

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS

# ICETECH 2012

SHIPS AND STRUCTURES IN ICE



September 17-20  
Banff Conference Centre  
Banff, Alberta  
[www.icetech12.org](http://www.icetech12.org)



# ICETECH 2012

INTERNATIONAL CONFERENCE AND EXHIBITION ON  
PERFORMANCE OF SHIPS AND STRUCTURES IN ICE

September 17-20, 2012 --- Banff, Alberta, Canada

Organized by the Arctic Section of the Society of Naval Architects and Marine Engineers (SNAME)

ICETECH 2012  
PO Box 63090  
Stadium RPO  
Calgary, Alberta, Canada, T2N 4S5  
URL: [www.icetech12.org](http://www.icetech12.org)

## TO THE PARTICIPANTS OF THE TENTH INTERNATIONAL CONFERENCE ICETECH 2012

Dear Friends, Colleagues, and Associates,

We are pleased to welcome you to ICETECH 12, the 10<sup>th</sup> International Conference and Exhibition on Ships and Structures in Ice, organized by the Arctic Section of the Society of Naval Architects and Marine Engineers, and held at the Banff Conference Centre in beautiful Banff, Alberta. We gratefully acknowledge the support and dedication of SNAME in the realization of this exciting and successful event.

The theme and subject areas of the conference complement the growing interest in Arctic shipping and in oil, gas and mineral exploration and production in Arctic offshore regions. As you can see from the program that follows, we have over 50 technical and plenary presentations – covering a wide range of specialty topics within our theme of performance in ice, with emphasis on icebreaking ships, ice resistant structures, and operations in ice. These will be presented during the conference by authors from around the globe. Additionally, on Monday we have an advance session: *World Maritime Day Observance: One Hundred Years after the Titanic*. This is hosted by the North American Marine Environment Protection Association (NAMEPA) and Transport Canada. Panel discussions are planned on Tuesday and Wednesday. A post-conference workshop, Alberta Arctic Offshore Petroleum Industry Initiatives, will be held on Thursday afternoon. The exhibition, near the main conference area, is another opportunity to network with leading offshore commercial organizations.

ICETECH 12 is grateful for the support of our many generous sponsors listed on the next page, who are crucial contributors to the success of this conference by providing funding to enhance events and facilities. Finally, we hope you enjoy the social event program and find opportunity to join some of the tours that showcase the beauty and splendor of the Canadian Rockies.

Once again, we thank you for being part of ICETECH 12 by taking part in the technical presentations and sessions, visiting the ICETECH exhibition, recognizing our sponsors, and enjoying the social functions, tours, and other opportunities that are a part of the conference. The ICETECH 12 organizing and support team is honored to have you here with us in Banff.

Many thanks!

**Frank Bercha**



**Alex Brovkin**



*Co-Chairs, ICETECH 2012*

### ICETECH 2012 Organizing Committee

**Frank Bercha** (Co-Chair and Papers)

**Alex Brovkin** (Co-Chair)

**Dave McGonigal** (Treasurer)

**Ben Seligman** (Sponsors)

**Merv Edgecombe** (Exhibition and A/V)

**Mohamed ElSeify** (A/V Support)

**Roger Pilkington** (Papers and Treasurer)

**Karen Muggeridge** (Arctic Section Chair)

**Susan Bercha** (Secretariat)



# ICETECH 2012

September 17-20, 2012  
Banff, Alberta, Canada



## Program and Conference Guide

Monday 1400-1730

The Titanic:

100 Years of Lessons Learned

North American World Maritime  
Day Observance Event  
NAMEPA  
and  
Transport Canada



Monday 1830: Exhibition Opening

Monday 1830-2200

Icebreaker Reception & Dinner

Max Bell Foyer

Gold Sponsor



Tuesday 1220-1330

Luncheon

Vistas Dining Room



Silver Sponsor

Tuesday 1730-1830

Social Hour Bar

Molson Company Lounge



Silver Sponsor

Tuesday 1900-2200

Conference Banquet

KC101/103/105  
Great Husky Hall

Buffalo Nation dancers  
and drummers

Gold Sponsor



Wednesday 1220-1330

Luncheon

Vistas Dining Room



Silver Sponsor

Wednesday 1730-1830

Social Hour Bar

Molson Company Lounge



Silver Sponsor

Wednesday 1900-2200

Western Barbeque

Offsite at the Brewster Facility  
Buses depart 1845, return 2200

ConocoPhillips

Gold Sponsor

Coffee Breaks

(Tuesday)



Bronze Sponsors

Thursday 1200-1230

Closing

Ceremonies

Room A



Arctic  
Section

Thursday 1230-1330

Closing Luncheon

Vistas Dining Room

Stena Drilling

Silver Sponsor

# Registration and General Notes

## **Notes to All Registrants:**

- Registration includes Monday night Icebreaker Reception, all breakfasts and lunches during the conference, the Tuesday evening Banquet and the Wednesday evening Western BBQ dinner. Please note that the accompanying person package does not include coffee breaks, but includes all breakfasts, bagged lunches, and the evening events.
- If you plan to go on any of the special package tours and have not yet booked these online, there will be a tour company desk near the registration area Monday through Wednesday.
- The dress for Icetek for all sessions and events is informal.
- The main evening events included in full and accompanying registrations are as follows:
  - Icebreaker Reception and Dinner sponsored by NAMEPA. Monday evening in the Max Bell Foyer.
  - Conference Banquet sponsored by Chevron Canada. Tuesday evening in the Great Husky Hall.
  - Western Barbeque sponsored by ConocoPhillips. Wednesday evening at the Brewster Facility. Buses are available to take you to and from the facility.
- If you require additional event tickets, also please purchase these at the Conference Registration Desk.
- If you have any questions or concerns please contact one of our ICETECH Organizing Committee or Team members via the Conference Registration Desk.
- Please note that if you wish any accompanying children to attend the evening events, tickets should be purchased when you register. Children under 5 are free, children 5 to 12 are half price and children over 12 are full price.

## **Notes on Presentations**

- All presenters (Plenary and Technical) please email the Secretariat ([secretariat@icetek12.org](mailto:secretariat@icetek12.org)) your PowerPoint presentation (can be a draft) and biography (maximum 200 words). This should be done prior to the conference, by September 12.
- All presenters (Plenary and Technical) should contact their session chairs at breakfast on the day of their session.
- All presenters should go to their presentation room 15 minutes before their session starts or at breakfast or lunch to download their presentations to the session laptop, unless you emailed the presentation prior to the conference. An AV professional will also be on hand at registration to download your presentation materials.
- The following are strict schedules for presentations:
  - Technical presentations maximum 15 minutes and 5 minutes for discussion
  - Plenary presentations maximum 20 minutes and 10 minutes for discussion
- Audio visual helpers will be available to make sure all equipment functions, presentations are loaded, etc. An LCD projector will be used with one of our AV professionals assisting, and session chair coordinating.
- A Practice Room is available, equipped with laptop computers for use by presenters to review their presentations.
- There will be three prizes for the best presentations based on chair and Team evaluations considering content and relevance, communication ability, and timeliness. These will be awarded at the closing ceremony.
- No flash photo or videography is allowed during presentations or discussion.





# Opening Day: Monday, September 17

**830-1700 Exhibition Set Up**

**1200-1800 Conference Registration**  
Location: Max Bell Building Foyer

## North American World Maritime Day Observance Event in conjunction with ICETECH 2012

**1400-1730 M-TT The Titanic: 100 Years of Lessons Learned**

Hosts: NAMEPA and Transport Canada

Location: Room A

1400-1415

*Welcome*

Julie Gascon, Director, Design, Equipment and Boating Safety and Acting Director, Domestic Vessel Regulatory Oversight, Marine Safety and Security, Transport Canada

**1415-1445 M-TT-1 Keynote Address: Lessons Learned from the Titanic**

1120-1140

Clay Maitland, NAMEPA Founding Chair and Managing Partner, International Registries, Inc.

**1445-1545 M-TT-2 PANEL: Preventing the Next Titanic**

As sea ice diminishes in the Arctic summer, there continues to be hazards to marine navigation from icebergs. What type of information is needed for marine operations and what's the best way to communicate information and the uncertainty over hazards that are constantly moving and changing?

Moderator: Darlene Langlois, Chief of Operations, Canadian Ice Service, Environment Canada

*Panelists:*

- Iceberg monitoring and detection – Barb O'Connell, Icebreaking Service Standards Officer, Canadian Coast Guard
- Communicating iceberg risks – Darlene Langlois, Chief of Operations, Canadian Ice Service, Environment Canada
- Icebergs in Canadian East Coast waters and in the Arctic – Tom Carrieres, Ice Modelling Manager, Environment Canada
- Use of iceberg limits by insurance companies – Peter Pamel, Chair, Canadian Maritime Law Association's Arctic Committee
- Design changes to ensure safety in the high Arctic - DNV

**1545-1615 Coffee Break**  
Sponsored by NAMEPA

**1615-1730 M-TT-3 PANEL: The Arctic – Region of Opportunity**

Canada, Finland and the United States led a comprehensive international evaluation of the current and potential shipping activities in the Arctic. Commissioned by the Arctic Council, the Arctic Marine Shipping Assessment (AMSA) Report (2009) consisted of an extensive database, nine chapters that cover a broad range of Arctic shipping activities, and a summary of findings and 17 recommendations intended to influence policy makers and planning in the Arctic. In response to the report to Arctic Council Ministers, the Arctic States are actively involved in domestic and international AMSA recommendation follow-up activities, including engagement through the International Maritime Organization.

Moderator: Julie Gascon

*Panelists:*

- Role of the Arctic Council – Rodney Neufeld, Deputy Director, Foreign Affairs and International Trade Canada, Circumpolar Affairs – (TBC)
- The Polar Code – Andrew Kendrick, STX Canada Marine
- Bilateral Opportunities – Dana Goward, USCG
- Domestic Case Study – TBC

**1830**

### ICETECH EXHIBITION OPENING

Location: Max Bell Foyer

MC: Frank Bercha and Alex Brovkin, ICETECH Co-Chairs

**1830-2200**

**Icebreaker Reception and Dinner** (Max Bell Foyer)  
Sponsored by NAMEPA

Entertainment: Violinist Ronelle Schaufele  
MC: Frank Bercha



# Day 1: Tuesday, September 18 (morning)

**Breakfast** (Vistas Dining Room)

700-830

Room A

Room B

**OPENING CEREMONIES AND WELCOME**

**900-920**

- ~ Frank Bercha and Alex Brovkin,  
ICETECH 2012 Conference Co-Chairs
- ~ Peter Noble, SNAME President
- ~ David Jackson, Canadian Ice Service

**Tu-PL-1 PLENARY SESSION**

**920-1000**

Chair: Frank Bercha

#145 *Ships and Structures in Ice*,  
Peter Noble

920-950

*Delegate Introductions*

950-1000



**Companion Program**

**Sulphur Mountain Gondola & Tour**

9:00am-1:00pm

Meet & board bus 9:00am, PDC

Tour led by Discover Destination Management

\* Pick up bag lunch at breakfast

**Coffee Break**

Sponsored by EBA, A Tetra Tech Company

1000-1020



**Tu-SH-1 1(a) Ships in Ice – General and Rules**

**1020-1120**

Chair: Peter Noble

#123 *Classification of Icebreakers – Updates to Requirements*, Robert Bridges, John Crocker, Claude DesRochers, and Desmond Upcraft

1020-1040

#125 *Response of IACS URI Ship Structures to Real-time Full-scale Operational Ice Loads*, Bruce Quinton, Claude Daley, and Robert Gagnon

1040-1100

#165 *Ship Simulator-integrated Ice Navigation Training*, Robert Thomas, Michael Angove, Scott Hamilton, Orson Smith, John Schibel, and Michael Terminel

1100-1120

**Tu-ST-1 2(a) Structures in Ice – Ice Loads 1**

Chair: Mitch Winkler

#107 *Feasibility of a Conical Piled Monopod in Multiyear Ice*, Ravi Aurora, Alan Williams, and Ricardo Argiolas

#129 *Numerical Simulations of Ice Interaction with a Moored Structure*, Mohamed Sayed, Ivana Kubat, Brian Wright, Aleksandr Iyersalimskiy, Amal Phadke, and Brenda Hall

#132 *Strength and Pressure Profiles of Conical Ice Crushing Experiments*, Phani Suresh Reddy Gudimella, Bruce Colbourne, Claude Daley, Stephen Bruneau, and Robert Gagnon

**Tu-OP-1 4(a) Operations in Ice – General**

**1120-1220**

Chair: Karen Muggeridge

#108 *Modeling and Optimization of Docking Stations and AUVs for Ice Floe Measurement*, Fang Lu, Zhichao Shu, John Hasenbein, David Morton, Dominic Berta, and Khalid Soofi

1120-1140

#116 *Comparing Crew Operations in Extreme Environments: Arctic Shipping vs. Outer Space*, Leslie Wickman

1140-1200

#131 *LNG along NSR*,  
Frédéric Hannon

1200-1220

**Tu-IC-1 3(a) Ice – Regional**

Chair: Paul Spencer

#113 *DEICING and WINTERIZING for the Northern Sea Route and Arctic Offshore Regions*, Tony Teo

#135 *The Changing Ice Regime of Northeastern Baffin Bay*, Todd Mudge, David Fissel, Mar Martinez de Saavedra Alvarez, John Marko, and Keath Borg

#142 *Alaska OCS Oil Spill Occurrence Probabilities*, Frank Bercha, Richard Prentki, and Caryn Smith

**Lunch** (Vistas Dining Room)

Sponsored by BP Exploration Operating Company Limited

MC: Merv Edgcombe

**1220-1330**



# Day 1: Tuesday, September 18 (afternoon)

## Room A

## Room B

### Tu-PL-2 **PLENARY SESSION** 1350-1420

Chair: Roger Pilkington

- #149 *The Titanic Disaster and Ice Mechanics: Completing the Picture*, Ian Jordaan (presenting) and Philippa Gosine

1350-1420



### **Companion Program**

Cultural Tour of Banff

1:00-4:00pm

Visit Banff's historic museums: Luxton and Whyte  
Tour led by Discover Destination Management

### Tu-SH-2 **1(b) Ships in Ice – General** 1420-1520

Chair: Ivana Kubat

- #130 *Quantifying Ice Pressure Conditions and Predicting the Risk of Ship Besetting*, Ivana Kubat, M Hossein Babaei, and Mohamed Sayed
- #104 *Azimuth Propeller Operation in Ice Conditions*, Samuli Hänninen, Torsten Heidemann, and Klaus Vänskä
- #166 *Comparison of Existing US Coast Guard Icebreaker Structural Designs to IACS Polar Class Structural Requirements*, Han Yu, Timothy McAllister, John Dolny, Shewen Liu, and Jiancheng (Jessie) Liu

1420-1440

1440-1500

1500-1520

### Tu-ST-2 **2(b) Structures in Ice – Ice Loads 2**

Chair: Dan Masterson

- #143 *Load Transmission to Foundation of GBS – Dynamic Loading*, Daniel Masterson
- #148 *High Pressure Zones, Statistics and Pressure-Area Effects*, Paul Spencer and Thomas Morrison
- #152 *A Simple Model for First-year Ridge Loads on Sloping Structures*, Ken Croasdale

### **Coffee Break**

Sponsored by Lloyd's Register

1520-1540



### Tu-IC-2 **3(b) Ice – Properties and Observations** 1540-1640

Chair: Hans van der Wal

- #111 *Beaufort Sea Ice Drift Forecasting On-Board the CCGS Amundsen*, Ian Turnbull and Roger Pilkington
- #137 *Modelling Risks to Offshore Facilities Associated with Ice Islands off Canada's East Coast*, Mark Fuglem, Martin Richard, Allison Kennedy, Tony King, and Neil Cater
- #168 *Tracking Ice during an Oil Well Blowout in the Arctic*, Roger Pilkington and David McGonigal

1540-1600

1600-1620

1620-1640

### Tu-OP-2 **4(b) Operations in Ice – Ice Management**

Chair: Freeman Ralph

- #106 *Methodology for Determination of Ice Management Efficiency*, Guy Vachon, Mohammed Sayed, and Ivana Kubat
- #115 *Determining Feasibility of Using an Open Water Mobile Offshore Drilling Unit in the Chukchi Sea*, Randall Shafer, Khalid A. Soofi, Peter Noble, and Chris Yetsko
- #151 *Assessment of Ice Management Success in Pack Ice*, Richard McKenna and Brian Wright

### Panel 1 #177 **Presentation and Panel Discussion: Canada's Arctic Sovereignty** 1640-1730

Chair: Rob Huebert

### **Social Hour Bar** (PDC 301 / Molson Company Lounge)

Sponsored by Det Norske Veritas

MC: Roger Pilkington

1730-1830



### **Conference Banquet**

Location: Great Husky Hall (KC101/103/105)

Sponsored by Chevron Canada

Entertainment: Buffalo Nation dancers and drummers

MC: Alex Brovkin

1900-2200



# Day 2: Wednesday, September 19 (morning)

**Breakfast** (Vistas Dining Room) 700-830

Room A

Room B

**ANNOUNCEMENTS**

**900-905**

**W-PL-3 PLENARY SESSION**

**900-1000**

Chair: Roger Pilkington

#176 *Ships in Pressure Ice*,  
Ivana Kubat

900-930

#153 *Modern Day Pioneering and its Safety in the Floating Offshore*,  
Arno Keinonen

930-1000



**Companion Program**

Full Day Bus Tour  
to Moraine Lake and Lake Louise

9:00am-5:00pm

Includes Lake Louise Gondola and Tour at the Top!

Meet & board bus 9:00am, PDC

Tour led by Discover Destination Management

\* Pick up bag lunch at breakfast

**Coffee Break**

Sponsored by SNAME Arctic Section

1000-1020

**W-IC-3 3(c) Ice 3 – Properties and Measurements 1**

**1020-1120**

Chair: Volker Neth

#110 *An Algorithm to Estimate the Thickness of Broken Arctic Ice Using an Image Processing Technique*, Jong-Ho Nam, Inha Park, Ho-Jin Lee, Young GyoSeo, and Kyungsik Choi

1020-1040

#134 *Double Pendulum Dynamic Impact Test Set-up for Ice-grillage Collision*, Md Shah Alam, Claude Daley, Bruce Colbourne, Greg Hermanski, Bob Gagnon, Steve Bruneau, Geoff Clarke, and Bruce Quinton

1040-1100

#138 *Ice Loads on a Moored Floating Production Unit*, David Molyneux, Lei Liu, Dexin Zhan, and Gina Reid

1100-1120

**W-SH-3 1(c) Ships in Ice - Design**

Chair: Arno Keinonen

#109 *GPU Modeling of Ship Operations in Pack Ice*, Claude Daley, Shadi Alawneh, Dennis Peters, Bruce Quinton, and Bruce Colbourne

#120 *Application of the Discrete Element Method (DEM) on Ship-Ice Interaction*, Erik Vroegrijk

#160 *Results of Investigation of USCGC 175 WLM Class Buoy Tender Performance in Ice*, David Karnes, James (Jim) St. John, and Karl Stambaugh

**W-OP-3 4(c) Operations in Ice – Support**

**1120-1220**

Chair: Bill Maddock

#127 *Disruption Risk Management in Arctic Offshore Support Operations*, Bjørn-Morten Batalden

1120-1140

#155 *Aurora Slim - For Monitoring of the Arctic Seas*, Mikko Niini and Matti Arpiainen

1140-1200

#171 *Detecting Icebergs in Sea Ice Using Dual Polarized Satellite Radar Imagery*, Carl Howell, Pradeep Bobby, Desmond Power, and Charles Randell

1200-1220

**W-ST-3 2(c) Structures in Ice – Ice Loads 3**

Chair: Richard McKenna

#114 *Reappraisal of Pressure Distribution Induced by Ice-Structure Interaction Using High-Precision Pressure Measurement Film*, Hyunwook Kim, Claude Daley, and Chris Ulan-Kvitberg

#117 *Development of Composite Sandwich Structures for Arctic Region*, KMA Sohel, JY Richard Liew, Yan Jiabao, MH Zhang, and PW Marshall

#136 *Ice Management Numerical Modeling and Modern Data Sources*, Jeff Brown, Evan Martin, and Arno Keinonen

**Lunch** (Vistas Dining Room)

**Sponsored by Shell Exploration and Production** 1220-1330

MC: Karen Muggeridge





## Day 2: Wednesday, September 19 (afternoon)

Room A	Room B
<p><b>W-PL-4 PLENARY SESSION</b> <span style="float: right;"><b>1330-1400</b></span></p> <p>Chair: Abdel Ghoneim</p> <p style="padding-left: 20px;">#112 <i>Ice Ridging Forces, Ice Rubble, and Other Neglected Topics in Ice-Structure Interaction</i>, Ken Croasdale <span style="float: right;">1330-1400</span></p>	
<p><b>W-ST-4 2(d) Structures in Ice – Local Ice Loads</b> <span style="float: right;"><b>1400-1500</b></span></p> <p>Chair: Karen Muggeridge</p> <p style="padding-left: 20px;">#133 <i>A Conceptual Study of Deep-Water Arctic Floater for Year-Round Drilling and Production</i>, Aleksandr Iyerusalimskiy, George Gu, Jun Zou, John Chianis, and Brajesh Kumar <span style="float: right;">1400-1420</span></p> <p style="padding-left: 20px;">#162 <i>Risk Based Approach to Operational Iceberg Management</i>, Jim Bruce, Freeman Ralph, and Paul Stuckey <span style="float: right;">1420-1440</span></p> <p style="padding-left: 20px;">#170 <i>Iceberg Detection and Operational Monitoring Using Altimeters</i>, Igor Zakharov, Pradeep Bobby, Desmond Power, Paul Adlakha, Neil Cater, and Charles Randell <span style="float: right;">1440-1500</span></p>	<p><b>W-OP-4 4(d) Operations in Ice – Ice Roads &amp; Shells</b></p> <p>Chair: Abdel Ghoneim</p> <p style="padding-left: 20px;">#147 <i>Extended Season Ice Road Operation</i>, Allan Strandberg, Paul Spencer, George Strandberg, and Uwe Embacher</p> <p style="padding-left: 20px;">#167 <i>Two Historical Ice Roads from Tununuk Point in the Mackenzie Delta to Herschel Basin</i>, Jos Lussenburg</p> <p style="padding-left: 20px;">#173 <i>Using Ice to Build Shell Structures</i>, Benjamin Kromoser and Johann Kollegger</p>
<p><b>Coffee Break</b> <span style="float: right;"><b>1500-1520</b></span></p> <p>Sponsored by SNAME Arctic Section</p>	
<p><b>W-IC-4 3(d) Ice – Properties and Measurements 2</b> <span style="float: right;"><b>1520-1600</b></span></p> <p>Chair: David Molyneux</p> <p style="padding-left: 20px;">#103 <i>Design Considerations of Arctic FPSOs</i>, George Li <span style="float: right;">1520-1540</span></p> <p style="padding-left: 20px;">#126 <i>Ice Induced Shock Response Experiments</i>, Geoff Clarke, John Dolny, Hoon Kyn Oh, and Claude Daley <span style="float: right;">1540-1600</span></p>	<p><b>W-SH-4 1(d) Ships in Ice – Design and Tests</b></p> <p>Chair: Merv Edgecombe</p> <p style="padding-left: 20px;">#105 <i>Performance of the Korean Research Icebreaker Araon Based on Full-Scale Ice Trials in the Amundsen Sea</i>, Kim Hyun Soo, Kyungsik Choi, and Chun-Ju Lee</p> <p style="padding-left: 20px;">#150 <i>Development of the New Icebreaking Tug for Northern Caspian Sea</i>, Göran Wilkman, Mika Hovilainen, Teemu Heinonen, Esa Hakanen, and Niko Miettinen</p>
<p><b>Panel 2 Panel:</b> <span style="float: right;"><b>1600-1700</b></span></p> <p><b>Arctic Design Criteria in a Warming World</b></p> <p>Chairs: Roger Pilkington, David Jackson</p>	
<p><b>Social Hour Bar</b> (PDC 301 / Molson Company Lounge)</p> <p>Sponsored by Arctia Offshore <span style="float: right;"><b>1730-1830</b></span></p> <p>MC: Mohamed ElSeify</p>	
<p> Bus to Brewster Facility for evening activities</p> <p>Departing PDC 6:45pm <span style="float: right;"><b>1845-1900</b></span></p>	
<p><b>Western Barbeque</b> <span style="float: right;"><b>1900-2200</b></span></p> <p>Sponsored by ConocoPhillips</p> <p>Location: Brewster Facility</p> <p>Entertainment: Live Western band and line dancing lessons</p> <p>MC: Karen Muggeridge</p>	
<p> Return buses to BCC begin at 2130</p> <p>Final bus departs Brewster at 2200 <span style="float: right;"><b>2130-2200</b></span></p>	

# Day 3: Thursday, September 20

**Breakfast** (Vistas Dining Room)  
MC: Alexander Brovkin

700-830

Room A

Room B

**ANNOUNCEMENTS**

**845-900**

Th-PL-5 **PLENARY SESSION**

**900-1000**

Chair: Karen Muggeridge

#178 *The Canadian Ice Service*,  
David Jackson

900-930

#141 *Arctic EER Challenges and Advances*,  
Frank Bercha

930-1000



**Companion Program**

Local Hiking Tour

8:30 am: Meet at Vistas (or PDC Lobby)

~ Decide on possible part day walk/hike  
(eg, Tunnel Mountain, Bow Meadows)

9:00am-2:00pm: Explore Banff's beautiful natural areas

*\* Pick up bag lunch at breakfast if you wish*

Th-ER-1 **5. Arctic EER**

**1000-1040**

Chair: David Jackson

#140 *ARKTOS New Developments*,  
Bruce Seligman and Frank Bercha

1000-1020

#144 *Arctic Offshore Structure EER Risk Based  
Standards and Methods of Risk Analysis*,  
James Poplin and Frank Bercha

1020-1040

Th-IC-5 **3(e) Ice – Properties and Measurements 3**

Chair: Walter Spring

#158 *Ice Measurements in Cook Inlet, Alaska with an  
Acoustic Doppler Profiler*, Alexander Khokhlov,  
Nels Sultan, John Pickering, and John Wood

#163 *Ongoing Development of Regional Ice Prediction  
System (RIPS)*, Lynn Pogson, Tom Carrieres, Mark  
Buehner, Alain Caya, Paul Pestieau, Yi Luo, Andrea  
Scott, and Michael Ross

**Coffee Break**

Sponsored by SNAME Arctic Section

1040-1100

Th-ST-5 **2(e) Structures in Ice**

**1100-1200**

Chair: Mohamed Sayed

#154 *Loads on Downward Breaking Cones from  
Managed Ice Floes*,  
Daniel Fenz and Theodore Kokkinis

1100-1120

#157 *Comparison of Analytical and Numerical Models  
of Glancing Ship-Ice Collisions*,  
Jiancheng (Jessie) Liu, Claude Daley, Han-Chang  
Yu, and James Bond

1120-1140

#159 *Ice Crushing Global Ice Pressures and Contact  
Area Geometry*,  
George Comfort and Ken Croasdale

1140-1200

**CLOSING CEREMONIES**

*Acknowledgements, awards, and closing remarks*

Location: Room A

MC: Frank Bercha and Alex Brovkin, ICETECH Co-Chairs

**1200-1230**

**Lunch** (Vistas Dining Room)

Sponsored by Stena Drilling

MC: Merv Edgecombe

1230-1330



**Workshop:**

**1400-1700**

**Alberta Arctic Offshore Petroleum Industry Initiatives**

**Max Bell, Room # TBA**

Chair: Scott Tiffin



## ICETECH's Gold Sponsors

### Chevron Canada

Chevron Corporation is one of the world's leading energy companies. In Canada, it has both an upstream subsidiary, Chevron Canada Limited (Upstream), which explores for, develops, produces and markets crude oil, natural gas and natural gas liquids and Chevron Canada Limited (Downstream) which refines, markets and distributes fuels and other energy products. Our goal at Chevron Canada and worldwide in Chevron Corporation is to deliver Operational Excellence. To us that means achieving world class performance through the systematic management of safety, health, environment, reliability and efficiency.



Visit [www.chevron.ca](http://www.chevron.ca) for more information.

### ConocoPhillips

ConocoPhillips has a time-honored tradition of placing safety, health and environmental stewardship at the top of our operating priorities. While North America is our home and provides the majority of our production, we are active in almost 30 countries and in a wide range of geologic and geographic settings, including some of the world's most challenging areas. From the frozen Arctic to the arid desert, we have a proven track record of responsibly and efficiently exploring for and producing oil and natural gas.



Go to [www.conocophillips.com](http://www.conocophillips.com) for more information.

### North American Marine Environment Protection Association

The North American Marine Environment Protection Association (NAMEPA) is a maritime industry-led initiative which engages maritime businesses, government and the public to "Save our Seas" by promoting sound environmental practices. NAMEPA operates as a nongovernmental organization committed to preserving the marine environment through educating seafarers, port communities and students about the need and strategies for protecting this important global resource. "



For more information, go to [www.namepa.net](http://www.namepa.net).



# Companion Schedule

## WELCOME TO BANFF!

The accompanying persons program for those registered as such, includes all the main evening events as well as a full touring program on Tuesday and Wednesday. Costs of the main events as well as lunches and transportation on the tour days are included in the accompanying person registration fee.

The Banff Tour Desk (Discover Destination) will be available at registration for booking additional tours (at additional cost) on Thursday and after the conference.

Specifically, the accompanying persons program includes:

### **Monday, Sept. 17**

1830-2200 Icebreaker Reception and Buffet, Max Bell Foyer  
*Entertainment: Violinist Ronelle Schaufele*

### **Tuesday, Sept. 18**

#### *Daytime activities:*

0700-0830 Breakfast in Vistas Dining Room; Pick up bag lunches  
0900 Tour bus at PDC to Sulphur Mountain  
0900-1300 Sulphur Mountain Gondola and tour  
1300-1600 Tour of Banff museums (Luxton and Whyte)

#### *Evening activities:*

1730-1830 Social Hour – All delegates, PDC 301  
1900-2200 Conference Banquet, Great Husky Hall  
*Entertainment: Buffalo Nation dancers and drummers*

### **Wednesday, Sept. 19**

#### *Daytime activities:*

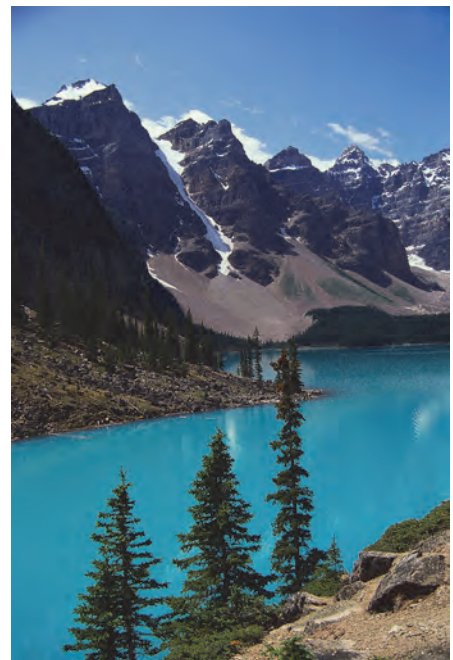
0700-0830 Breakfast in Vistas Dining Room; Pick up bag lunches  
0900 Tour bus at PDC – including guide  
0900-1700 Tour: Moraine Lake, Lake Louise, and Lake Louise Gondola and tour at top.

#### *Evening activities:*

1730-1830 Social Hour – All delegates, PDC 301  
1845-1900 Bus to BBQ venue  
1900-2200 Western Barbeque at Brewster Facility  
*Entertainment: Live Western band and line dancing lessons*  
2200 Buses back to the Banff Centre

### **Thursday, Sept. 20**

0700-0830 Breakfast in Vistas Dining Room; Pick up bag lunches if you wish  
0830 Meet at Vistas (or PDC Lobby) to decide on possible walking/hiking for ½ day (eg. Tunnel Mountain, Bow Meadows)  
0900-1400 Options



*Beautiful Moraine Lake*

## Companion Tours: September 18 and 19

The accompanying persons tours led by Discover Destination Management will explore some of the Banff area's natural and cultural highlights.

### Tuesday, September 18

#### *Morning Tour: 9:00 AM – 1:00 PM*

**Banff Gondola at Sulphur Mountain:** Take the gondola up to the 7,500 ft summit of Sulphur Mountain and enjoy the panoramic view of the entire Bow Valley. Spend some free time here in the restaurant, or the many interpretive trails that wind atop the mountain. Take the winding staircase up to the uppermost level and get a new perspective of the world using the giant compass!



#### *Afternoon Tour: 1:00 – 4:00 PM*



**Luxton Museum:** Journey into the extraordinary heritage of the Indians of the Northern Plains and Canadian Rockies at the Buffalo Nations Luxton Museum. From richly ornamented costumes to a beautifully decorated teepee, from colourful quillwork to hunting equipment, the museum displays a wealth of native arts and daily life. It is a cultural display that celebrates the richness, diversity, continuity and, above all, the resilience of the native peoples of this area.

**Whyte Museum of the Canadian Rockies:** The Whyte Museum of the Canadian Rockies welcomes those who are drawn to the power and inspiration of these mountains. The Museum is a place where people are imaginatively engaged in the excitement of exploring Canadian Rockies art, culture, and history.



*Transportation to and from the Banff Gondola, Luxton Museum, Whyte Museum, and a Discover naturalist/guide are part of both the morning and afternoon tours.*

### Wednesday, September 19

#### *Day Tour: 9:00 AM – 5:00 PM*



**Discover Lake Louise and Moraine Lake:** On this sightseeing tour you will visit the "Jewel of the Canadian Rockies", Lake Louise, and the World Renowned Moraine Lake, both of which are part of a UNESCO World Heritage Site. You will have time to take photos and explore their shorelines. Learn about mountaineering history and how a tragic accident at Lake Louise shaped Canadian mountain culture. Finally, take a short walk to a viewpoint in the Valley of Ten Peaks overlooking Moraine Lake.

Highlights include Bow Valley Parkway: Wildlife watching and the role of fire in the Park, Castle Mountain: Learn how this local landmark got its name.

*Transportation, Lake Louise Gondola and a Discover naturalist/guide are part of this day-long tour.*



# Message from SNAME



Dear ICETECH participants,

The Arctic Section of the Society of Naval Architects and Marine Engineers (SNAME) welcomes you to ICETECH 12 in Anchorage, Alaska! We hope you will all have a great experience here, technically and socially, and we hope you will consider further participation in SNAME. The opportunity is here! Right at the SNAME exhibition booth or through any of the many SNAME members attending.

You may know that ICETECH 12 is the 10<sup>th</sup> ICETECH conference organized by the Arctic Section. We have had ICETECHs in Montreal, Calgary and Banff, Canada, St. Petersburg, Russia, and Anchorage, USA.

In joining SNAME, you will get many member benefits, including those outlined below.

## **SNAME Members**

SNAME members have designed and overseen the building of thousands upon thousands of boats, ships, submarines and other naval craft of all sizes and descriptions and published millions of pages of original research defining the state of the art and best practices in marine architecture and engineering. SNAME members have done all this while enjoying the collegiality of the Society. Joining SNAME means joining nearly 10,000 colleagues from around the world: naval architects and marine engineers whose combined knowledge comprises expertise of every aspect of the ship-building arts. Membership is open to all qualified applicants in or associated with the maritime, offshore, and small craft industries. As a member you will have immediate access to this rich community. All members are empowered with access to SNAME's robust online tools that make connecting with any other SNAME member and working together as simple as sending an email. Beyond work, SNAME members enjoy the unique fellowship that comes with membership in an international organization respected around the world.



Peter Noble, SNAME President, will be in attendance at ICETECH 12.

## **Knowledge Resources**

SNAME captures its extensive history in its vast and expanding library of peer-reviewed research papers, journals, books, and other content. Members enjoy unsurpassed access and discounts to this priceless resource, literally consisting of thousands of unique documents. The entire library can be searched online with 5,000+ papers spanning SNAME's history available for download directly to your computer. Members receive a substantial discount on all items for sale and students receive special discounts.

## **Author and Leadership Opportunities**

SNAME members have the opportunity to make their mark on the industry. The Society encourages and sponsors maritime research into areas of the ocean sciences, with particular emphasis on marine vehicles and offshore structures. Members can join dozens of committees and panels dedicated to the fields of their expertise. Papers authored by these panels and individual authors are subject to presentation, with a handful selected for publication in the annual Transactions.

## **SNAME Sections**

The Society's 17 Sections exist within 5 regions across the world, and membership in SNAME includes membership in a SNAME Section. These regionally based subgroups offer regular, well-attended meetings and substantial networking opportunities. Many SNAME Sections also run research symposia and publish peer-reviewed research material semi-independently of the larger Society. ICETECH is the work of the Arctic Section. An Alaska Section could be formed if members so wish.

## **Student Benefits**

SNAME student membership includes many benefits to help you advance in your academic and professional career and better afford your education. Important student member benefits include:

- *Textbook discounts* – up to 50%
- *Scholarships* for undergraduate and graduate study
- *Online research tools* through the SNAME website
- *Career Center* – post your resume for free; create a job search; look for internships
- *Technical Paper Awards* – an opportunity to have your papers presented at the SNAME Annual Meeting

## **Insurance Plans and Discounts**

SNAME members in the USA now have access to numerous types of business and personal lines insurance products through Arthur J. Gallagher Risk Management Inc. (AJG), which provides Professional Liability Insurance, Medical Insurance, and other types of commercial insurance.

## **Partner Discounts**

SNAME members enjoy discounts with some useful commercial service organizations including Avis Car Rental, Budget Car Rental, Dell Computer, or UPS

So, why not visit the SNAME ICETECH 12 Exhibition booth and check it out? You can apply for membership right here today!

See you there!

Karen Muggeridge, PEng  
SNAME Arctic Section Chair (2010-2012)

and

Merv Edgecombe, MSc, PEng  
SNAME Arctic Section Chair (2012-2014)

## Sponsors

Thank you to all of our sponsors; your support has contributed to the success of ICETECH 12.

### Honorary Sponsors

- Society of Naval Architects and Marine Engineers (SNAME), Artic Section [www.sname.org](http://www.sname.org)

### Gold Sponsors

- Chevron Canada [www.chevron.com](http://www.chevron.com)
- ConocoPhillips [www.conocophillips.com](http://www.conocophillips.com)
- North American Marine Environment Protection Association (NAMEPA) [www.namepa.net](http://www.namepa.net)

### Silver Sponsors

- Arctia Offshore [www.arctia.fi](http://www.arctia.fi)
- BP Exploration (Alaska) [www.bp.com](http://www.bp.com)
- Det Norske Veritas (DNV) [www.dnv.com](http://www.dnv.com)
- Shell Exploration and Production [www.shell.us](http://www.shell.us)
- Stena Drilling [www.stena.com](http://www.stena.com)

### Bronze Sponsors

- EBA, A Tetrattech Company [www.eba.ca](http://www.eba.ca)
- Lloyd's Register North America Inc. [www.lr.org](http://www.lr.org)

## ICETECH 2014

Plans are already underway for the next ICETECH conference, to be held in Anchorage, Alaska, USA in July 2014.

The conference will be co-hosted by the SNAME Arctic Section and Anchorage-based Institute of the North.

We hope you will join us in 2014.



## Exhibitors

The ICETECH Exhibition will be open throughout the conference in the Max Bell Foyer. Be sure to visit our exhibitors.

- ABB Oy, Marine & Cranes
- Advanced Mat Systems Inc (AMS)
- Arctia Offshore Oy
- ARKTOS Developments Ltd
- Arno Keinonen Arctic Consulting Inc (AKAC)
- ASL Environmental Sciences Inc
- Canatec Associates International Ltd
- EBA Engineering Consultants Ltd, a Tetra Tech Company
- Informa Maritime Events
- The Society of Naval Architects and Marine Engineers (SNAME)



Cover image courtesy of Frank Bercha,  
*The Molikpaq*, original oil on canvas painting



## **ICETECH 12 – Secretariat**

SNAME Arctic Section

PO Box 63090

Stadium RPO

Calgary, Alberta, Canada T2N 4S5

[www.icetech12.org](http://www.icetech12.org)

