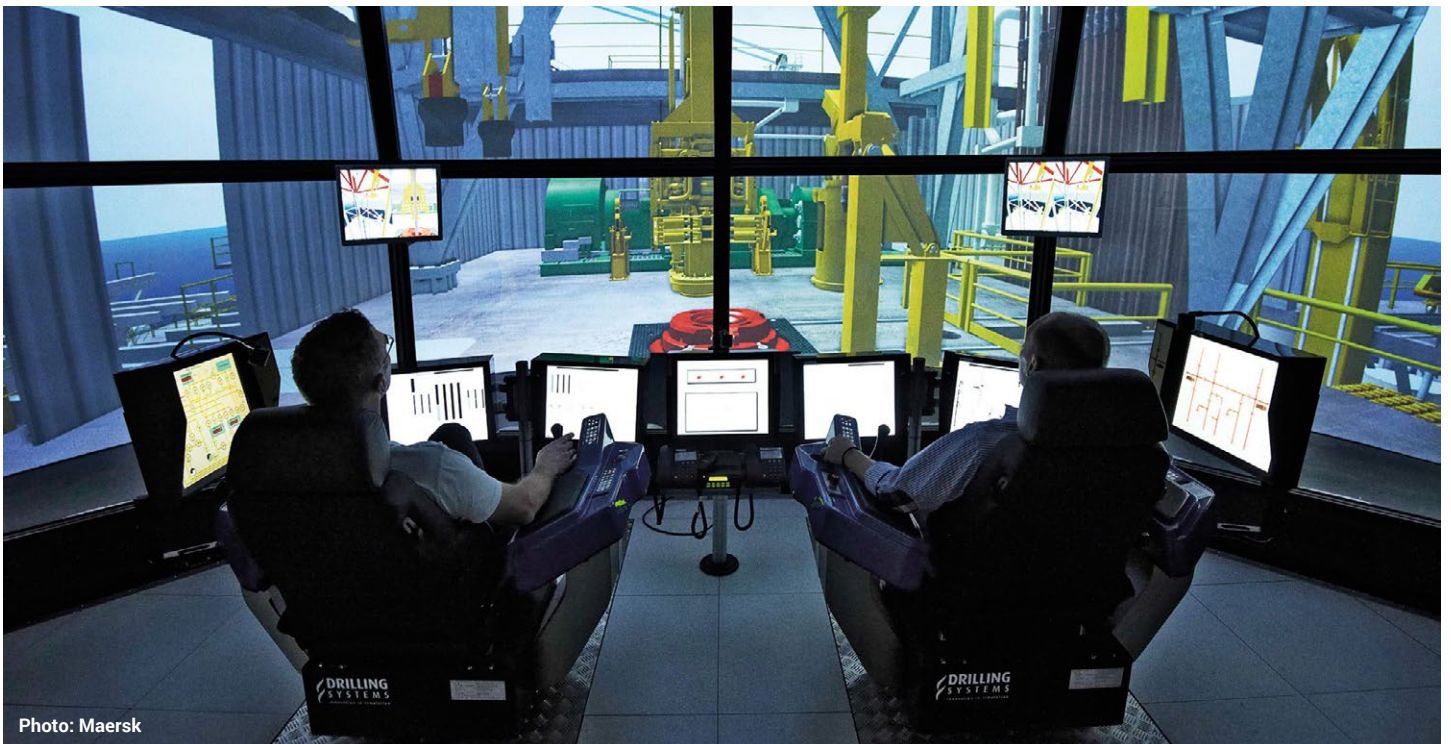


Photo: Maersk

that have not yet occurred - based on what already has happened. Information about earlier incidents is recorded in the system in the form of reports such as safety observations, deviations, procedure violations, technical failures, and so on.

A basic prerequisite for such a safety management system is that the reported incidents reflect the real risk in the operations, which in turn requires that risks are indeed perceived.

On that basis we are working on a study that seeks to map out what elements are perceived as risks. In order to do this, we have written two fictional stories – so called vignettes – that both describe operational situations where offshore vessels nearly collide with a pier. The stories consist of specifically selected elements.

These elements of risk have been reported as contributing factors in maritime investigation reports, and include poor organization on the bridge, failing ship management, elements of interruption, procedural deviations, communication failures, changes in plans, etc. The excerpt below is taken from one of the vignettes:

*Just past one o'clock at night the new chief officer is taken onboard with a MOB boat in Haugesund. Chief Officer Skogen is about to have a week long overlap before he becomes the regular chief officer on the next shift. Since he has been travelling the whole day, he turns in quickly after boarding.*

*The overlap happens three weeks into the regular chief officer's (Chief Officer Vik) shift, and is scheduled to take place in the last week of his shift. Chief Officer Vik has a heavily pregnant wife at home, who has been hospitalized for the last month with pregnancy problems, and he is therefore taking a leave of absence.*

89 captains and bridge officers – half of them assigned to each vignette – were asked to identify with a marker pen which elements in these stories they deemed risky. They were then asked to comment on why these elements represented risks.

We have started analyzing the data, and the preliminary results show that there is a great variation in how risk is perceived. In the excerpt quoted above, informants identified risk factors such as using a MOB boat at night with poor visibility and the lack of familiarization of Chief Officer Skogen. We also wanted to check if informants would identify family or personal issues as risks. We believe that such factors may reduce the awareness of one's own performance, and, in effect, constitute a risk. Even so, we hypothesized that insiders would not identify these as risk factors. If we were right, in saying that these factors pose risks but may not be recognized as such, the likelihood that they were reported might also be low. If so, the reporting system might not register such risks.

Several elements influence the quality of a safety management system, such as reactions to reports, investigative thoroughness, and the quality of remedial measures taken. A good point of departure is good collaboration between all departments in the on-shore organization. Independent of this, it is important for organizations to take a critical review of existing practices if safety management is to be improved. A good start may be to develop a common understanding about what constitutes risk – and that everybody is aware of their own role in the safety management system.

# RISKOP and MARKOM 2020

Buskerud and Vestfold University College (HBV) is organizing a workshop series financed under the MARKOM2020 program for development of Norwegian maritime competence. A workshop on training and assessment in May aimed at identifying challenges faced by simulator training and to develop a mutual understanding between researchers and practitioners.



**Researcher Sturle D. Tvedt** held a presentation entitled «Digital tools for assessment» representing RISKOP and HSH.

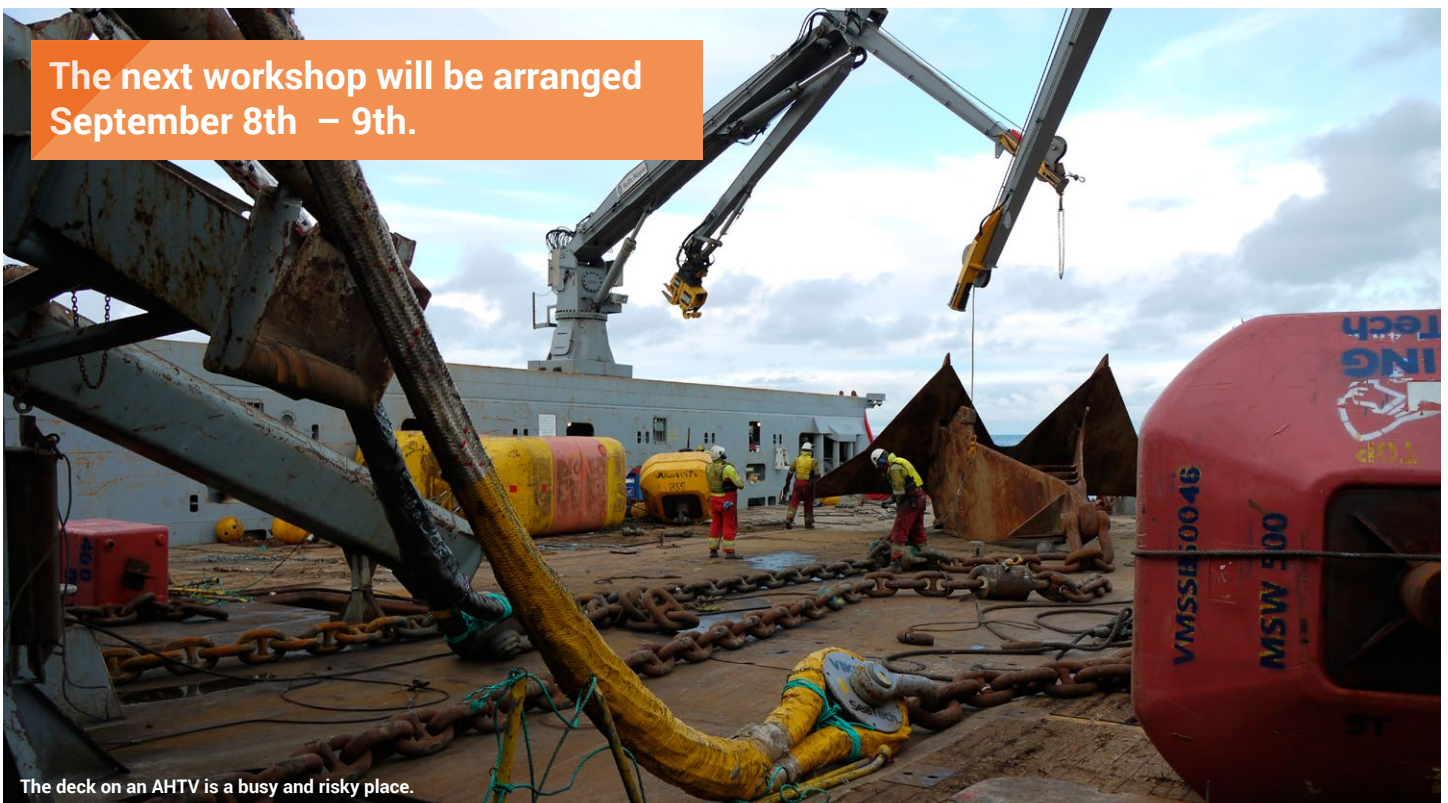
The focus for the presentation was experiences with the Integrative Assessment Program (IAP), which is a digital assessment tool developed by Hucon Global. It is at the same time both a technical facilitator for

the assessor as well as a logistical hub organizing documentation, feedback, and system reports on assessor practice.

The IAP has recently been adopted by the SIMSEA simulation center located in Haugesund as an integral part of the DNV-GL certification scheme for DPO specialization certificates. The IAP aims to combine assessment of technical and non-technical skills during bridge simulations and represents a 21st century assessment tool for behavior in bridge simulators. The presentation high-

lighted opportunities for standardization of assessment and debriefing, which is traditionally heavily dependent upon the assessor. However, it was also pointed out that the IAP approach requires highly specified scenarios with unambiguous performance criteria, and that these scenarios are conducted in a consistent manner.

Future research may shed more light on the usability of digital assessment tools for maritime simulation training.



The next workshop will be arranged September 8th – 9th.

The deck on an AHTV is a busy and risky place.

# Trust and Risk in the Cargo Supply Chain

The overarching purpose of the cargo supply chain between installations and depots is to ensure effective production and to avoid unnecessary delays. Safety has an equally high priority in the actual supply operations.

There are many inherent dangers in such operations – such as personal injuries, pollution, and large-scale disasters. A worse case scenario of the latter kind is the collision between a PSV and the Mumbai High North platform in July 2005 that caused a gas explosion and massive fires killing 22 people. Personal injuries and fatalities are far more likely, however. A report from the North Sea Offshore Authorities Forum (NSOAF) from 2007 claims that lifting and mechanical handling accounts for 47% of all offshore fatalities in the North Sea. Objects falling off the lifted cargo, or cargo that hits or crushes people are the main forms of such accidents.

Within the Norwegian sector alone offshore cranes average two lifts per minute (NSOAF 2007), and as such it is remarkable how seldom incidents occur. Three RISKOP researchers are presently working on an analysis of how the cooperation and interactions between installations and PSV's contribute to these favourable safety levels. The analysis builds on the assumption that high levels of trust between crew on PSV's and installations, particularly between crane operators and seamen, is a precondition for safety. The purpose of the analysis is to understand the factors and processes that build or

undermine trust. Preliminary results indicate that within the structure of the cargo supply chain are a number of potentials for conflicts between installations and PSV's.

Trust in these relationships increases when there is a lot of mutual knowledge and appreciation of each other's working situations, work challenges, and concerns. Absence of such mutual knowledge and appreciation provides room for conflict escalation, suspicions, and distrust. Data for this analysis was collected both via participant observations and interviews, and the researchers have noted that the supply operators are highly conscious of the safety value of being very familiar with each other's work situations. They express a clear wish for increased opportunities to get to know each other better.

The results of the above analysis is currently being written up in a research paper titled, "Risk, trust, and 'othering' in the cargo supply chain." The paper will be presented at the WOS2015 (Workingonsafety.net) conference in Porto, Portugal on 23-25 September.



# Bachelor Students Contributing to RISKOP

**Three bachelor groups were connected to RISKOP this spring.**

Under the supervision of Guro Persdotter Fjeld, students Alexander Iversen and Martin Furnes wrote the thesis, “Closed loop kommunikasjon i broteam (Closed-Loop Communication in Bridge Teams).” The students focused on safe and efficient communication in the maritime industry. To investigate the role played by closed- loop communication in bridge teams, Alexander and Martin analyzed video and sound material recorded from simulations held at BRM-training (at the SIMSEA simulation center). Their findings concern how closed- loop communication is used on the bridge; one of the interesting themes presented is an exploration of how closed-loop communication is used in creating and maintaining the team’s shared mental model.

**The second group** was supervised by Helle Oltedal. Students Håkon Persson Fosen, Jonas Bjordal, Dani Nedrebø Johannessen, and Hans Petter Utvær wrote the thesis, “Risikopersepsjon til brooffiserer (Bridge Officers’ Risk Perception).” The students investigated the results from the vignettes (described on page 4) in order to study how risk is perceived on board.

**The third group**, supervised by Lene Jørgensen, wrote a thesis about the incident report system in four shipping companies. Stig W. Pettersen, André Spångberg, and Emil Mustafin analyzed reported incidents, and interviewed informants (deck, HSEQ, and captains) about their reporting experiences, follow- up and feedback, and learning based on reported incidents.

The thesis discusses findings using the risk management regulations as a framework, as well as theories on safety culture, motivation, and learning. The authors conclude that many of the aspects important for developing a safety culture seems to be practiced by the shipping companies under study. The shipping companies use their incident report system as a means of continuous improvement and learning. The study also reveals a potential for further improvements, for example to make sure that reporting systems are easy to use.



Guro Persdotter Fjeld



Helle Oltedal

**From back left: Stig W. Pettersen, Emil Mustafin, and André Spångberg. From left front Lene Jørgensen (supervisor/examiner) and Tom Skauge (external examiner)**



## Published articles so far this year 2015:

1. **Xie, Chunyan and Bagozzi, Richard P. (2015):** "The impact of reputation and identity congruence on employer brand attractiveness". *Marketing Intelligence & Planning*, 33 (2)/2015. ISSN0263-4503.
2. **Jonassen, Jan R. (2015):** "Effects of multi-team leadership on collaboration and integration in subsea operations". *International Journal of Leadership Studies* 9/2015. ISSN1554-3145.
3. **Johannessen, Idar A., McArthur, Philip W. and Jonassen, Jan R. (2015):** "Informal leadership redundancy: Balancing structure and flexibility in subsea operations". *Scandinavian Journal of Management*. In Press 2015. [Dx.doi.org/10.1016/j.scaman.2015.01.001](https://doi.org/10.1016/j.scaman.2015.01.001).
4. **Vandeskog, B.: (2015):** "The Legitimacy of Safety Management Systems in the Minds of Norwegian Seafarers". *TransNav, International Journal on Marine Navigation and Safety of Sea Transport*. Vol. 9, no. 1. ISSN 2083-6473.



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