



RISKOP

MANAGING RISK IN OFFSHORE OPERATIONS | NEWSLETTER JUNE 2017



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The RISKOP project studies how risk is identified and managed in order to increase safety in offshore operations. This knowledge will be converted to or integrated into teaching programs at Western Norway University og Applied Sciences and University Nord and our partners. The project is running for a period of four years from June 2013 until end 2017 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, Uni Research Polytec, SIMSEA and Kongsberg Maritime as research partners and a resource group of the professors: Helen Sampson, SIRC at University of Cardiff, Rhona Flin, University of Aberdeen, both UK, Erik Hollnagel, University of Southern Denmark, Ole Andreas Engen, University of Stavanger, Norway, Silvia Jordan, University of Innsbruck and Richard Bagozzi, University of Michigan, 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 participants' evaluation of operational results. The third work package group, studies bridge officers' risk perception, risk identification, and the non-technical skills of bridge officers (the cognitive, social and personal resource skills that complement technical skills).

The RISKOP team: Jan R. Jonassen (Project leader), Lene Jørgensen, Idar A. Johannessen, Bjarne Vandeskog, Chunyan Xie, Guro Persdotter Fjeld, Erik Mygind du Plessis (all from Western Norway University og Applied Sciences) Kari Skarholt and Gunnar Lamvik (from SINTEF). Contributors to this newsletter: Lene Jørgensen, Erik Mygind du Plessis, Idar A. Johannessen and Jan R. Jonassen.

Understanding and analysing risk; what is it and how is it managed?

Petroleum Safety Agency (PSA/Ptil) and University of Stavanger presented on May 30th new research on understanding and analysing risk, based on the new definition PSA/Ptil has adapted. One traditional definition of risk is related to probability and consequences of different scenarios.

The past years' research by Professor Terje Aven and his team introduced uncertainty into the definition. This is now adopted by the PSA. The analysis of risk factors start by deciding the basic prerequisites for the analysis. The next factor to enter the analysis is your or the team's knowledge as a basis for evaluating the probability for something to happen and the consequences of your decisions. The knowledge in the risk analysis must be evaluated according to its assumed strength; weak, medium or strong. How solid is your knowledge? Check that your knowledge and data is correct, up to date, relevant and properly understood. This will impact your decision.

This is, however, not the only choice you have to make in the risk analysis. You also have to decide which of the expected consequences will be affected by your decision

and within what time. To illustrate, we can offer some help from Bertrand Russel's turkey. The turkey is guarded all year round, well fed and cared for. It feels safe and looks sound and satisfied. However, as Thanksgiving or Christmas is closing in, the fate of the turkey is increasingly insecure and the consequences serious until the final act.

RISKOP adds to this research by focusing on the risk situation created by the interaction between people, parts of the organizations (teams), technology/equipment and elements in the environment. This is a multifaceted picture which is not easily calculated by equations. It is crucial to keep in mind at which levels of the organization or between organizations the risk analysis will be implemented. The analysis must be fully understood and be considered useful for the performers of the analysis and utterly accepted by the operators on the deck.

As much as sense making is important, clarity in text and speech is also important to avoid ambiguity and helplessness in performing the operations and reducing risks.

In RISKOP we have seen from our empirical results that good operations are based on *continuous adjustments, adaptations and corrections* by performing teams.

In our efforts to understand risk as a concept and propose how this understanding can be used practically in organizations, we need both of these presented perspectives on risk and safety. Available empirical knowledge will enhance understanding and practical use.



Anchorhandling.
Photo: Jan Roald Jonassen

Risk in a nutshell:

- Probability and consequence adjusted by uncertainty
- Evaluate, clarify and validate all data
- Consider the impact of interaction by people, teams and environment
- Risk is reduced by continuous adjustments, adaption and correction



Anchorhandling.
Photo: Jan Roald Jonassen



Subsea operation.
Photo: Jan Roald Jonassen



ROV in subsea operation.
Photo: Jan Roald Jonassen



Subsea operation.
Photo: Jan Roald Jonassen



Anchorhandling.
Photo: Jan Roald Jonassen

High Reliability Conversations

In our complex world, sizing up risk and making smart choices happens in diverse teams, in multi-team systems, and across organizational boundaries.

Risk conversations often take place under time constraints, involve high stakes, and require the ability of people to create - from their limited individual perspectives - a shared understanding of the big picture. The quality of these conversations matters, and represents an often uncalculated risk.

High reliability (HRO) theory suggests that, in some exceptional organizations, conversations to detect and correct errors flow with greater ease and less defensiveness than one might expect. While HRO theory has identified broad features of a mindful culture, research on HROs has not studied high-stake conversations in sufficient detail to understand how to improve them in action.

As our present risk project draws to a close we invited our colleague Phil McArthur from Action Design, Cambridge, USA to help us reflect on how organizations relate to complexity and risk from a perspective that looks precisely at *the quality of the conversations themselves*. He used a well-known example as a starting point, a film by NBC of the conversations that led up to the fatal decision to launch the Challenger space shuttle.

We invited researchers from Western Norway University of Applied Sciences and executives from our partner companies to the venue and combined insights from HRO theory with an Action Science perspective on organizational learning. The idea was to reflect on conditions for what we might call *high reliability conversations*.

We looked closely at the interaction in the discussions leading up to the launch decision with the help of the


tools presented by Phil. This made us aware that the conversations had an imbalance in favour of *advocacy* (the act of presenting one's own view) over *inquiry* (the act of exploring other people's views). We identified spots in the conversations where warnings were articulated, but not followed. Important data was not discussed. These missed opportunities prevented an otherwise very capable group from developing a shared understanding of information that could guide them away from their disastrous decision.

In *our* group, the example led to a lively debate over how one might notice early signals that an important discussion was heading in the wrong direction.

So, what prevented a group of very smart people from making a better decision? The Challenger team consisted of two sub teams, the NASA executives and the team from the supplier discussing the possible impact of the cold weather on the O-rings on the launch shuttle. To seal the sections of the rocket, so the fuel didn't leak, they used giant rubber bands called O-rings.

The O-rings were critical for a successful launch and may be affected by cold weather. There had been 24 successful flights; however, during 7 of them there had been problems with the O-rings. The NASA team was presented a chart displaying these seven flights spread at both low and high temperatures, but all higher than 50 F degrees. The day of the launch the forecast predicted 29 F (-2 C), but the NASA team did not see any correlation to low temperature.

The chart showing temps at the launch of the 17 flights with no incidents, were never discussed, and although they were



The challenger distaster

On January 28, 1986 the Challenger Shuttle blew up minutes after launch. The night before, top engineers and managers at NASA and at Morton-Thickol spent hours debating whether to launch in cold weather

Question:

What prevented a group of very smart people from making a better decision?

all launched at temperatures above 65 F. The discussion was stuck in imbalance, the Challenger was launched, and the O-rings failed and the shuttle exploded.

What are the lessons from this tragic incident? Conversations can create both aggressiveness and defensiveness

that can impact the result of a conversation. Be aware of the need for balancing advocacy and inquiry.

The other lesson often overlooked: *Risk analysis should not only be based on lessons from failures and mistakes, but include lessons from what is going well; successful operations.*

International and multi-disciplinary collaboration

Risk and safety within petro-maritime and offshore operations is a strategic focus area within the Haugesund campus of The Western Norway University of Applied Sciences. The RISKOP-team has worked within the field during the last four years and is now entering into the final months of the project.



Good quality research is created within the hub of different perspectives, approaches, disciplines, people and nationalities.

Behind from left: Professor Ole Andreas Engen (University of Stavanger), Associate Professor Idar A. Johannessen (Western Norway University of Applied Sciences, WNUAS), Professor Erik Hollnagel (University of Southern Denmark), Associate Professor Erik Mygind du Plessis (WNUAS), Senior Researcher Gunnar Lamvik (Sintef). Front from left: Professor Richard Bagozzi (University of Michigan), Professor Chunyan Xie (WNUAS), PhD Candidate Guro Fjeld (WNUAS), Professor Helen Sampson (University of Cardiff), Lecturer Lene Jørgensen (WNUAS), Senior Researcher Kari Skarholt (Sintef), Professor Rhona Flin (University of Aberdeen) and Professor Jan R. Jonassen (WNUAS). Associate Professor Bjarne Vandeskog (WNUAS) and Professor Silvia Jordan (University of Innsbruck) were not present during the photo session.

Early into the project, the researchers in Haugesund tied researchers from different disciplines, perspectives, institutes and nationalities into the research team including a resource group of five internationally renowned professors and researchers. It proved to be a creative, daring and valuable measure. Researchers from different disciplines, but also different scientific- and methodological perspectives collaborate in the team; organization science, sociology, psychology, safety, social anthropology, market research, qualitative and quantitative perspectives. This broad combination of perspectives and approach-

es is of great importance and is impacting our results in challenging ways.

During a three day workshop in May 2017, the researchers presented drafts of their cooperative works and frameworks for the ongoing research towards finalization of RISKOP. It all went through a constructive process of feedback and discussion, incorporating the different views and approaches represented in the team. This working approach gives researchers intellectual growth and inspiration for the final stage of the project.



Familiarization meetings: Room for improvements?

Familiarization meetings are used to focus the attention of operational staff on board on upcoming tasks and challenges following mobilization of staff and equipment.

They are important arenas for partners to meet and focus on safety issues. Are these meetings utilized to their full potential? Researcher Lene Jørgensen from RISKOP currently investigates this issue within subsea operations. Based on a study of documents, observation of familiarization meetings and interviews, she will produce a report where she, on the basis of current status, will propose improvements for the development of these meetings as a better tool for safety in offshore operations.

Turning the tap

Helen Sampson and Idar A. Johannessen presented work in progress on a methodology article with the working title “Turning on the tap; the benefits of using ‘real life vignettes’ in qualitative research interviews”.

The article draws on three studies, all in maritime settings, that make use of stimulus materials (“vignettes”) based on real examples as ‘conversation pieces’ to start off research interviews. The article explains that researchers showed interviewees real stories of controversial practices (improvisation that deviates from set procedures, corruption) collected during fieldwork both in offshore service shipping and deep sea shipping. This seemed to create confidence that the researchers had done their homework. It gave the informants an opportunity to react specifically to the practices under study while staying free to choose how much they wanted to disclose about themselves. The article discusses the methodological and ethical challenges in putting this methodology to use.

Resilient lifting operations

Erik Mygind du Plessis is investigating offshore lifting operations in connection with the idea of ‘resilience’. Resilience has recently been proposed as a solution to the safety problems in the sector that have arisen during the last three years’ economic downturn.

Through interviews, observations and document studies, Erik will seek to understand what resilience means in this context and what a resilient offshore lifting operation might look like.



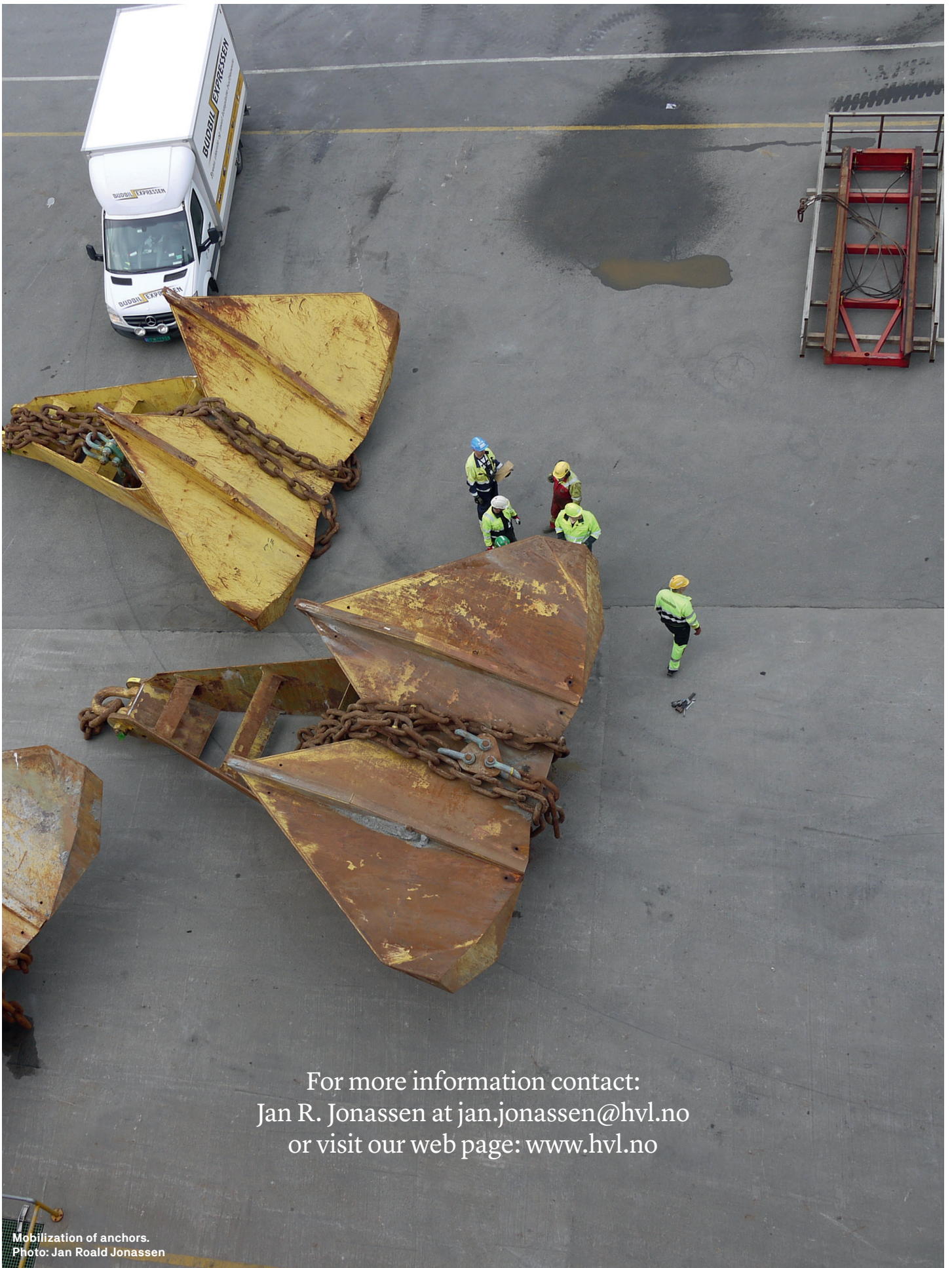


Published articles and book chapters this period

1. **Silvia Jordan, Hermann Mitterhofer & Lene Jørgensen (2016)**, The interdiscursive appeal of risk matrices: Collective symbols, flexibility normalism and interplay of risk and uncertainty, published in *Accounting, Organizations and Society* (2016) 1-22. <http://dx.doi.org/10.1016/j.aos.2016.04.003>
2. **Chunyan Xie, and Sven Haugland (2016)**, Formation of reputation in business markets, *Journal of Business-to-Business Marketing*, 23(1), 25-45. ISSN: 1051-712X (Print), 1547-0628 (Online).
3. **Røyrvik, J., Skarholt, K., Lamvik, G.M. and Jonassen, J.R. (2015)**, The Balance between control and autonomy in Nowakowski, T., Mlynczak, M., Jodejko-Pietruczuk, A. & Werbínska-Wojciechowska, S.: *Safety and reliability*, CRC Press 2015. ISBN 978-1-138-02681-0.
4. **Skarholt, K., Lamvik, G., Antonsen, S., Røyrvik, J. and Jonassen, J.R. (2016)**, Economic crisis in the Norwegian offshore industry: How may it affect safety conditions in offshore operations? In Walls, J., Revie, M. and Bedford, T.: *Risk, Reliability and Safety, Innovating Theory and Practice*, CRC Press/Balkema, Leiden, the Netherlands. ISBN: 978-1-138-02997-2. Download from: <https://brage.bibsys.no/xmlui/handle/11250/2413279>.
5. **Bjarne Vandeskog (2016)**, Arbeidslag-spillet estetik og evnen til å forutse. *Norsk Antropologisk Tidsskrift*, vol. 27 nr. 3-4, s. 226-245, 2016 Universitetsforlaget, ISSN 0802-7285. (The aesthetics of teamwork and the ability to predict).
6. **Chunyan Xie and Kjell Grønhaug (2017)**, "Corporate Identity and Corporate Performance: Conceptual Issues and an Empirical Illustration", *Beta (Scandinavian Journal of Business Research)*, 31(1), 43-64. (ISSN 0801-3322).
7. **Silvia Jordan and Lene Jørgensen: Risk Mapping: Day-to-Day Practices of Risk Work in Inter-organizational Project Management**, chapter 2 in Michael Power (ed.) 2016: *Riskwork, Essays on the Organizational Life of Risk Management*, book Oxford University Press, UK.

Further plans for the RISKOP team:

- Finalize the documentation of risk factors in subsea and anchor operations
- Finalize the analysis of good operations
- Study of resilience in offshore lifting operations
- Improving familiarization meetings
- Study the impact of supervisor support on safety behaviour
- Finalize a study of non-technical skills in bridge officers



For more information contact:
Jan R. Jonassen at jan.jonassen@hvl.no
or visit our web page: www.hvl.no

Mobilization of anchors.
Photo: Jan Roald Jonassen