

**SECOND
WORKSHOP**

Safety and Integrity Management of Operations in Harsh Environments

OCTOBER 22-23, 2014 • ST. JOHN'S • NEWFOUNDLAND AND LABRADOR • CANADA



Asset Integrity Day • October 22, 2014 • Sheraton Hotel
Safety Day • October 23, 2014 • Johnson GEO CENTRE

Partners



Atlantic Canada
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Agence de
promotion économique
du Canada atlantique



**NSERC
CRSNG**



**WOOD GROUP
PSN**



WorleyParsons
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Organizer



SAFETY AND RISK ENGINEERING GROUP

Faculty of Engineering and Applied Science
Memorial University of Newfoundland
www.engr.mun.ca/research/sreg



The Environment...

Operations in harsh conditions have become a necessity as we are pushed more and more into difficult environments. Oil & gas, mining, utility, construction and shipping companies need to know how their operations can safely progress in these challenging conditions.

The Challenges...

Freezing temperatures, extreme winds, corrosive sea spray and remoteness of operations are some of the challenges that need to be addressed to allow advancement into these locations. Solutions need to be evaluated for the impact on both humans and assets to safely implement change and capitalize on these new opportunities.

The Workshop...

Continuing from the success of the 2013 workshop, this year's workshop will bring together industry experts and researchers to share knowledge and experience, and to identify and establish new collaborative research opportunities relevant to the Arctic and other harsh environments. The two-day workshop will focus on two important themes related to the management of natural resource development in harsh and frontier areas, namely Safety and Asset Integrity.

Our Goals...

This workshop will identify and prioritize the risks and challenges for operations and exploration in harsh environments, strategize a plan for solutions and disseminate knowledge and advances in harsh environment safety and asset integrity.

STEERING COMMITTEE

Marco Ahrens
Canship

Shawn Combden
Wood Group PSN

Scott Crosbie
Nalcor Energy

Faisal Khan
Memorial University

Mike Maguire
Husky Energy

Thomas McKeever
StatOil

Steve Mercer
RDC

Greg Naterer
Memorial University

Dan Oldford
ABS

Bonnie O'Rourke
Atlantic Canada Opportunities Agency

Mike Paulin
INTECSEA

Wei Qiu
Memorial University

Charles Randell
C-CORE

Don Stevens
Vale

Welcome Letter



Knowing something and believing in it are quite different. We know that unsafe events can take place; however, we tend to believe that these can't happen to us. Perhaps we all will agree that we need to enhance our understanding and practice with regards to safety and risk management; however, it goes lower in priority when it comes to implementation.

This workshop provides an international platform to share our knowledge on safety, risk and integrity management. Through sharing knowledge we strengthen our belief and take a step closer to developing innovative solutions to prevent failures, incidents and accidents, and thus improving safety and integrity. This is an opportunity to enlighten our understanding and develop a collective action plan to ensure safer designs and operations.

We, the Safety and Risk Engineering Group (SREG) at Memorial University's Faculty of Engineering and Applied Science, dedicate our time, energy and resources to develop novel techniques, investigate modern technologies and generate new knowledge. As dedicated researchers, we challenge ourselves to study applied and practical problems. We are **committed** to making our facilities safer and resilient. We are **connected** to the global network of safety experts in industries, academia and R&D organizations and we are **contributing** to scientific knowledge and developing innovative solution to challenges in safety and risk engineering.

Our geographical location adjoins to our responsibility to dedicate research effort on the safety and integrity issues in harsh environments. The pristine polar environments, isolation and remoteness, deep water, extreme temperatures are all new challenging conditions. The unknowns are monumental compared to our knowledge about these conditions. It is only through sharing our limited knowledge that we can enrich our understanding and develop an action plan to ensure safer and resilient operations.

We welcome you taking a step forward to participate in this workshop, and standing for the cause of making safety and integrity as the first priority both in belief and action. Let us share our successes as well as failure stories for the greater cause. In harsh environments, it is only through going together, we can go farther.

On behalf of the Safety and Risk Engineering Group, I am pleased to welcome you to the workshop. We hope that you enjoy your stay in this beautiful city and greatly benefit from this knowledge-sharing event.

Faisal Khan

Professor & Vale Chair of Process Safety & Risk Engineering
Head, Department of Process Engineering
Faculty of Engineering & Applied Science
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"Safety to System is Health to Human"

SECOND WORKSHOP

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Workshop Program

Day 1 - Asset Integrity OCTOBER 22, 2014 - SHERATON HOTEL			Day 2 - Safety OCTOBER 23, 2014 – JOHNSON GEO CENTRE		
Schedule					
7:30 am – 8:00 am	Registration and Breakfast		Registration and Breakfast		
8:00 am – 8:45 am	Opening Remarks		Morning Keynote 1		
9:00 am – 10:00 am	Morning Keynote		Morning Keynote 2		
10:00 am – 10:15 am	Nutritional Break		Nutritional Break		
10:15 am – 12:30 pm	SESSION 1 DESIGN AND OPERATIONAL INTEGRITY IN HARSH ENVIRONMENTS		SESSION 5 PROCESS, OCCUPATIONAL AND INHERENT SAFETY IN HARSH ENVIRONMENTS		
	SESSION 2 EFFICIENT WINTERIZATION STRATEGIES		SESSION 6 RISK MANAGEMENT		
12:30 pm – 2:00 pm	Lunch Keynote		Lunch Keynote		
2:00 pm – 4:15 pm	SESSION 3 CORROSION PREVENTION AND CONTROL		SESSION 7 HUMAN FACTOR ENGINEERING AND SAFETY CULTURE IN HARSH ENVIRONMENTS		
	SESSION 4 CONDITION MONITORING IN HARSH ENVIRONMENTS		SESSION 8 INNOVATION IN DATA COLLECTION AND REMOTE MONITORING		
4:30 pm – 6:30 pm	Networking Session Non-alcoholic beverages will be provided. Cash bar available.				

Sessions Overview

MORNING TECHNICAL SESSIONS

SESSION 1: DESIGN AND OPERATIONAL INTEGRITY IN HARSH ENVIRONMENTS

Session will aim to identify the unique short- and long-term integrity issues expected while operating in harsh, and remote areas and to explore potential models to assess and address these issues.

SESSION 2: EFFICIENT WINTERIZATION STRATEGIES

Session will focus on the challenges faced in developing efficient winterization strategies; identify innovative approaches to winterization and creativity in implementation.

AFTERNOON TECHNICAL SESSIONS

SESSION 3: CORROSION PREVENTION AND CONTROL

Session will focus on identifying challenges to identification, prediction and prevention of corrosion, and to identify conditions in harsh environments that challenge traditional methodologies.

SESSION 4: CONDITION MONITORING IN HARSH ENVIRONMENTS

Session will discuss the challenges to condition monitoring in harsh environments; new innovation and proven methods.

ASSET
INTEGRITY
OCTOBER 22, 2014
SHERATON HOTEL

MORNING TECHNICAL SESSIONS

SESSION 5: PROCESS, OCCUPATIONAL AND INHERENT SAFETY IN HARSH ENVIRONMENTS

Session aims to increase understanding of the differences faced in process and occupational safety when operating in harsh environments, and will discuss opportunities for inherently safer design.

SESSION 6: RISK MANAGEMENT

Session will examine methodologies to perform the risk assessment and risk prediction for better management when sufficient information is not available including discussion of cross industry communication to aid risk management in harsh environments.

AFTERNOON TECHNICAL SESSIONS

SESSION 7: HUMAN FACTOR ENGINEERING AND SAFETY CULTURE IN HARSH ENVIRONMENTS

Session goal is to identify existing and potential challenges to people working in extreme environments to improve safety and efficiency of operations, and to discuss new strategies to deal with this unique environment.

SESSION 8: INNOVATION IN DATA COLLECTION AND REMOTE MONITORING

Session will discuss new methods of data collection and monitoring in harsh environment to improve operational safety.

SAFETY
OCTOBER 23, 2014
JOHNSON GEO CENTER

Workshop Agenda: Asset Integrity Day

OCTOBER 22, 2014 - SHERATON HOTEL

7:30 am – 8:00 am	Registration and Breakfast (Salon A) Asset Integrity Day Chair: SYED IMTIAZ , MEMORIAL UNIVERSITY	
8:00 am – 8:10 am	Welcome & Safety Note by Workshop Chair FAISAL KHAN , SAFETY AND RISK ENGINEERING GROUP , MEMORIAL UNIVERSITY	
8:10 am – 8:50 am	Welcome and Opening Remarks NOREEN GOLFMAN , PROVOST AND VICE-PRESIDENT (ACADEMIC) , MEMORIAL UNIVERSITY (8:10 AM – 8:20 AM) GREG NATERER , DEAN & WORKSHOP STEERING COMMITTEE CHAIR , MEMORIAL UNIVERSITY (8:20 AM – 8:30 AM) KEN MARTIN , DIRECTOR GENERAL , ATLANTIC CANADA OPPORTUNITIES AGENCY (8:30 AM – 8:40 AM) FAISAL KHAN , SAFETY AND RISK ENGINEERING GROUP , MEMORIAL UNIVERSITY (8:40 AM – 8:50 AM)	
9:00 am – 10:00 am	Morning Keynote DRAGOS RAUTA , INTERTANKO	
10:00 am – 10:15 am	Nutritional Break	
10:15 am – 12:30 pm	SESSION 1 (SALON B)	SESSION 2 (SALON C/D)
	DESIGN AND OPERATIONAL INTEGRITY IN HARSH ENVIRONMENTS FACILITATOR: DARLENE SPRACKLIN-REID	EFFICIENT WINTERIZATION STRATEGIES FACILITATOR: DAVID FUREY
	SCOTT CROSBIE, NALCOR	ELLI LEMBESSIS, ABS
	BUSHRA WAHEED, BC OIL & GAS COMMISSION	PETER BAEN, THERMON
	PREMKUMAR THODI, INTECSEA	KUJALA PENTTI, AALTO UNIVERSITY
	PANEL DISCUSSION	PANEL DISCUSSION
	SCOTT CROSBIE, NALCOR BUSHRA WAHEED, BC OIL & GAS COMMISSION PREMKUMAR THODI, INTECSEA EDDY DE RADEMAEKER, PREVENTION MANAGEMENT INTERNATIONAL BVBA	ELLI LEMBESSIS, ABS PETER BAEN, THERMON KUJALA PENTTI, AALTO UNIVERSITY MING YANG, MEMORIAL UNIVERSITY
12:30 pm – 2:00 pm	Lunch Keynote LUIS GARFIAS , WOOD GROUP INTEGRITY MANAGEMENT	
2:00 pm – 4:15 pm	SESSION 3	SESSION 4
	CORROSION PREVENTION AND CONTROL FACILITATOR: DARLENE SPRACKLIN-REID	CONDITION MONITORING IN HARSH ENVIRONMENTS FACILITATOR: DAVID FUREY
	BINDER SINGH, GENESIS OIL AND GAS	HOSSAM GABER, UOIT
	RAOUF KATTAN, SAFINAH LTD	MING ZUO, UNIVERSITY OF ALBERTA
	FAISAL KHAN, MEMORIAL UNIVERSITY SUSAN CAINES, MEMORIAL UNIVERSITY	ROBERT CONACHEY, ABS
	PANEL DISCUSSION	PANEL DISCUSSION
4:30 pm – 6:30 pm	BINDER SINGH, GENESIS OIL AND GAS RAOUF KATTAN, SAFINAH LTD MATTHEW KETTLE, RDC FAISAL KHAN, MEMORIAL UNIVERSITY	HOSSAM GABER, UOIT MING ZUO, UNIVERSITY OF ALBERTA SYED IMTIAZ, MEMORIAL UNIVERSITY PAUL MITTEN, COMPUSULT LTD.
	Networking Session Non-alcoholic beverages will be provided. Cash bar available.	

Workshop Agenda: Safety Day

OCTOBER 23, 2014 – Johnson GEO CENTRE

7:30 am – 8:00 am	Registration and Breakfast (Reception Hall) Safety Day Chair: SALIM AHMED , MEMORIAL UNIVERSITY	
8:00 am – 10:00 am	Morning Keynote 1 ROMNEY DUFFEY , AECL	
	Morning Keynote 2 ALAN HOLLONDS , EXXONMOBIL	
10:00 am – 10:15 am	Nutritional Break	
10:15 am – 12:30 pm	SESSION 5 (RECEPTION HALL)	SESSION 6 (CELESTIAL GALLERY)
	PROCESS, OCCUPATIONAL AND INHERENT SAFETY IN HARSH ENVIRONMENTS FACILITATOR: DARLENE SPRACKLIN-REID	RISK MANAGEMENT FACILITATOR: DAVID FUREY
	DARYL ATTWOOD , LLOYD'S REGISTER	HOWARD PIKE , (FORMER) CNLOPB
	HAROLD WARNER , DYNAMIC AIR SHELTERS	JORGE BALLELIO , ABS
	VALERIO COZZANI , UNIVERSITÀ DI BOLOGNA	GENSERIK RENIERS , UNIVERSITEIT ANTWERPE
	PANEL DISCUSSION DARYL ATTWOOD , LOYD'S REGISTER HAROLD WARNER , DYNAMIC AIR SHELTERS DAVID RANDELL , WORLEYPARSONS VALERIO COZZANI , UNIVERSITÀ DI BOLOGNA SALIM AHMED , MEMORIAL UNIVERSITY	PANEL DISCUSSION HOWARD PIKE , (FORMER) CNLOPB JORGE BALLELIO , ABS STEVEN SAWHILL , DNV GL - MARITIME PAUL MITTEN , COMPUSULT LTD. GENSERIK RENIERS , UNIVERSITEIT ANTWERPE
12:30 pm – 2:00 pm	Lunch Keynote ANDREW KENDRICK , VARD MARINE INC.	
2:00 pm – 4:15 pm	SESSION 7	SESSION 8
	HUMAN FACTOR ENGINEERING AND SAFETY CULTURE IN HARSH ENVIRONMENTS FACILITATOR: DARLENE SPRACKLIN-REID	INNOVATION IN DATA COLLECTION AND REMOTE MONITORING FACILITATOR: DAVID FUREY
	KATIE AYLWARD , ABS	CHRIS MCGRATH-HARDY , WOOD GROUP
	SCOTT MACKINNON , MEMORIAL UNIVERSITY	DESMOND POWER , C-CORE
	KEITH PIKE , EXXONMOBIL	RAJAGOPALAN SRINIVASAN , INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR
	PANEL DISCUSSION KATIE AYLWARD , ABS SCOTT MACKINNON , MEMORIAL UNIVERSITY KEITH PIKE , EXXONMOBIL FAISAL KHAN , MEMORIAL UNIVERSITY	PANEL DISCUSSION CHRIS MCGRATH-HARDY , WOOD GROUP DESMOND POWER , C-CORE RAJAGOPALAN SRINIVASAN , INDIAN INSTITUTE OF TECHNOLOGY GANDHINAGAR PAUL MITTEN , COMPUSULT LTD.

ENVIRONMENTAL MODELLING AND MANAGEMENT FOR OFFSHORE OPERATIONS

Committed
to effective
management of
environmental
issues in offshore
operations.

Connected to
both academic
and industrial
collaborators,
such as Australian
Maritime College and
American Bureau
of Shipping.

Contributing to
development of
risk-based approaches
for environmental
management and
methodologies for
environmental risk
assessment of
oil/chemical spills in
Arctic environment.

Safety and Risk Engineering Group

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Committed to developing and improving methods of integrity assessments with targeted research and system development.

Connected to real issues through industry and academic partnerships.

- Degradation modelling
- System design
- Inspection and maintenance strategies
- Sustainable operations

Contributing to advancements with important and relevant research.

- Predictive models for material degradation
- Asset integrity modelling with limited information
- Harsh environment inspection
- Risk-based inspections in extreme conditions
- Understanding changes in human factors in extreme conditions

ASSET INTEGRITY MODELLING AND MANAGEMENT

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REAL-TIME MONITORING AND FAULT DIAGNOSIS

Committed to detecting faults early and diagnosing the root cause precisely, and minimizing the process down time and operational risks.

Connected to local mineral processing and offshore drilling industries through the development of a multivariate statistical monitoring tool for the hydromet process and a kick-detection tool for the managed pressure drilling system.

Our intelligent fault diagnosis tool will integrate process knowledge with data informatics and point to the root cause of fault.

Integrates fault consequence with severity of fault and gives a real time indication of risk.

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DYNAMIC RISK ASSESSMENT AND ACCIDENT MODELLING

Modelling accidents
to prevent repetition.

Providing early
warning tools to
predict accidents.

Continuing loss of life
and assets need
research attention.

Dynamic risk assessment
using plant data can
prevent accidents.

Developing tools to
capture knowledge
from plant accident
processes.

Novel methods to
dynamically update
risk from real-time
plant data.

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Committed

Making continuous monitoring of risk a reality.

Ensuring plant safety to attain sustainability.

Connected

Partners with local and global industries, universities and R&D organizations.

Training students from all over the world.

Contributing

Novel methods for dynamic risk assessment, fault detection and early warning system.

Highly qualified personnel to apply advanced methods in industries.

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