



**POAC
2011**



**POAC'11 - 21st International Conference on Port and Ocean Engineering under Arctic Conditions
PROGRAM AT A GLANCE - MONTRÉAL, CANADA**

	July 10, 2011 Sunday	July 11, 2011 Monday				July 12, 2011 Tuesday					
08:30 - 09:00		Registration - 1st Floor Foyer (07:30 opening)				Tourisme Montréal	Registration Desk Open - 1st Floor Foyer (13:00 closing)				Partner Exhibition
09:00 - 09:30			Opening Ceremony					Session 12.2 - Innovations in Shipping	Session 2.4 - Ice-Structure Interaction	Session 13.1 - Engineering Pipelines	
09:30 - 10:00			Keynote Lecture 1					Coffee Break			
10:00 - 10:20			Coffee Break			Coffee Break					
10:20 - 12:00			Session 12.1 - Innovations in Shipping	Session 11.1 - Ports in Cold Climates	Session 2.1 - Ice-Structure Interaction	Session 1.3 - Ice Properties		Session 2.5 - Ice-Structure Interaction	Session 5.2 - Caspian Sea		
12:00 - 13:30			Lunch			Lunch					
13:30 - 15:10			Session 5.1 - Caspian Sea	Session 1.1 - Ice Properties	Session 2.2 - Ice-Structure Interaction	City Tour and Visit to La Sucrierie					
15:10 - 15:30			Coffee Break								
15:30 - 17:10			Session 2.3 - Ice-Structure Interaction	Session 1.2 - Ice Properties	Session 4.1 - Offshore Operations						
17:10 - 18:00	Registration-Zen	POAC 2011 Icebreaker - Zen Room	Free evening in Montréal								
18:00 - 19:00											
19:00 - 20:00											
20:00 - 21:00											
21:00 - 22:30											

Salon Des Saisons A
Salon Printemps
Salon Été
Salon Des Saisons B
Salon Automne

	July 13, 2011 Wednesday				July 14, 2011 Thursday				
08:30 - 09:00	Registration Desk Open - 1st Floor Foyer				Registration Desk Open - 1st Floor Foyer				Partner Exhibition
09:00 - 09:30		Keynote Lecture 2				Keynote Lecture 4			
09:30 - 10:00		Keynote Lecture 3				Keynote Lecture 5			
10:00 - 10:20		Coffee Break				Coffee Break			
10:20 - 12:00		Session 6.1 - ISO 19906	Session 2.6 - Ice-Structure Interaction	Session 7.1 - EER		Session 2.7 - Ice-Structure Interaction	Session 3.1 - Extreme Ice Features	Session 13.2 - Engineering Pipelines	
12:00 - 13:30		Lunch				Lunch			
13:30 - 15:10		Session 6.2 - ISO 19906	Session 9.1 - Ice Forecasting	Session 12.3 - Innovations in Shipping		Session 3.2 - Extreme Ice Features	Session 10.1 - Remote Sensing in Ice		
15:10 - 15:30		Coffee Break				Closing Ceremony			
15:30 - 17:10	Registration Desk Open - 1st Floor Foyer	Session 1.4 - Ice Properties	Session 9.2 - Ice Forecasting	Session 8.1 - Moored Structures					
17:10 - 18:00									
18:00 - 19:00									
19:00 - 20:00		POAC'11 Banquet - L'Atrium and Pierre de Coubertin (18:00 - 22:30)							
20:00 - 21:00									
21:00 - 22:30									

POAC'11- Program Overview

Sunday 17.00 Registration/POAC Icebreaker

Sunday July 10 17.00 -19.00

Room: Zen Room

Monday 9.00 Opening Ceremony

Monday July 11 9.00 – 9.30

Room: Salon Des Saisons A
Chair: Ivana Kubat

Monday 9.30 Keynote Lecture 1

Monday July 11 9.30 – 10.00

Room: Salon Des Saisons A
Chair: Ivana Kubat

MANAGEMENT OF OIL AND GAS ACTIVITIES IN CANADA'S NORTH AND ASSOCIATED RESEARCH

Geneviève Carr

Indian and Northern Affairs Canada

Monday 10.20 Parallel sessions

Paper ID

12.1 INNOVATIONS IN NAVIGATION AND SHIPPING IN ICE-COVERED WATERS

Room: Salon Des Saisons A
Chair: Barb O'Connell

POAC11-088 10.20-10.40 **THE INTERIM RESULTS OF THE LONG-TERM ICE LOADS MONITORING ON THE LARGE ARCTIC TANKER**

Aleksandr Iyerusalimskiy¹, Jaewoong Choi¹, Gunil Park¹, Youngsung Kim², Han Yu³, James St. John⁴

¹ConocoPhillips, Houston, United States

²Samsung Heavy Industries Co. Ltd., South Korea

³ABS, Houston, United States

⁴Science and Technology Corporation, Hampton, United States

POAC11-151 10.40-11.00 **INVESTIGATIONS OF VARIABILITY FOR SHIP NAVIGATION THROUGH THE NORTHWEST PASSAGE, 1982-2010**

Todd D. Mudge¹, David B. Fissel¹, Mar Martínez de Saavedra Álvarez¹, John. R. Marko¹

¹ASL Environmental Sciences Inc, Victoria, Canada

POAC11-157 11.00-11.20 **POLAR VIEW: INNOVATIVE INFORMATION SERVICES TO SUPPORT NAVIGATION IN ICE-INFESTED WATERS**

T.M. Puestow¹, D. Power¹, P. Adlakha¹

¹C-CORE, St. John's, Canada

POAC11-181 11.20-11.40 **ICE RESPONSE MONITORING USING STRUCTURAL MONITORING SYSTEMS**

Geir Sagvolden¹, Karianne Pran¹

¹Light Structures AS, Oslo, Norway

POAC11-108 11.40-12.00 **THE ICE FIELD TESTS OF KOREAN ICEBREAKING RESEARCH VESSEL**

Chun-Ju Lee¹, Seong-Yeob Jeong¹, Hyun-Soo Kim²

¹Maritime & Ocean Engineering Research Institute, Daejeon, Korea

²Inha Technical College, Incheon, Korea

POAC11-082 12.00-12.20 **REMOTE SENSING SUPPORT OF CRUISE VESSELS IN THE ARCTIC**

M. Kapfer¹, T. Hirose¹, J. Bennett¹

¹Noetix Research Inc., Ottawa, Canada

Paper ID

11.1 PORTS IN COLD CLIMATES

Room: Salon Printemps
Chair: Robert Frederking

POAC11-129 10.20-10.40 **ICE ACTION ON A GEOBAG EMBANKMENT IN LANDFAST SEA ICE ON SVALBARD, NORWAY**

Espen Østerås^{1,2}, Jomar Finseth^{1,3}, Knut V. Høyland^{1,2}

¹The University Centre in Svalbard, (UNIS), Spitsbergen, Norway

²The Norwegian University of Science and Technology (NTNU), Trondheim, Norway

³SINTEF, Building and Infrastructure, Trondheim, Norway

POAC'11- Program Overview

- POAC11-086 **MARINE INFRASTRUCTURES IN NUNAVIK AND CLIMATE CHANGES**
 10.40-11.00 Yann Ropars¹, Anick Guimond², Jean-Pierre Savard³
¹Consultants Ropars inc., Saint-Foy, Canada
²Transports Québec, Rouyn-Noranda, Canada
³Ouranos, Montréal, Canada
- POAC11-137 **MICROBIAL INDUCED CORROSION ON A WHARF IN THE CANADIAN ARCTIC**
 11.00-11.20 Harald Kullmann¹, Matthias Graff², Rodney Watson³
¹WorleyParsons Canada Ltd., Vancouver, Canada
²Danfoss A/S, Technology Centre, Nordborg, Denmark
³Department of National Defence, Ottawa, Canada
- POAC11-145 **WATER-ICE ACTIONS ON THE COAL QUAY AT KAPP AMSTERDAM IN SVALBARD**
 11.20-11.40 Aleksey Marchenko¹, Aleksey Shestov¹, Anton Sigitov², Sveinung Løset³
^{1,2}The University Centre in Svalbard, Longyearbyen, Norway
²AGIP KCO, Atyrau, Kazakhstan
³Norwegian University of Science and Technology, Trondheim, Norway
- POAC11-087 **FORECAST OF BEARING CAPACITY REDUCTION AT ROADS AND PORTS DURING THAW SEASON**
 11.40-12.00 Andreas Berglund¹, Tommy Edeskär¹, Sven Knutsson¹
¹Dept. of Civil, Environmental and Natural Resources Eng. Luleå University of Technology, Luleå, Sweden

Paper ID **2.1 ICE-STRUCTURE INTERACTION** **Room:** Salon Été
Chair: Tom Brown

- POAC11-040 **RELIABILITY ANALYSIS OF ICE LOADS ON ARCTIC OFFSHORE STRUCTURES**
 10.20-10.40 Bo Wang¹, Roger Basu¹, Alok Jha², Steve Winterstein²
¹American Bureau of Shipping (ABS), Houston, United States
²MMI Engineering, Oakland, United States
- POAC11-029 **PLATFORM SHAPE AND ICE INTERACTION: A REVIEW**
 10.40-11.00 K. R. Croasdale¹
¹K.R. Croasdale & Associates, Calgary, Canada
- POAC11-027 **PERFORMANCE OF MINIMAL OFFSHORE PLATFORMS IN ICE ENVIRONMENTS**
 11.00-11.20 A.B. Cammaert¹, A.V. Metrikine¹, J.S. Hoving¹
¹Delft University of Technology, Delft, The Netherlands
- POAC11-038 **ICE CRUSHING PRESSURE DISTRIBUTION AGAINST A COMPLIANT STIFFENED PANEL**
 11.20-11.40 Mauri Määtänen¹, Pieti Marjavaara², Sami Saarinen³
¹Aalto University, Finland / NTNU, Trondheim, Norway
²VTT, Espoo, Finland
³Aker Arctic, Helsinki, Finland
- POAC11-158 **PRESSURE-AREA RELATIONSHIPS IN COMPRESSIVE ICE FAILURE: APPLICATION TO MOLIKAQ**
 11.40-12.00 Rocky S. Taylor¹, Ian J. Jordaan^{1,2}
¹C-CORE, St. John's, Canada
²Ian Jordaan and Associates, St. John's, Canada

Monday 13.30 Parallel sessions

Paper ID **5.1 OPERATIONAL EXPERIENCE: LESSONS LEARNED FROM THE CASPIAN SEA** **Room:** Salon Des Saisons A
Chair: George Li

- POAC11-171 **ICE ISSUES RELATING TO THE KASHAGAN PHASE II DEVELOPMENT, NORTH CASPIAN SEA**
 13.30-13.50 Paul Verlaan¹, Ken Croasdale²
¹Shell Development Kashagan, London, United Kingdom
²K. R. Croasdale & Associates Ltd., Calgary, Canada
- POAC11-112 **THE NORTH CASPIAN SEA ICE CONDITIONS AND HOW KEY ICE DATA IS GATHERED**
 13.50-14.10 Rune Nilsen¹, Paul Verlaan²
¹Shell International Exploration and Production, Rijswijk, The Netherlands
²Shell Development Kashagan, London, United Kingdom

POAC'11- Program Overview

POAC11-117 14.10-14.30	OFFSHORE PLATFORMS AND DETERMINISTIC ICE ACTIONS: KASHAGAN PHASE 2 DEVELOPMENT: NORTH CASPIAN SEA Ken Croasdale ¹ , Ian Jordaan ² , Paul Verlaan ³ ¹ K.R. Croasdale & Associates, Calgary, Canada ² Ian Jordaan & Associates, St John's, Canada ³ Shell Development Kashagan, London, United Kingdom
POAC11-133 14.30-14.50	PROBABILISTIC MODELLING OF THE ICE ENVIRONMENT IN THE NORTHEAST CASPIAN SEA AND ASSOCIATED STRUCTURAL LOADS Ian Jordaan ¹ , Paul Stuckey ² , Jim Bruce ² , Ken Croasdale ³ , Paul Verlaan ⁴ ¹ Ian Jordaan & Associates, St John's, Canada ² C-CORE, St. John's, Canada ³ K.R. Croasdale & Associates, Calgary, Canada ⁴ Shell Development Kashagan, London, United Kingdom
POAC11-002 14.50-15.10	ICE ENCROACHMENT IN THE NORTH CASPIAN SEA Richard McKenna ¹ , Paul Stuckey ² , Mark Fuglem ² , Greg Crocker ³ , Dave McGonigal ⁴ , Ken Croasdale ⁵ , Paul Verlaan ⁶ , Ainur Abuova ⁶ ¹ R.F. McKenna & Associates, Wakefield, Canada ² C-CORE, St. John's, Canada ³ Ballicater Consulting, Kingston, Canada ⁴ D. McGonigal, Calgary, Canada ⁵ K.R. Croasdale & Associates, Calgary, Canada ⁶ Shell Development Kashagan, Brentford, Middlesex, United Kingdom

Paper ID	1.1 ICE PROPERTIES	Room: Salon Printemps Chair: Knut Høyland
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POAC11-168 13.30-13.50	VISCOELASTICITY, DAMAGE AND ICE BEHAVIOUR IN COMPRESSION Ian J. Jordaan ^{1,2} , Rocky S. Taylor ¹ ¹ C-CORE, St. John's, Canada ² Ian Jordaan and Associates, St. John's, Canada
POAC11-023 13.50-14.10	DEVELOPMENT OF ICE FAILURE AND YIELD CRITERIA FOR ACCIDENTAL LIMIT STATE DESIGN Ekaterina Kim ¹ , Jørgen Amdahl ¹ , Sveinung Løset ¹ ¹ Norwegian University of Science and Technology, Trondheim, Norway
POAC11-015 14.10-14.30	SHEAR FAULTING AND THE ICE-STRUCTURE INTERACTION PROBLEM Narayana Golding ¹ , Erland M. Schulson ¹ , Carl E. Renshaw ² ¹ Thayer School of Engineering, Dartmouth College, Hanover, United States ² Department of Earth Science, Dartmouth College, Hanover, United States
POAC11-007 14.30-14.50	EXPERIMENTS ON THE RELATION BETWEEN FREEZEBOND AND ICE RUBBLE STRENGTH, PART I: SHEAR BOX EXPERIMENTS Nicolas Serré ^{1,2} , Ada H. V. Repetto-Llamazares ² , Knut V. Høyland ² ¹ NTNU, Department of Civil and Transport Engineering, Høgskoleringen, Norway ² Barlindhaug Consult AS, Tromsø, Norway
POAC11-019 14.50-15.10	EXPERIMENTS ON THE RELATION BETWEEN FREEZE-BONDS AND ICE RUBBLE STRENGTH PART II: FREEZE-BOND EXPERIMENTS AND COMPARISON WITH NUMERICAL SIMULATIONS Ada H. V. Repetto-Llamazares ¹ , Knut V. Høyland ¹ ¹ Norwegian University of Science and Technology (NTNU), Trondheim, Norway

Paper ID	2.2 ICE-STRUCTURE INTERACTION	Room: Salon Été Chair: Karen Muggeridge
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POAC11-004 13.30-13.50	INTEGRATED NUMERICAL ANALYSIS OF ICEBERG COLLISIONS WITH SHIP SIDES Zhenhui Liu ¹ , Jørgen Amdahl ¹ , Sveinung Løset ² ¹ Department of Marine Technology, Norwegian University of Science and Technology, Trondheim (NTNU), Norway ² Department of Civil and Transportation Engineering, Norwegian University of Science and Technology, Trondheim (NTNU), Norway
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POAC'11- Program Overview

POAC11-037 13.50-14.10	NUMERICAL INVESTIGATION OF EFFECT OF CHANNEL CONDITION AGAINST SHIP RESISTANCE IN BRASH ICE CHANNELS Akihisa Konno ¹ , Osamu Saitoh ^{1,2} , Yuuki Watanabe ¹ ¹ Kogakuin University, Tokyo, Japan ² Setsubi Consultants Co., Ltd., Tokyo, Japan
POAC11-041 14.10-14.30	PRODUCTION SHIP RESISTANCE TO ICEBERG IMPACT STUDY S.L. Karlinsky ¹ , V.A. Chernetsov ¹ ¹ PJSC, Central Design Bureau for Marine Engineering "RUBIN", St. Petersburg, Russia
POAC11-035 14.30-14.50	NUMERICAL INVESTIGATION OF THE ICE FORCE DISTRIBUTION AROUND THE SHIP HULL IN LEVEL ICE Junji Sawamura ¹ , Ryouhei Kikuzawa ¹ , Takashi Tachibana ¹ , Masaya Kunigita ¹ ¹ Department of Naval Architecture and Ocean Engineering, Osaka University, Osaka, Japan
POAC11-163 14.50-15.10	NUMERICAL SIMULATION OF SHIPS OPERATING IN LEVEL ICE Biao Su ¹ , Kaj Riska ^{1,2} , Torgeir Moan ¹ ¹ Centre for Ships and Ocean Structures, NTNU, Trondheim, Norway ² ILS Oy, Helsinki, Finland

Monday 15.30 Parallel sessions

Paper ID	2.3 ICE-STRUCTURE INTERACTION	Room: Salon Des Saisons A Chair: Michel Metge
POAC11-165 15.30-15.50	OVERVIEW OF THE MOLIKPAQ MULTI-YEAR ICE LOAD REANALYSIS 2007 JIP Robert Frederking ¹ , Kevin Hewitt ² , Ian J. Jordaan ^{3,4} , Denise Sudom ¹ , Jonathon Bruce ⁴ , Mark Fuglem ⁴ , Rocky S. Taylor ⁴ ¹ Canadian Hydraulics Centre, National Research Council, Ottawa, Canada ² K.J. Hewitt & Associates Ltd., Calgary, Canada ³ Ian Jordaan & Associates Inc., St. John's, Canada ⁴ C-CORE, St. John's, Canada	
POAC11-130 15.50-16.10	RE-EVALUATION OF ICE LOADS AND PRESSURES MEASURED IN 1986 ON THE MOLIKPAQ STRUCTURE Ian Jordaan ^{1,2} , Jonathon Bruce ² , Kevin Hewitt ³ , Robert Frederking ⁴ ¹ Ian Jordaan & Associates Inc., St. John's, Canada ² C-CORE, St. John's, Canada ³ K. J. Hewitt & Associates Ltd., Calgary, Canada ⁴ Canadian Hydraulics Centre, National Research Council of Canada, Ottawa, Canada	
POAC11-149 16.10-16.30	ESTIMATION OF THE PEAK IMPACT LOAD ON THE MOLIKPAQ BY A MULTI-YEAR FLOE ON MAY 12, 1986 BASED ON FLOE DECELERATION Mark Fuglem ¹ , Ian Jordaan ^{1,2} , Jonathon Bruce ¹ ¹ C-CORE, St. John's, Canada ² Ian Jordaan and Associates, St. John's, Canada	
POAC11-134 16.30-16.50	ICE LOADS ON THE MOLIKPAQ at AMAULIGAK I-65 BASED ON GEOTECHNICAL ANALYSES AND RESPONSES Kevin Hewitt ¹ ¹ K.J. Hewitt & Associates Ltd., Calgary, Canada	
POAC11-189 16.50-17.10	ICE LOAD MEASUREMENT ON MOLIKPAQ: METHODOLOGY AND ACCURACY M. Jefferies ¹ , B. Rogers ² , M. Hardy ² , B. Wright ² ¹ Klohn Crippen Berger, Calgary, Canada ² Wright & Associates, Canmore, Canada	
POAC11-058 17.10-17.30	THE EFFECT OF LOW PASS FILTERS IN THE MOLIKPAQ DATA ACQUISITION SYSTEM ON "PHASE LOCK" INTERACTION SIGNALS Paul Spencer ¹ , Tom Morrison ¹ , Mike Jefferies ² ¹ Ausenco Sandwell, Calgary, Canada ² Klohn Crippen Berger, Calgary, Canada	

POAC'11- Program Overview

Paper ID	1.2 ICE PROPERTIES	Room: Salon Printemps Chair: Garry Timco
POAC11-014 15.30-15.50	EXPERIMENTAL INVESTIGATION OF FRICTION COEFFICIENT OF LABORATORY ICE Lennart Fransson ¹ , Aniket Patil ² , Henrik Andren ¹ ¹ Luleå University of Technology, Luleå, Sweden ² Northern Research Institute, Narvik, Norway	
POAC11-016 15.50-16.10	FRICTION MODELLING IN ICE CRUSHING SIMULATION Maria Tikanmäki ¹ , Lasse Makkonen ¹ , Juha Kurkela ¹ ¹ VTI Technical Research Centre of Finland, Espoo, Finland	
POAC11-008 16.10-16.30	FIELD EXPERIMENTS ON ICE-ICE FRICTION Sergiy Sukhorukov ^{1,2} , Sveinung Løset ^{1,2} ¹ Norwegian University of Science and Technology, Trondheim, Norway ² The University Centre in Svalbard (UNIS), Spitsbergen, Norway	
POAC11-148 16.30-16.50	FIELD STUDIES OF SEA WATER AND ICE PROPERTIES IN SVALBARD FJORDS A. Marchenko ¹ , A. Shestov ¹ , E. Karulin ² , E. Morozov ³ , M. Karulina ² , P. Bogorodsky ⁴ , S. Muzylev ³ , D. Onishchenko ⁵ , A. Makshtas ⁴ ¹ The University Centre in Svalbard, Longyearbyen, Norway ² Krylov Ship Building Research Institute, St.-Petersburg, Russia ³ Shirshov Institute of Oceanology of RAS, Moscow, Russia ⁴ Arctic and Antarctic Research Institute, St.-Petersburg, Russia ⁵ Gazprom VNIIGAZ LLC., Moscow, Russia	
POAC11-006 16.50-17.10	A REVIEW ON THE DEVELOPMENT OF THE METHODS OF ICE AND ICE-SOIL REINFORCEMENT N. K. Vasiliev ¹ , A.A. Ivanov ¹ , V.V. Sokurov ¹ , I. N. Shatalina ¹ , K. N. Vasilyev ² ¹ The B. E. Vedenev VNIIG, Saint Petersburg, Russia ² Halcrow Group Ltd., Swindon, United Kingdom	
Paper ID	4.1 OFFSHORE OPERATIONS: LOGISTICS AND ICE MANAGEMENT	Room: Salon Été Chair: Carrie Young
POAC11-050 15.30-15.50	ADVANCES IN ICE MANAGEMENT FOR DEEPWATER DRILLING IN THE BEAUFORT SEA Bill Maddock ¹ , Andy Bush ² , Tom Wojahn ¹ , Theodore Kokkinis ³ , Adel Younan ³ , James R. Hawkins ⁴ ¹ ExxonMobil Development Company, Houston, United States ² SeaRiver Maritime, Houston, United States ³ ExxonMobil Upstream Research Company, Houston, United States ⁴ Imperial Oil Resources Ventures Limited, Calgary Canada	
POAC11-170 15.50-16.10	SHIP EMERGENCY RESPONSE IN POLAR WATERS Adam Broughton ¹ , Marcel LaRoche ² , Mihailo Pavic ¹ , David Prentice ¹ , Des Upcraft ¹ ¹ Lloyd's Register EMEA, London, United Kingdom ² Lloyd's Register North America Inc., Burlington, Canada	
POAC11-190 16.10-16.30	WHEN CERTAINTY IS FAR FROM CERTAIN Adam Chamberlain ¹ ¹ Borden Ladner Gervais LLP, Toronto, Canada	
POAC11-047 16.30-16.50	OPTIMUM LOAD SPACING FOR SAFER TRANSPORTATION ON FLOATING ICE Farzin Keshmiri ¹ ¹ Production Services Network (PSN), Aberdeen, United Kingdom	
POAC11-166 16.50-17.10	ICE MANAGEMENT FOR STEERING OF LARGE ICE FLOES Khalid Soofi ¹ , Peter Noble ¹ , Chris Yetsko ¹ , Denise Sudom ² , Anne Collins ² , Mohamed Sayed ² ¹ ConocoPhillips Company, Houston, United States ² Canadian Hydraulics Centre, National Research Council, Ottawa, Canada	

Monday 17.10 Free Evening in Montreal

Monday July 11 17.10 –

Tuesday 9.00 Parallel sessions

**Paper ID 12.2 INNOVATIONS IN NAVIGATION
AND SHIPPING IN ICE-COVERED
WATERS Room: Salon Des Saisons A
Chair: Marcel LaRoche**

POAC11-005 **AN APPROACH FOR INCLUDING POLAR CLASS VESSELS IN THE CANADIAN ARCTIC
SHIPPING REGULATIONS**

G.W. Timco¹, A. Collins¹, I. Kubat¹

¹Canadian Hydraulics Centre, National Research Council of Canada, Ottawa, Canada

POAC11-093 **RISK-BASED APPROACH FOR STRUCTURAL DESIGN OF ICE-STRENGTHENED
VESSELS NAVIGATING IN THE BALTIC SEA**

Jorma Kaldasaun¹, Pentti Kujala¹

¹Aalto University School of Engineering, Helsinki, Finland

9:40 – 10:00 **PANEL DISCUSSION OF ARCTIC SHIPPING (POLAR CODE) RULES**

Chair: Ross MacDonald

**Paper ID 2.4 ICE-STRUCTURE INTERACTION Room: Salon Printemps
Chair: Mitch Winkler**

POAC11-039 **SPATIAL-TEMPORAL VARIABILITY OF STATIC ICE FORCES**

9:00-9:20 Brian Morse¹, Edward Stander², Alain Côté³, André Taras³, Rock Santerre¹, Yann Prat¹

¹Laval University, Laval, Canada

²State University of New York, Cobleskill, United States

³Institut de recherche d'Hydro-Québec, Varennes, Canada

POAC11-009 **CALCULATION OF ICE ABRASION FOR THE LIGHTHOUSES INSTALLED IN THE GULF OF
BOTHNIA**

9:20-9:40 A. Bekker¹, T. Uvarova¹, E. Pomnikov¹

¹Far Eastern Federal University, Vladivostok, Russia

POAC11-102 **CAN WE ENGINEER ICE RUBBLE FOR PROTECTION OF OFFSHORE PLATFORMS IN THE
BEAUFORT SEA?**

9:40 – 10:00 Anne Barker¹, Garry Timco¹, Paul Spencer²

¹National Research Council of Canada - Canadian Hydraulics Centre, Ottawa, Canada

²Ausenco Sandwell, Calgary, Canada

**Paper ID 13.1 ENGINEERING PIPELINES FOR
SCOUR PROTECTION Room: Salon Été
Chair: Gary Sonnichsen**

POAC11-153 **KEEL-SEABED INTERACTION: NUMERICAL MODELLING FOR SANDS**

9:00-9:20 Ryan Phillips¹, John Barrett¹

¹C-CORE, St. John's, Canada

POAC11-096 **LARGE SCALE INDENTER TEST PROGRAM TO MEASURE SUB GOUGE DISPLACEMENTS**

9:20-9:40 Rodolfo Sancio¹, Ken Been², Juan Lopez²

¹MMI Engineering, Inc., Houston, United States

²Golder Associates Inc., Houston, United States

POAC11-100 **ADVANCED NUMERICAL SIMULATIONS OF ICE GOUGE EVENTS AND IMPLICATIONS
FOR ENGINEERING DESIGN**

9:40-10:00 K. Pike¹, S. Kenny^{1,2}, B. Hawlader¹

¹Memorial University of Newfoundland, St. John's, Canada

²Wood Group Chair in Arctic and Harsh Environments Engineering, Memorial University of Newfoundland, St. John's, Canada

Tuesday 10.20 Parallel sessions

Paper ID	1.3 ICE PROPERTIES	Room: Salon Des Saisons A Chair: Lennart Fransson
POAC11-180 10.20-10.40	OBSERVING THE SNOW AND ICE PROPERTIES OVER THE LABRADOR SHELF WITH HELICOPTER-BORNE GROUND-PENETRATING RADAR, LASER AND ELECTROMAGNETIC SENSORS Simon Prinsenberg ¹ , Ingrid Peterson ² , Scott Holliday ³ , Louis Lalumier ³ ¹ Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth, Canada ² Geosensors Inc., Toronto, Canada ³ Sensors by Design Ltd., Newmarket, Canada	
POAC11-184 10.40-11.00	2010 ARCTIC VOYAGE OF THE ICEBREAKING RESEARCH VESSEL 'ARAON' AND MATERIAL PROPERTIES OF ARCTIC SEA ICE Kyungsik Choi ¹ , Young-Jin Park ¹ , Dae-Hwan Kim ¹ , Jong-Ho Nam ¹ ¹ Korea Maritime University, Busan, Korea	
POAC11-186 11.00-11.20	OIL ENTRAINMENT AND MIGRATION IN LABORATORY-GROWN SALTWATER ICE Jonas Karlsson ^{1,2} , Chris Petrich ² , Hajo Eicken ² ¹ University of Copenhagen, Copenhagen, Denmark ² Geophysical Institute, University of Alaska Fairbanks, Fairbanks, United States	
POAC11-124 11.20-11.40	FIRST-YEAR ICE CONDITIONS FOR OPERATIONS OF THE CANADIAN COAST GUARD POLAR ICEBREAKER Robert Frederking ¹ , Anne Collins ¹ , Ivana Kubat ¹ ¹ Canadian Hydraulics Centre, Ottawa, Canada	
POAC11-179 11.40-12.00	FLATJACK CALIBRATION FOR IN-SITU TESTING M.T. Pennington ¹ , J.P. Dempsey ¹ ¹ Clarkson University, Potsdam, United States	
Paper ID	2.5 ICE-STRUCTURE INTERACTION	Room: Salon Printemps Chair: Dave Kerr
POAC11-034 10.20-10.40	STRUCTURAL RESPONSE TO WIND AT THE CONFEDERATION BRIDGE – PIERS 31 AND 32 J. Susan Tibbo ¹ , Noorma Shrestha ² , Thomas G. Brown ² ¹ Chevron Canada, Calgary, Canada ² University of Calgary, Calgary, Canada	
POAC11-028 10.40-11.00	THE STUDY OF RELATIONSHIP BETWEEN ICE GEOMETRIC CHARACTERISTICS AND THEIR EFFECT ON ICE LOAD Noorma Shrestha ¹ , Thomas G. Brown ¹ , Derek C. Mayne ¹ ¹ University of Calgary, Calgary, Canada	
POAC11-011 11.00-11.20	DETAILED PRESSURE DISTRIBUTION ANALYSIS OF A CONFEDERATION BRIDGE PIER Dhruva Tripathi ¹ , Derek C. Mayne ¹ , Thomas G. Brown ¹ ¹ University of Calgary, Calgary, Canada	
POAC11-103 11.20-11.40	POTENTIAL FOR OIL AND GAS PROJECTS IN THE NEW OIL AND GAS PROVINCE SHARED BETWEEN RUSSIA AND NORWAY Maria Bulakh ^{1,2} , Ove T Gudmestad ¹ , Anatoly B Zolotukhin ^{1,2} ¹ University of Stavanger, Stavanger, Norway ² Gubkin State University of Oil and Gas, Moscow, Russia	
POAC11-147 11.40-12.00	CHARACTERISTICS OF ICE DRIFT IN THE WESTERN BARENTS SEA RECONSTRUCTED BY THE DATA OF ICE TRACKERS DEPLOYED ON DRIFTING ICE OF THE BARENTS SEA IN 2008 AND 2010 Aleksy Marchenko ¹ , Beate Kvamstad ² , Kay Fjørtoft ² , Knut Hoyland ¹ , Dmitry Brazhnikov ³ ¹ The University Centre in Svalbard, Longyearbyen, Norway ² MARINTEK e-Maritime, Trondheim, Norway ³ State Oceanography Institute, Moscow, Russia	

POAC'11- Program Overview

Paper ID	5.2 OPERATIONAL EXPERIENCE: LESSONS LEARNED FROM THE CASPIAN SEA	Room: Salon Été Chair: George Li
POAC11-003 10.20-10.40	MODELLING OF ICE RUBBLE ACCUMULATIONS IN THE NORTH CASPIAN SEA Richard McKenna ¹ , Dave McGonigal ⁴ , Paul Stuckey ² , Greg Crocker ³ , Bob Marcellus ⁷ Ken Croasdale ⁵ , Paul Verlaan ⁶ , Ainur Abuova ⁶ ¹ R.F. McKenna & Associates, Wakefield, Canada ² C-CORE, St. John's, Canada ³ Ballicater Consulting, Kingston, Canada ⁴ D. McGonigal, Calgary, Canada ⁵ K.R. Croasdale & Associates, Calgary, Canada ⁶ Shell Development Kashagan, Brentford, United Kingdom ⁷ CMEL, Spencerville, Canada	
POAC11-118 10.40-11.00	SOME OBSERVATIONS OF ICE FEATURES IN THE NORTH CASPIAN SEA Greg Crocker ¹ , Avron Ritch ² , Rune Nilsen ³ ¹ Ballicater Consulting Ltd., Kingston, Canada ² Avron Ritch Consulting Ltd, Vancouver, Canada ³ Shell International Exploration and Production, Rijswijk, The Netherlands	
POAC11-052 11.00-11.20	ICE GOING CAPABILITY OF A SMALL UNCONVENTIONAL VESSEL IN THE KASHAGAN FIELD L. Cok ¹ , K.E., Sazonov ² , V.A. Belyashov ² , V.M. Shaposhnikov ² , A.B. Nesterov ² , Putorti ³ ¹ Navalprogetti S.r.l., Trieste, Italy ² E., Krylov Shipbuilding Research Institute, St. Petersburg, Russia ³ Agip KCO, Atyrau, Kazakhstan	
POAC11-056 11.20-11.40	INVESTIGATION OF THE ICE REGIME OF THE EASTERN PART OF THE CASPIAN WITHIN BACKGROUND ECOLOGICAL INVESTIGATION PROGRAM AT YUZHNY JAMBAY-YUZHNY ZABURUNJE E. Ayazbaev ¹ , P.I.Buharitsin ² ¹ NPC Mekensak, Kazakhstan ² Astrakhan forwarding base of Institute of water problems of the Russian Academy of Sciences, Astrakhan, Russia	
POAC11-055 11.40-12.00	ICE CONDITIONS ON THE LOWER VOLGA AND THE NORTH-CASPIAN SEA DURING THE MODERATE WINTER OF 2009-2010 P.I.Buharitsin ¹ ¹ Astrakhan forwarding base of Institute of water problems of the Russian Academy of Sciences, Astrakhan, Russia	

Tuesday 13.30 City Tour and visit to La Sucrierie

Tuesday July 12 13.30 –22.00 Buses will leave from the Omni Hotel

POAC'11- Program Overview

Wednesday 9.00 Keynote Lecture 2

Wednesday July 13 9.00 – 9.30

Room: Salon Des Saisons A

Chair: Anne Barker

YEAR ROUND ARCTIC OPERATIONS

Tim Keane

FEDNAV Limited, Montreal, Canada

Wednesday 9.30 Keynote Lecture 3

Wednesday July 13 9.30 – 10.00

Room: Salon Des Saisons A

Chair: Anne Barker

ISO 19906 - AN INTERNATIONAL STANDARD FOR ARCTIC OFFSHORE STRUCTURES

W. Spring¹, R. F. McKenna², G.A.N. Thomas³, D. Blanchet⁴

¹ Bear Ice Technology, Inc., Dallas, United States

² R. F. McKenna and Associates, Wakefield, Canada

³ BP Exploration Operating Company Ltd, Sunbury, United Kingdom

⁴ BPXA Alaska, Arcadia, United States

Wednesday 10.20 Parallel sessions

Paper ID

6.1 ISO 19906 ARCTIC OFFSHORE STRUCTURES: SCOPE AND RATIONALE

Room: Salon Des Saisons A

Chair: Walt Spring

POAC11-142
10.20-10.40

ISO 19906: BEARING CAPACITY OF ICE AND ICE ROADS

Dan Masterson¹, Sveinung Løset^{2,3}

¹ Chevron Canada Resources, Calgary, Canada

² Norwegian University of Science and Technology, Trondheim, Norway

³ The University Centre in Svalbard, Longyearbyen, Norway

POAC11-155
10.40-11.00

ISO 19906 – IMPLICATIONS FOR ARCTIC OFFSHORE ESCAPE, EVACUATION AND RESCUE

J. Poplin¹, F. Bercha², C. Brummelkamp³, D. Dickins⁴, S. Knight⁵, M. Mansurov⁶, M. Mørland⁷, D. Onshuus⁸, V. Santos-Pedro⁹, A. Simões Re¹⁰, G. Timco¹¹

¹ ExxonMobil Development Company, Houston, United States

² Bercha Group, Calgary, Canada

³ Shell Upstream International, The Hague, The Netherlands

⁴ DF Dickins Associates, La Jolla, United States

⁵ Gardin-Haag B.V., The Hague, The Netherlands

⁶ Gazprom VNNIGAZ, Moscow, Russia

⁷ Statoil ASA, Oslo, Norway

⁸ Dag K. Onshuus, Drammen, Norway

⁹ Transport Canada, Ottawa, Canada

¹⁰ NRC Institute for Ocean Technology, St. John's, Canada

¹¹ NRC Canadian Hydraulics Center, Ottawa, Canada

POAC11-064
11.00-11.20

DATA FOR CRUSHING FORMULA

T. Kärnä¹, D.M. Masterson²

¹ Karna Research and Consulting, Helsinki, Finland

² Chevron Canada Limited, Calgary, Canada

POAC11-063
11.20-11.40

ISO 19906 ICE CRUSHING LOAD DESIGN EXTENSION FOR NARROW STRUCTURES

Mauri Määtänen¹, Tuomo Kärnä²

¹ Aalto University, Espoo, Finland / NTNU, Trondheim, Norway

² Karna Research and Consulting, Helsinki, Finland

POAC11-065
11.40-12.00

ISO 19906 ANNEX B – DESCRIPTION AND USE

W. Spring¹, G. Timco², Y. Mironov³, C. J Shaw⁴

¹ Bear Ice Technology, Inc., Dallas, United States

² NRC Canadian Hydraulics Center, Ottawa, Canada

³ Arctic and Antarctic Research Institute, Saint Petersburg, Russia

⁴ Shell (UK) Exploration and Production, Aberdeen, United Kingdom

POAC'11- Program Overview

2.6 ICE-STRUCTURE INTERACTION

Room: Salon Printemps
Chair: Dmitri Matskevitch

- POAC11-024
10.20-10.40 **INTRODUCTION OF ICE LOADS IN OVERALL SIMULATION OF OFFSHORE WIND TURBINES**
Jaakko Heinonen¹, Sebastian Hetmanczyk², Michael Strobel²
¹VTI Technical Research Centre of Finland, Espoo, Finland
²Fraunhofer Institute for Wind Energy and Energy System Technology (IWES), Bremerhaven, Germany
- POAC11-025
10.40-11.00 **ICE INDUCED VIBRATION IMPLEMENTATION OF MÄÄTTÄNEN MODEL AND DEVELOPMENT OF DESIGN SUPPLEMENTS**
Harsh Nandan¹, Adel H. Younan², Lu Deng²
¹Virginia Polytechnic Institute and State University, Blacksburg, United States
²ExxonMobil Upstream Research Company, Houston, United States
- POAC11-125
11.00-11.20 **AN INSIDE LOOK AT ICE-CRUSHING INDUCED VIBRATION AND LOCK-IN**
R.E. Gagnon¹
¹Institute for Ocean Technology, National Research Council of Canada, St. Johns, Canada
- POAC11-030
11.20-11.40 **CRITERION OF ICE INDUCED SELF EXCITED VIBRATION**
Fengwei Guo¹, Qianjin Yue¹
¹State Key Laboratory of Structural Analysis for Industrial Equipment Dalian University of Technology, Dalian, China
- POAC11-031
11.40-12.00 **ICE INDUCED VIBRATIONS OF FLEXIBLE OFFSHORE STRUCTURES: THE EFFECT OF LOAD RANDOMNESS, HIGH ICE VELOCITIES AND HIGHER STRUCTURAL MODES**
H. Hendrikse¹, G.L. Kuiper², A.V. Metrikine¹
¹Delft University of Technology, Delft, The Netherlands
²Shell Global Solutions International B.V., Rijswijk, The Netherlands

Paper ID

7.1 EER FOR ICE-COVERED WATERS

Room: Salon Été
Chair: Antonio Simões Ré

- POAC11-070
10.20-10.40 **AN OVERVIEW OF RECENT PROJECTS TO STUDY THERMAL PROTECTION IN LIFERAFTS, LIFEBOATS AND IMMERSION SUITS**
L. Mak^{1,6}, M.B. DuCharme^{2,6}, B. Farnworth^{3,6}, E.H. Wissler^{4,6}, R. Brown^{5,6}, A. Kuczora^{1,6}
¹National Research Council Canada, Institute for Ocean Technology (NRC-IOT), St. John's, Canada
²Defence R&D, Toronto, Canada
³Helly Hansen, Dartmouth, Canada
⁴University of Texas, Austin, United States
⁵Marine Institute Offshore Safety and Survival Centre, St. Johns, Canada
⁶Maritime and Arctic Survival Scientific and Engineering Research Team (MASSERT)
- POAC11-156
10.40-11.00 **PERFORMANCE MEASUREMENTS OF THE EFFECT OF SIMULATOR TRAINING ON NOVICE OPERATORS IN SIMULATED ICE CONDITIONS.**
Stephanie Power MacDonald¹, Scott MacKinnon¹, Antonio Simões Ré², Jonathan Power²
¹Memorial University, St. John's, Canada
²Institute for Ocean Technology, St. John's, Canada
- POAC11-143
11.00-11.20 **OCCUPANT HABITABILITY WITHIN A TOTALLY ENCLOSED MOTOR PROPELLED SURVIVAL CRAFT**
Andrew Baker¹, António Simões Ré², Jonathan Power², Scott N. MacKinnon¹
¹Memorial University, St. John's, Canada
²National Research Council - Institute for Ocean Technology, St. John's, Canada
- POAC11-116
11.20-11.40 **SEASONAL STRATEGIES FOR EVACUATION FROM OFFSHORE STRUCTURES IN THE BEAUFORT SEA**
Anne Barker¹, Garry Timco¹, Brian Wright²
¹National Research Council of Canada - Canadian Hydraulics Centre, Ottawa, Canada
²B. Wright and Associates Ltd., Canmore, Canada
- POAC11-174
11.40-12.00 **KEY CONSIDERATIONS RELATED TO THE USE OF SUPPORT VESSELS FOR PERSONNEL EVACUATION FROM OFFSHORE STRUCTURES IN THE BEAUFORT SEA**
B. Wright¹, R. Browne², G. Timco³, A. Barker³
¹B. Wright & Associates Ltd., Canmore, Canada
²R. P. Browne Marine Ltd., Qualicum Beach, Canada
³Canadian Hydraulics Centre, National Research Council of Canada, Ottawa, Canada

POAC'11- Program Overview

- POAC11-160 **FIELD TRIALS OF A LIFEBOAT IN ICE AND OPEN WATER CONDITIONS**
 12.00-12.20 A. Simões Ré¹, B. Veitch², A. Kuczora¹, A. Barker³, D. Sudom³, P. Gifford¹
¹Institute for Ocean Technology- National Research Council, St. John's, Canada
²University of Newfoundland, St. John's, Canada
³Canadian Hydraulics Centre-National Research Council, Ottawa, Canada

Wednesday 13.30 Parallel sessions

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| Paper ID | <p>6.2 ISO 19906 ARCTIC OFFSHORE STRUCTURES: SCOPE AND RATIONALE</p> <p>POAC11-059 COMPARISON OF ICE LOAD CALCULATIONS USING ISO 19906, CSA, API AND SNIP
 13.30-13.50 D.M. Masterson¹, J. Susan Tibbo¹
 ¹Chevron Canada Resources, Calgary, Canada</p> <p>POAC11-057 ICE MANAGEMENT AND OPERATIONAL STRATEGY FOR FLOATERS IN ICE
 13.50-14.10 Costas Makrygiannis¹, Richard McKenna², Brian Wright³, Tore Sildnes⁴, Wim Jolles⁵, Morten Mørland⁶, Roger Basu⁷, Norm Allyn⁸
 ¹Petoro AS, Stavanger, Norway
 ²R.F. McKenna & Associates, Wakefield, Canada
 ³B. Wright Associates, Canmore, Canada
 ⁴DnV, Høvik, Norway
 ⁵Jolmar, Den Haag, The Netherlands
 ⁶Statoil, Oslo, Norway
 ⁷ABS, Houston, United States
 ⁸Worley Parsons, North Vancouver, Canada</p> <p>POAC11-062 THE NEW ISO19906 STANDARD AND RELATED ARCTIC ACTIVITIES AT DNV
 14.10-14.30 P.O. Moslet¹, O.T. Gudmestad², T. Sildnes¹, E. Sæbø¹
 ¹Det Norske Veritas, DNV, Høvik, Norway
 ²University of Stavanger, Stavanger, Norway</p> <p>POAC11-060 MOVING ON FROM ISO 19906: WHAT OUGHT TO FOLLOW?
 14.30-14.50 Andrew Palmer¹
 ¹Centre for Offshore Research and Engineering, National University of Singapore, Singapore</p> <p>POAC11-079 THE POTENTIAL OF SATELLITE EARTH OBSERVATION OF ICE CONDITIONS IN SUPPORTING ISO 19906
 14.50-15.10 Kim Partington¹, Nicolas Fournier², Mitchell Winkler³
 ¹Polar Imaging Limited, Andover, United Kingdom
 ²Shell International Exploration and Production, Rijswijk, The Netherlands
 ³Shell International Exploration and Production, Houston, United States</p> | <p>Room: Salon Des Saisons A
 Chair: Graham Thomas</p> |
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| Paper ID | <p>9.1 ICE FORECASTING</p> <p>POAC11-173 LONG TERM BALTIC SEA ENSEMBLE FORECASTING
 13.30-13.50 Antti Westerlund¹, Byoung Woong An¹, Tapani Stipa¹
 ¹Finnish Meteorological Institute, Helsinki, Finland</p> <p>POAC11-135 A CONCEPTUAL FUZZY LOGIC MODEL TO ESTIMATE SHIP SCALE ICE COMPRESSION HAZARD
 13.50-14.10 Tarmo Kõuts¹, Madis-Jaak Lilover¹
 ¹Tallinn University of Technology, Tallinn, Estonia</p> <p>POAC11-139 OBSERVATIONS OF SHIPS IN COMPRESSIVE ICE
 14.10-14.30 Hanna Leisti¹, Kristjan Kaups², Jonni Lehtiranta³, Mikael Lindfors¹, Mikko Suominen³, Mikko Lensu³, Jari Haapala³, Kaj Riska¹, Tarmo Kouts⁴
 ¹ILS Oy, Helsinki, Finland
 ²Aalto University, Espoo, Finland
 ³Finnish Meteorological Institut, Helsinki, Finland
 ⁴Tallinn University of Technology, Tallinn, Estonia</p> | <p>Room: Salon Printemps
 Chair: Mohamed Sayed</p> |
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POAC'11- Program Overview

POAC11-084 14.30-14.50	A MODIFIED DISCRETE ELEMENT MODEL FOR SEA ICE DYNAMICS Shunying Ji ¹ , Anliang Wang ¹ , Baohui Li ² , Yu Liu ² , Hai Li ² ¹ Department of Engineering Mechanics, Dalian University of Technology, Dalian, China ² National Marine Environment Forecast Centre, Beijing, China	
POAC11-078 14.50-15.10	THE INFLUENCE OF SOLAR ACTIVITY FLUCTUATIONS ON LONG-TERM CLIMATIC EVENTS IN THE NORTH-CASPIAN REGION FOR THE PERIOD BEFORE 2017 Petr Buharitsin ¹ , A.N. Andreev ² ¹ Institute Of Hydro Problem, RAS & Astrakhan State Technical University, Astrakhan, Russia ² Hydrometeorological centre of the Caspian fleet, Astrakhan, Russia	
Paper ID	12.3 INNOVATIONS IN NAVIGATION AND SHIPPING IN ICE-COVERED WATERS	Room: Salon Été Chair: Roger Basu
POAC11-152 13.30-13.50	ICE HAZARD RADAR Barbara O'Connell ¹ ¹ Canadian Coast Guard, Ottawa, Canada	
POAC11-089 13.50-14.10	SYNTHETIC APERTURE RADAR BASED ICE AND ICEBERG MONITORING IN SUPPORT OF TACTICAL OPERATIONS Desmond Power ¹ , Kim Partington ² , Nick Walker ³ ¹ C-CORE, St. John's, Canada ² Polar Imaging Limited, Andover, United Kingdom ³ eOsphere, West Woodhay, United Kingdom	
POAC11-136 14.10-14.30	CHARACTERIZATION OF PRESSURED ICE THREAT TO SHIPPING Ivana Kubat ¹ , David Watson ¹ , Mohammed Sayed ¹ ¹ National Research Council of Canada, Canadian Hydraulics Centre, Ottawa, Canada	
POAC11-138 14.30-14.50	A SHIP MANOEUVRING IN ICE MODELING SOFTWARE OSIS-IHI Michael Lau ¹ ¹ National Research Council of Canada, Institute for Ocean Technology, St. John's, Canada	
POAC11-092 14.50-15.10	DEVELOPMENT OF PREDICTION METHODS FOR ICE GOING SHIPS BASED ON NEURAL NETWORKS Nils Reimer ¹ ¹ The Hamburg Ship Model Basin, Hamburg, Germany	

Wednesday 15.30 Parallel sessions

Paper ID	1.4 ICE PROPERTIES	Room: Salon Des Saisons A Chair: Ian Jordaan
POAC11-169 15.30-15.50	THE ROLE OF SPALLING FRACTURE IN SCALE EFFECT IN COMPRESSIVE ICE FAILURE Rocky S. Taylor ¹ , Ian J. Jordaan ^{1,2} ¹ C-CORE, St. John's, Canada ² Ian Jordaan and Associates, St. John's, Canada	
POAC11-021 15.50-16.10	REVIEW IN EXPERIMENTAL STUDIES ON FREEZE-BONDS Ada H. V. Repetto-Llamazares ¹ , Knut V. Høyland ¹ ¹ Norwegian University of Science and Technology (NTNU), Trondheim, Norway	
POAC11-187 16.10-16.30	MODELLED BULK SALINITY OF GROWING FIRST-YEAR SEA ICE AND IMPLICATIONS FOR ICE PROPERTIES IN SPRING Chris Petrich ^{1,2} , Pat Langhorne ¹ , Hajo Eicken ² ¹ Department of Physics, University of Otago, Dunedin, New Zealand ² Geophysical Institute, University of Alaska Fairbanks, Fairbanks, United States	
POAC11-013 16.30-16.50	ANALYSIS OF THE PROBLEM OF SATURATION OF ICE WITH AIR BUBBLES Vadim K. Goncharov ¹ , Natalia Yu. Klementieva ² , Jian-min Qin ³ ¹ Department of Oceantechnics and Marine Technology, St.-Petersburg State Marine Technical University, Saint-Petersburg, Russia ² Ice Laboratory, Krylov Shipbuilding Research Institute, Saint-Petersburg, Russia ³ Ministry of Education Key Laboratory of Advanced Transducers and Intelligent Control Systems, Taiyuan University of Technology, Shanxi, China	

POAC'11- Program Overview

- POAC11-140 **EXPERIMENTAL STUDY ON THE POROSITY EFFECT ON THE UNIAXIAL COMPRESSIVE STRENGTH OF BOHAI SEA ICE**
 16.50-17.10 Zhijun Li¹, Limin Zhang¹, Peng Lu¹, Guangwei Li¹, Matti Leppäranta²
¹State Key Laboratory of Coastal and Offshore Engineering, Dalian University of Technology, Dalian, China
²Department of Physics, Helsinki University, Helsinki, Finland

Paper ID **9.2 ICE FORECASTING**

Room: Salon Printemps

Chair: Mohamed Sayed

- POAC11-072 **ON A NEW NUMERICAL SCHEME FOR ICE DYNAMICS MODELS**
 15.30-15.50 Robert S Pritchard¹, Bruno Tremblay²
¹IceCasting, Inc, San Rafael, United States
²McGill University, Montreal, Canada
- POAC11-075 **ARCTIC ICE EXTENT FORECASTING USING THE UKMO GLOSEA4 SEASONAL PREDICTION SYSTEM**
 15.50-16.10 K.A. Peterson¹, A. Arribas¹, A. McLaren¹, H. Hewitt¹, M. Gordon¹
¹Hadley Centre, UK Met Office, Exeter, United Kingdom
- POAC11-114 **THE INCORPORATION OF AN OCEAN TEMPERATURE PROFILE INTO AN EXISTING ICEBERG DETERIORATION MODEL**
 16.10-16.30 S. E. Bruneau¹, E. G. Manning¹, G. Crocker.²
¹Faculty of Engineering and Applied Science, Memorial University of Newfoundland, St. John's, Canada
²Ballicater Consulting Limited, Kingston, Canada
- POAC11-076 **EVALUATION OF THE CONCEPTS SEA ICE FORECASTS**
 16.30-16.50 Gregory C. Smith¹, Christiane Beaudoin¹, Alain Caya¹, Mark Buehner¹, Francois Roy², Fraser Davidson³, Jennifer Wells³, Tom Carrieres⁴, Hal Ritchie⁵, Youyu Lu⁶
¹Meteorological Research Division, Environment Canada, Dorval, Canada
²Canadian Meteorological Centre, Environment Canada, Dorval, Canada
³Northwest Atlantic Fisheries Centre, Fisheries and Oceans Canada, St. Johns, Canada
⁴Canadian Ice Service, Environment Canada, Ottawa, Canada
⁵Meteorological Research Division, Environment Canada, Dartmouth, Canada
⁶Bedford Institute of Oceanography, Fisheries and Oceans Canada, Bedford, Canada

Paper ID **8.1 MOORED STRUCTURES IN ICE-COVERED WATERS**

Room: Salon Été

Chair: Sveinung Løset

- POAC11-123 **EXPERIENCES AT HSVA WITH MODEL TESTING OF MOORED STRUCTURES IN ICE-COVERED WATERS**
 15.30-15.50 Karl-Ulrich Evers¹, Peter Jochmann¹
¹Hamburg Ship Model Basin (HSVA), Hamburg, Germany
- POAC11-146 **WATER-ICE ACTIONS ON FLOATING PLASTIC JETTY IN SVALBARD**
 15.50-16.10 Aleksey Marchenko¹, Kjetil Bråten²
¹The University Centre in Svalbard, Longyearbyen, Norway
²Port of Longyearbyen, Longyearbyen, Norway
- POAC11-176 **NUMERICAL SIMULATIONS OF MOORED STRUCTURES IN ICE: INFLUENCE OF VARYING ICE PARAMETERS**
 16.10-16.30 Basile Bonnemaire¹, Trine Lundamo¹, Nicolas Serré^{1,2}, Arnt Fredriksen^{1,2}
¹Barlindhaug Consult, Tromsø, Norway
²Norwegian University of Science and Technology (NTNU), Trondheim, Norway
- POAC11-106 **SIMULATION METHODOLOGY FOR ASSESSING SEA ICE DOWNTIME OF A FLOATING PLATFORM**
 16.30-16.50 Basile Bonnemaire¹, Trond Sagerup¹, Trine Lundamo¹, Arnt Fredriksen¹, Pavel Liferov², Guillaume Le Marechal²
¹Barlindhaug Consult, Tromsø, Norway
²Shtokman Development AG, Paris, France

Wednesday 18.00 POAC 11 Banquet

Wednesday July 13 18.00 – 22.30

Room: L'Atrium and Pierre de Courbertin



POAC'11- Program Overview

Thursday 9.00 Keynote Lecture 4

Thursday July 14 9.00 – 9.30

Room: Salon Des Saisons A

Chair: Ivana Kubat

POLES APART - A TALE OF TWO EARLY 20TH CENTURY EXPEDITIONS TO THE ENDS OF THE EARTH

Peter Noble

ConocoPhillips, Houston, United States

Thursday 9.30 Keynote Lecture 5

Thursday July 14 9.30 – 10.00

Room: Salon Des Saisons A

Chair: Ivana Kubat

ARCTIC OFFSHORE FIELD DEVELOPMENTS IN DEEPER EURASIAN WATERS

Sveinung Løset

Centre for Sustainable Arctic Coastal and Marine Technology, Norwegian University of Science and Technology, Trondheim, Norway

Thursday 10.20 Parallel sessions

Paper ID **2.7 ICE-STRUCTURE INTERACTION** **Room:** Salon Des Saisons A
Chair: Richard McKenna

POAC11-022 **PHENOMENA BEHIND PEAK LOADS ON INCLINED STRUCTURE DURING A SIMULATED**
10.20-10.40 **ICE PILE-UP PROCESS**

Jani Paavilainen¹, Jukka Tuhkuri¹, Arttu Polojärvi¹

¹Aalto University, School of Engineering, Espoo, Finland

POAC11-036 **DEVELOPMENT OF A NUMERICAL SIMULATION FOR ROTATING AND SLIDING OF THE**
10.40-11.00 **ICE FLOES ALONG A SHIP HULL**

Junji Sawamura¹, Takashi Tachibana¹

¹Department of Naval Architecture and Ocean Engineering, Osaka University, Osaka, Japan

POAC11-172 **NUMERICAL ASSESSMENT FOR STATIONARY STRUCTURE (KULLUK) IN MOVING**
11.00-11.20 **BROKEN ICE**

J. Wang¹, A. Derradji-Aouat¹

¹Institute for Ocean Technology, National Research Council, St. John's, Canada

POAC11-032 **THEORETICAL AND EXPERIMENTAL INVESTIGATIONS OF LEVEL ICE**
11.20-11.40 **INTERACTION WITH FOUR-LEGGED STRUCTURES**

Marina M. Karulina¹, Karl N. Shkhinek², Graham A.N. Thomas³

¹Krylov Shipbuilding Research Institute, Saint Petersburg, Russia

²Saint Petersburg State Polytechnical University, Saint Petersburg, Russia

³BP Exploration Operating Company Limited, Sunbury-on-Thames, United Kingdom

POAC11-033 **THREE DIMENSIONLESS INDEPENDENT PARAMETERS TO FULLY DESCRIBE AND**
11.40-12.00 **ESTIMATE DIMENSIONLESS ICE-INDUCED PRESSURES ON VERTICAL STRUCTURES**

Aaruun V. M. Arunachalam¹

¹College of the North Atlantic, Burin Campus, Burin-Bay Arm, Canada

POAC11-085 **STRESS CONCENTRATION IN FLOATING ICE WITH A SLOTTED-SHAPE OPENING**
12.00-12.20 **Farzin Keshmiri¹**

¹Wood Group PSN Company Ltd., Aberdeen, United Kingdom

Paper ID **3.1 EXTREME ICE FEATURES** **Room:** Salon Printemps
Chair: Michelle Johnson

POAC11-164 **ANALYSIS OF FIRST-YEAR AND MULTI-YEAR SEA ICE RIDGE PROPERTIES**
10.20-10.40

Denise Sudom¹, Garry Timco¹, Bjørnar Sand², Lennart Fransson³

¹Canadian Hydraulics Centre, National Research Council, Ottawa, Canada

²Norut Northern Research Institute, Narvik, Norway

³Luleå University of Technology, Luleå, Sweden

POAC'11- Program Overview

POAC11-044 10.40-11.00	ICE ISLAND OCCURRENCE ON THE CANADIAN EAST COAST Ingrid Peterson ¹ ¹ Bedford Institute of Oceanography, Dartmouth, Canada
POAC11-045 11.00-11.20	EXTREME ICE FEATURES DISTRIBUTION IN THE CANADIAN ARCTIC David McGonigal ¹ , Douglas Hagen ¹ , Leonardo Guzman ² ¹ Associate, Canatec Associates International Ltd., Calgary, Canada ² Canatec Associates International Ltd., Calgary, Canada
POAC11-046 11.20-11.40	DANGEROUS ICE CONDITIONS AND ACCIDENTS IN RUSSIAN ARCTIC Nataliya Marchenko ^{1,2,3} ¹ The University Centre in Svalbard, Longyearbyen, Norway ² The Norwegian University of Science and Technology, Department of Civil and Transport Engineering, Trondheim, Norway ³ State Oceanographic Institute, Moscow, Russia
POAC11-042 11.40-12.00	A REVIEW OF THE MORPHOLOGICAL AND MECHANICAL PROPERTIES OF FIRST-YEAR SEA ICE RIDGES Lucie Strub-Klein ^{1,2} ¹ The University Centre on Svalbard, Longyearbyen, Norway ² The Norwegian University of Technology, Trondheim, Norway

Paper ID	13.2 ENGINEERING PIPELINES FOR SCOUR PROTECTION	Room: Salon Été Chair: Jonathan Caines
POAC11-094 10.20-10.40	AN ENGINEERING ASSESSMENT OF ICE GOUGE STATISTICS AND RECOMMENDED STATISTICAL DISTRIBUTIONS FOR EXTREME ICE GOUGE PARAMETER ESTIMATION Jonathan Caines ¹ , Mike Paulin ¹ , Shawn Kenny ² ¹ INTECSEA Canada, St. John's, Canada ² Faculty of Engineering & Applied Science, Memorial University of Newfoundland, St. John's, Canada	
POAC11-185 10.40-11.00	THE FORCES REQUIRED TO PRODUCE SEABED GOUGES A. Fredj ¹ , G. Comfort ¹ , K. Been ² ¹ BMT Fleet Technology Limited, Kanata, Canada ² Golder Associates Inc., Houston, United States	
POAC11-188 11.00-11.20	2004 GRAND BANKS ICEBERG SCOUR SURVEY Gary V. Sonnichsen ¹ , Tony King ² ¹ Geological Survey of Canada, Bedford Institute of Oceanography, Bedford, Canada ² C-CORE, St. John's, Canada	
POAC11-098 11.20-11.40	IMPACT OF ENVIRONMENTAL FACTORS ON THE DISTRIBUTION OF EXTREME SCOURING (GOUGING) EVENTS, CANADIAN BEAUFORT SHELF Steve Blasco ¹ , Erin Carr ² , Patrick Campbell ² , Jim Shearer ³ ¹ Geological Survey of Canada, Dartmouth, Canada ² Canadian Seabed Research, Ltd., Porters Lake, Canada ³ Shearer Consulting, Ottawa, Canada	
POAC11-099 11.40-12.00	ICEBERG SCOUR RISE-UP MODELING P. Moore ¹ , T. King ¹ , M. Fuglem ¹ , G. Sonnichsen ² ¹ C-CORE, St. John's, Canada ² Geological Survey of Canada, Dartmouth, Canada	

Thursday 13.30 Parallel sessions

Paper ID	3.2 EXTREME ICE FEATURES	Room: Salon Des Saisons A Chair: Jukka Tuhkuri
POAC11-175 13.30-13.50	A COMPARATIVE ANALYSIS OF RUBBLE FIELD DATA COLLECTION TECHNIQUES Mark Flynn ¹ , Anne Barker ² ¹ Faculty of Engineering – Ocean and Naval Architectural Engineering, Memorial University, St. John's, Canada ² National Research Council of Canada, Canadian Hydraulics Centre, Ottawa, Canada	
POAC11-043 13.50-14.10	ONE SEASON OF A 1 ST YEAR SEA ICE RIDGE INVESTIGATION WINTER 2009 Lucie Strub-Klein ¹ , Knut V. Høyland ² ¹ The University Centre on Svalbard, UNIS, Longyearbyen, Norway ² The Norwegian University of Technology, NTNU, Trondheim, Norway	

POAC'11- Program Overview

- POAC11-144 14.10-14.30 **OLD ICE FLOE AND RIDGE STATISTICS FROM SUBMARINE UPWARD LOOKING SONAR DATA FOR THE BEAUFORT, CHUKCHI AND ARCTIC SEAS**
 Bob Marcellus^{1,3}, Richard McKenna², Dave McGonigal¹, Roger Pilkington¹
¹Associates of Canatec Associates International Ltd. Calgary, Canada
²R.F. McKenna and Associates, Wakefield, Canada
³C.M.E.L., Spencerville, Canada
- POAC11-132 14.30-14.50 **VALIDATING HELICOPTER-BASED ELECTROMAGNETIC INDUCTION (HEM) MEASUREMENTS OVER THICK MULTI-YEAR ICE**
 Michelle Johnston¹, Christian Haas²
¹National Research Council of Canada, Canadian Hydraulics Centre Ottawa, Canada
²University of Alberta, Edmonton, Canada
- POAC11-159 14.50-15.10 **MORPHOLOGY AND PHYSICAL PROPERTIES OF OLD SEA ICE IN THE FRAM STRAIT**
 Aleksey Shestov^{1,2}
¹The University Centre in Svalbard, Longyearbyen, Norway
²Norwegian University of Science and Technology, Trondheim, Norway

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| Paper ID | 10.1 REMOTE SENSING IN ICE | Room: Salon Printemps
Chair: Des Power |
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- POAC11-126 13.30-13.50 **HIGH RESOLUTION RADARSAT-2 SAR DATA FOR SEA-ICE CLASSIFICATION IN THE NEIGHBORHOOD OF NUNAVIK'S MARINE INFRASTRUCTURES**
 C. Gignac¹, Y. Gauthier¹, J-S. Bédard¹, M. Bernier¹, D.A. Clausi²
¹Laboratoire de Géomatique et Télédétection, INRS-ETE, Quebec City, Canada
²Department of Systems Design Engineering, University of Waterloo, Waterloo, Canada
- POAC11-080 13.50-14.10 **DAILY GLOBAL SEA ICE MAPS FROM AMSR-E 89 GHZ OBSERVATIONS – A POLAR VIEW SERVICE**
 Georg Heygster¹, Heidrun Wiebe¹, Justus Notholt¹, Roberto Saldo²
¹Institute of Environmental Physics, University of Bremen, Germany
²National Space Institute, Copenhagen, Denmark
- POAC11-077 14.10-14.30 **DIGITAL IMAGE TECHNIQUES OF SEA ICE FIELD OBSERVATION IN THE BOHAI SEA**
 Shunying Ji¹, Hai Li², Anliang Wang¹, Qianjin Yue¹
¹Department of Engineering Mechanics, Dalian University of Technology, Dalian, China
²National Marine Environment Forecast Center, Beijing, China
- POAC11-083 14.30-14.50 **INTEGRATION OF SEA-ICE MONITORING COMPONENTS TO SUPPORT HIGH LATITUDE OFFSHORE OPERATIONS – TWO CASE STUDIES**
 M.C. Hill¹, G.R. Pilkington¹, Ian Turnbull¹
¹Canatec Associates International Ltd., Calgary, Canada

Thursday 15.10 Closing Ceremony

Thursday July 14 15.10 – 15.30

Room: Salon Des Saisons A
Chair: Ivana Kubat

POAC'11- Program Overview