

SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS

ICETECH 2014

SHIPS AND STRUCTURES IN ICE



July 28-31

Banff Conference Centre

Banff, Alberta

www.icetech14.org



ICETECH 2014

INTERNATIONAL CONFERENCE AND EXHIBITION on
PERFORMANCE OF SHIPS AND STRUCTURES IN ICE
July 28-31, 2014 — Banff, Alberta, Canada
Organized by the Arctic Section of the Society of Naval Architects and Marine Engineers (SNAME)

ICETECH 2014
PO Box 63090
Stadium RPO
Calgary, Alberta, Canada, T2N 4S5
URL: www.icetech14.org

TO THE PARTICIPANTS OF THE ELEVENTH INTERNATIONAL CONFERENCE ICETECH 2014

Dear Friends, Colleagues, and Associates,

We are pleased to welcome you to ICETECH 14, the 11th 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. This year we have drawn attention to the importance of climate change on Arctic operations – hence: looking to the future in a warming world. 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. There is also an exhibition portion of the conference onsite at the Banff Centre to facilitate networking with leading offshore commercial organizations.

ICETECH 14 is grateful for the support of our generous sponsors shown 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 14 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 14 organizing and support team is honored to have you here with us in Banff.

Many thanks!

Frank Bercha



Merv Edgecombe



Co-Chairs, ICETECH-14

ICETECH 2014 Organizing Committee

Frank Bercha - Co-Chair & Papers
Merv Edgecombe - Co-Chair & Exhibition; Arctic Section Chair
Azmy Aboulazm - Program; incoming Arctic Section Chair
Lawson Brigham - Alaska Coordination
Alex Brovkin - Budget Manager
Dave Currie - Audiovisual
Dave McGonigal - Treasurer

Karen Muggerridge - Member at Large
Ben Seligman - Sponsors
Roger Pilkington - Venue Staff Coordinator
Orson Smith - Papers, Alaska
Shannon Vossepoel - Member at Large
Susan Bercha - Secretariat



ICETECH 2014

July 28-31, 2014
Banff, Alberta, Canada



Program and Conference Guide

Monday 1830: Exhibition Opening
Icebreaker Reception and Dinner

Monday 1830-2200

Max Bell Foyer & Exhibition Hall
Mingle with refreshments,
Enjoy canapés, set to
a background of
live music by iDuo



Tuesday: (1) 1000-1020 (2) 1450-1510
Coffee Breaks



Bronze Sponsors

Tuesday 1200-1300
Luncheon
Vistas Dining Room



Silver Sponsor

Tuesday 1700-1900
Social Hour Bar
Molson Company Lounge



Bronze Sponsor

Tuesday 1900-2200
Conference Banquet

KC101/103/105
Great Husky Hall

iDuo joined by
Edward Powell on violin

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
Local band, Kickstart



Gold Sponsor

Thursday 1220-1250
Closing Ceremonies
Room A

Sponsored by:



Thursday 1250-1400
Closing Luncheon
Vistas Dining Room

Sponsored by:



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 ICETECH for all sessions and events is informal. Tropical attire is encouraged!
- The main evening events included in full and accompanying registrations are as follows:
 - Exhibition Opening and Icebreaker Reception and Dinner sponsored by SNAME Arctic Section. 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

- If not already submitted, all presenters should submit their biography directly to their session chair on the day of the session.
- 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 your final presentation to the Secretariat 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.
- Prizes for the best presentations are 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, July 28

830-1700 Exhibition Set Up

1500-2000 **Conference Registration**
Location: Max Bell Building Foyer (also Tuesday morning: 730-930)

1830 **ICETECH EXHIBITION OPENING**
Location: Max Bell Foyer and exhibition hall
MC: Frank Bercha and Merv Edgcombe, ICETECH Co-Chairs

1900-2200 **Icebreaker Reception with Hors d'Oeuvres** (Max Bell Foyer & Exhibition Hall)
Sponsored by SNAME Arctic Section
Performers: iDuo
MC: ICETECH Co-Chairs: Frank Bercha and Merv Edgcombe



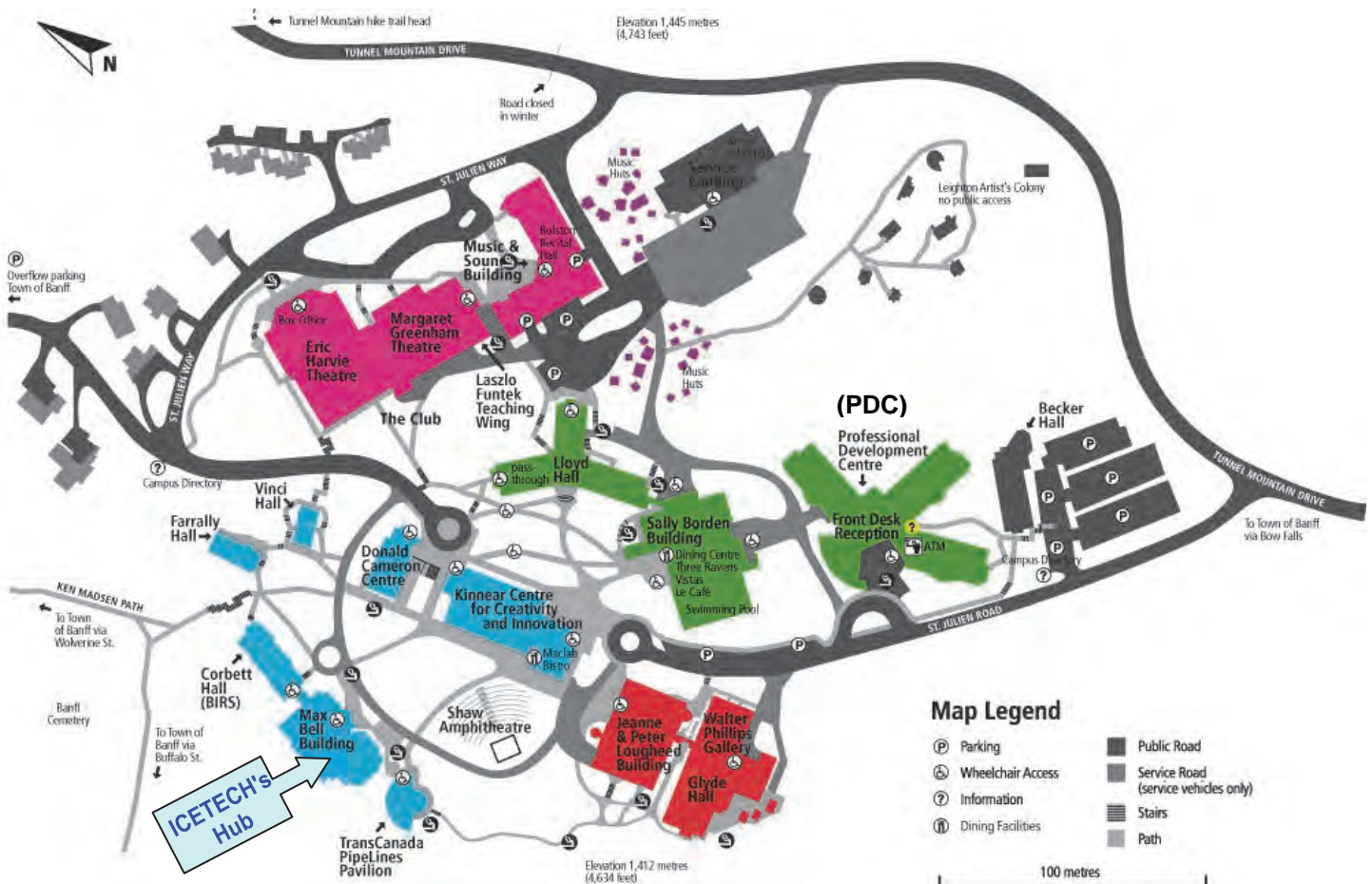
Arctic Section

ICETECH's Evening Performers



Michelle and Peter Powell are iDuo. These classically trained and internationally acclaimed Canadian musicians accompany our Opening Night reception with Michelle on piano and Peter on classical guitar. We are pleased to have iDuo with us again at the Tuesday night Chevron Conference Banquet, joined by the very talented young artist, Edward Powell on violin. Wednesday evening's ConocoPhillips Western Barbeque features the local band, Kickstart, known for its lively danceable music!

Getting Around the Banff Centre



Day 1: Tuesday, July 29 (morning)

Breakfast (Vistas Dining Room)
MC: Azmy Aboulazm

700-830

ICETECH Conference Registration Desk
Open 730-930
In the Max Bell Building Foyer

Room A

Room B

OPENING CEREMONIES AND WELCOME

900-920

- ~ Frank Bercha and Merv Edgecombe (ICETECH Co-Chairs), and Azmy Aboulazm (Incoming Section Chair)
- ~ Sponsor Recognition
- Gold Sponsors: Chevron and ConocoPhillips

Tu-PL-1 PLENARY SESSION

920-1000

Chair: Frank Bercha

#176 *Introductory Plenary*

Peter Noble, SNAME President

Delegate Introductions

920-950

950-1000



Accompanying Persons

Discover Banff and It's Wildlife

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 DNV GL

1000-1020



Tu-SH-1 1(a) Ships in Ice – General

1020-1100

Chair: Lawson Brigham

#168 *Model Tests of the New Canadian Polar Icebreaker (John G Diefenbaker)*

Jungyong Wang, James Millan, and Dan McGreer

#160 *Conversions of Icebreakers to Meet New Environmental Standards in Emissions*

Jukka Salminen, Kari Patrakka, and Tero Vauraste

1020-1040

1040-1100

Tu-CC-1 3. Climate Change

Chair: Frank Bercha

#119 *Ice Road Operation and Climate Change*

Allan Strandberg, Ruixue Wang, Paul Spencer, and George Strandberg

#144 *Nuclear Power Supply of Oil and Gas Resources Development of the Arctic Shelf*

Nidzhat Isakov, Evgeny Velikhov, Vyatcheslav Kuznetsov, and Dilizhan Mirzoev

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

1100-1200

Chair: Dave McGonigal

#117 *A Case Study of Ice Management for Exploration Floating Drilling*

Jed Hamilton, Curtis Holub, Svetlana Shafrova, Joshua Blunt, Raymond Foltz, and Ron Ritch

#150 *Arctic Past Experience - How to Gather and Utilize It?*

G. Abdel Ghoneim and Merv Edgecombe

#166 *A Short Review on Ice Navigation History*

Göran Wilkman

1100-1120

1120-1140

1140-1200

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

Chair: Karen Muggeridge

#138 *Detailed Ice Ridge Loading Events on the Norströmsgrund Lighthouse*

Louis Poirier, Denise Sudom, and Robert Frederking

#154 *Challenges Implementing ISO 19906 for Probabilistic Assessment of Multi-year Sea Ice Loads on Sloping Structures*

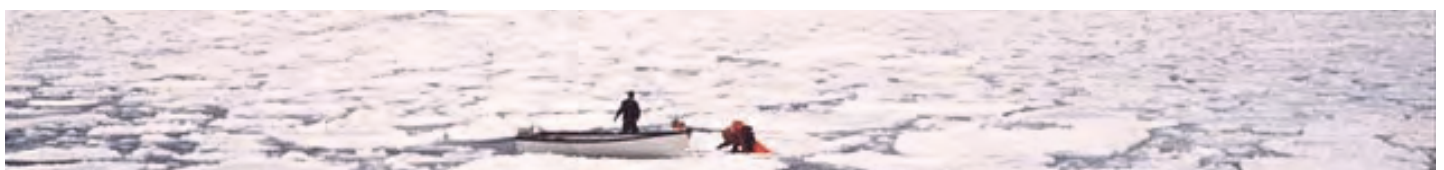
Mark Fuglem, Martin Richard, and Jan Thijssen

#153 *Challenges in Determining Design Iceberg Impact Loads for Offshore Structures*

Paul Stuckey and Mark Fuglem

Lunch (Vistas Dining Room)
Sponsored by Lloyd's Register
MC: Azmy Aboulazm

1200-1300



Day 1: Tuesday, July 29 (afternoon)

Room A

Room B

Tu-PL-2 PLENARY SESSION 1320-1350

Chair: Roger Pilkington

- #122 *Arctic EER State of Art*
Frank Bercha

1320-1350

Tu-ER-1 5(a) EER and Risk - 1 1350-1450

Chair: Jim Bruce

- #121 *Design Considerations in the Arctic: Ensuring Vessels are Capable of and Suitably Prepared for Operations in Cold Climates through Application of Advanced Design and Operations Studies to Improve Safety, Reliability and Risk Management*
William Cowardin Jr and Roderick Allan

1350-1410

- #123 *Current Offshore Oil Spill Statistics*
Frank Bercha, Caryn Smith, and Heather Crowley

1410-1430

- #169 *Assessing the Risks of Icebergs Impacting the Topsides of a Gravity Based Structure*
Paul Stuckey, Adel Younan, Jonathon Bruce, and Mark Fuglem

1430-1450

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

Chair: Karen Muggeridge

- #167 *Uncertainty in 100 and 10,000 Year Ice Loads on Offshore Structures*
Richard McKenna, Mark Fuglem, and Greg Crocker

- #135 *First-Year Ice Ridge Loads on Norströmsgrund Lighthouse in 2002 and 2003*
Denise Sudom and Robert Frederking

- #134 *Updated Temperature, Salinity and Strength Distributions for Old Ice*
Michelle Johnston and Robert Frederking

Coffee Break

Sponsored by Arctia Shipping

1450-1510



Tu-ER-2 5(b) EER and Risk – 2 1510-1610

Chair: Frank Bercha

- #104 *Probabilistic Analysis of Local Ice Loads on a Lifeboat*, Md Samsur Rahman, Rocky Taylor, Antonio Simões Rê, Allison Kennedy, Jungyong Wang, and Brian Veitch

1510-1530

- #130 *CPR Propulsor Development for Arctic Vessels*
Hannu Jukola and Markus Niemi

1530-1550

- #132 *Characterization of the Iceberg Scour Regime on the Makkovik Bank, Labrador Shelf*
Tony King and Gary Sonnichsen

1550-1610

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

Chair: Alexander Iyerusalimskiy

- #105 *Winterization of Cold Climate and Arctic Offshore Operations*
Ove Gudmestad and Eva Elisabeth Lund

- #129 *Operating Experience of Sevmorput as a Basis for Future Nuclear Transport Ships*
Vladimir Makarov, Vasily Ustinov, Vladimir Vorobiyov, and Stanislav Golovinskiy

- #127 *Simulation of Managed Sea Ice Loads on a Floating Offshore Platform using GPU-Event Mechanics*, Claude Daley, Shadi Alawneh, Dennis Peters, Gary Blades, and Bruce Colbourne

Panel 1 Panel / Workshop: Arctic EER 1610-1740

Chair: Ian Denness

Panelists: Frank Bercha, Ove Gudmestad, Bruce Seligman, and Brian Veitch

1610 Chasing Ice – Full Movie Screening



Run time: 75 minutes

Chair: Susan Bercha

All delegates and accompanying persons welcome

Social Hour Bar (PDC 301 / Molson Company Lounge)

Sponsored by Vard Marine Inc.

MC: Roger Pilkington

1800-1900



Conference Banquet

Location: Great Husky Hall (Kinneir Centre 101/103/105)

Sponsored by Chevron Canada

Performers: iDuo and Edward Powell

MC: Jim Bruce

1900-2200



Day 2: Wednesday, July 30 (morning)

Breakfast (Vistas Dining Room)
MC: Jim Bruce

700-830

Room A

Room B

ANNOUNCEMENTS

900-905

W-PL-3 PLENARY SESSION

900-1000

Chair: Frank Bercha

#148 *Literature Survey of Station Keeping and Ice Management*

900-930

Ivana Kubat (*presenter*) and Mohamed Sayed

#101 *Kolskaya and Kulluk. A Disaster and a Near Disaster*

930-1000

Ove Gudmestad (*presenter*) and Alexandra Aristova



Accompanying Persons

Discover Lake Louise
and Moraine Lake

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 SNAME Arctic Section

1000-1020

W-IC-1 6(a) Ice – Properties and Measurements – 1

1020-1120

Chair: Dave McGonigal

#124 *Tracking Icebergs with Remotely Monitored GNSS Satellite Telemetry Ice Drift Beacons*

1020-1040

Juan Acevedo, Chris Ulan-Kvitberg, Scott Tiffin, Roger Pilkington, Logan Cooper, Eric Soulis, and Dave Hannah

#107 *Forecasting Pack Ice Blockage Events at St John's Harbour, Newfoundland: An Empirical Approach and Development of Ship Alert and Advisory Tables*

1040-1100

Ian Turnbull, Richard McKenna, Rocky Taylor, and Robert Sarracino

#102 *Identification of Extreme Ice Features in the Canadian Arctic*

1100-1120

Igor Zakharov, Pradeep Bobby, Sherry Warren, and Desmond Power

W-IM-1 7(a) Ice Mechanics – 1

Chair: Paul Spencer

#155 *Analysis of Experimental Data and Quantifying Influence of Dimensionless Material Properties, Velocity and Aspect Ratio on Ice-induced Forces on Vertical Structures*

Aaruun Arunachalam

#161 *Characteristics of Field-scale High Pressure Zones during Non-simultaneous Failure of Thin First-year Sea Ice*

Rocky Taylor and Martin Richard

#162 *Use of Thermal Imagery to Assess Temperature Variation in Ice Collision Processes*

Jochen Tijssen, SE Bruneau, and Bruce Colbourne

W-ICE-2 6(b) Ice – Properties and Measurements – 2

1120-1220

Chair: David Currie

#158 *The Detection of Multi-Year Ice Using Upward Looking Sonar Data*

1120-1140

David Fissel, Edward Ross, Louis Sadova, Alex Slonimer, Dawn Sadowy, and Todd Mudge

#157 *The Measurement of Shallow Ocean Currents Beneath Deformed Mobile Sea Ice Using Upward Looking Sonar Instruments*

1140-1200

Todd Mudge, David Fissel, Keath Borg, Nikola Milutinovic, and Ed Ross

#139 *Iceberg Detection Using Simulated Radarsat Constellation Data*

1200-1220

Michael Denbina and Michael Collins

W-IM-2 7(b) Ice Mechanics – 2

Chair: Rocky Taylor

#125 *Fracture Analysis of a Steel Plate Loaded by Ice*

Tayyeb Seif, Abdullah Jamaly, and Claude Daley

#120 *Impact Ice Loads on Spherical Geometries*

Dan Oldford, Regina Sopper, and Claude Daley

#111 *Bond Enhancement in Curved Sandwich Shells*

Peter Marshall, Vul Thang, Nicholas Brake, and Paul Corder

Lunch (Vistas Dining Room)





Sponsored by ABS Americas

MC: Karen Mugeridge

1220-1330



Day 2: Wednesday, July 30 (afternoon)

Room A	Room B
<p>W-PL-4 PLENARY SESSION 1350-1420</p> <p>Chair: Alexander Iyerusalimskiy</p> <p>#165 <i>A Short History on Ice Expeditions in the Russian Federation</i> Göran Wilkman</p>	
<p>W-OP-3 4(c) Operations in Ice 1420-1520</p> <p>Chair: Ivana Kubat</p> <p>#137 <i>Numerical Modeling of the Stationkeeping of Drillships in Ice</i> Mohamed Sayed, Ivana Kubat, Brian Wright, and James Millan</p> <p>#145 <i>Motion Control of Underwater Vehicle Floating in Space Under Ice Cover</i> Sergei Karlinskiy and Alexandr Iurkanskii</p> <p>#172 <i>A Mathematical Model of Icebreaking for Safe Speed Assessment</i> Mahmud Sazidy, Claude Daley, and Bruce Colbourne</p>	<p>W-IM-3 7(c) Ice Mechanics – 3</p> <p>Chair: Michelle Johnston</p> <p>#118 <i>Ice Crushing Pressures for Arctic Structure Design</i> Paul Spencer</p> <p>#164 <i>A Short History of Ice Model Tests in Finland</i> Göran Wilkman</p> <p>#175 <i>Behavior of Ice Covers Under Moving Loads - The Driving Mechanism</i> Michel Lanteigne and Gary Van Der Vinne</p>
<p>Coffee Break 1520-1540</p> <p>Sponsored by SNAME Arctic Section</p>	
<p>Panel 2 Panel / Workshop: Climate Change Implications 1540-1710</p> <p>Chair: Frank Bercha</p> <p>Panelists: Lawson Brigham, Ove Gudestad, Ivana Kubat, Paul Spencer, and Göran Wilkman</p>	
<p>Social Hour Bar (PDC 301 / Molson Company Lounge) 1730-1830</p> <p>Sponsored by Stena Drilling</p> <p>MC: David Currie</p> <div style="text-align: right;">  </div>	
<div style="display: flex; align-items: center;">  <div> <p>Bus to Brewster Facility for evening activities</p> <p>Departing PDC 6:45pm</p> </div> <div style="margin-left: auto; text-align: right;"> <p>1845-1900</p> </div> </div>	
<p>Western Barbeque 1900-2200</p> <p>Sponsored by ConocoPhillips</p> <p>Location: Brewster Facility</p> <p>Performers: Kickstart</p> <p>MC: Karen Muggeridge</p> <div style="text-align: right;">  </div>	
<div style="display: flex; align-items: center;">  <div> <p>Return buses to BCC begin at 9:30pm</p> <p>Final bus departs Brewster at 10:00pm</p> </div> <div style="margin-left: auto; text-align: right;"> <p>2130-2200</p> </div> </div>	



Day 3: Thursday, July 31

Breakfast (Vistas Dining Room)
MC: David Currie

700-830

Room A

Room B

ANNOUNCEMENTS

845-900

Th-PL-5 PLENARY SESSION

900-1000

Chair: Alexander Iyerusalimskiy

- #109 *Planning for the Unexpected in Arctic Offshore* 900-930
Arno Keinonen and Evan Martin (*presenter*)
- #142 *The Design and Operational Implications of the IMO Polar Code* 930-1000
Andrew Kendrick



Accompanying Persons

Design Your Own Day!

You may choose to

Explore Banff's beautiful natural areas;
art, culture and history at Banff's museums;
or visit Banff's shops and town centre.

* Pick up bag lunch if you are not returning for the Closing Luncheon

Th-ICE-3 6(c) Ice – Properties and Measurements – 3 1000-1040

Chair: Roger Pilkington

- #174 *Modeling of Pressured Ice Interaction with Ships* 1000-1020
Ivana Kubat, Mohamed Sayed, and Philippe Lamontagne
- #115 *A Method for Characterizing Uncertainty in Tactical Sea Ice Drift Forecasting* 1020-1040
Joshua Blunt, Douglas Mitchell, and Adel Younan

Th-SH-2 1(b) Ships in Ice – Design and Tests

Chair: Göran Wilkman

- #110 *A Risk-Based Evaluation Ice-Strengthened Hull Structures*
Pentti Kujala and Sören Ehlers
- #170 *Investigation of the Propeller Blade Failure Load and the Associated Spindle Torque - JIP Blafex*
Andreas Junglewitz, Claas Fischer, Wolfgang Fricke, and Wolfgang Koch

Coffee Break

Sponsored by SNAME Arctic Section

1040-1100

Th-RS-1 8. Regulations and Standards

1100-1220

Chair: Azmy Aboulazm

- #147 *Class Requirements and Practical Solutions to Winterisation* 1100-1120
Tony Vollmers and Rob Hindley
- #152 *Arctic Standards and Regulations – Status and Update* 1120-1140
G. Abdel Ghoneim
- #106 *Rock and a Hard Place: A Blowout in the Arctic* 1140-1200
Wylie Spicer (Presented by Cameron Greaves)

Th-SS-1 9. Ships and Structures in Ice

Chair: Evan Martin

- #149 *Kits for the Enhancement of Surface Ship Operations in Cold Weather*
Heather Tomaszek and Christopher Bassler
- #126 *Analytical Approach for Predicting Fracture in Structures Due to Lateral Ice Indentation*
Abdullah Jamaly, Tayybe Sief, and Claude Daley
- #136 *An Ice Failure Explanation of Dynamic Ice Loading Events on Molikpaq*
Yan Qu
- #141 *A Semi-Empirical Method of Ice Resistance Prediction in Level Ice*
Jeong Seong-Yeob, Kyungsik Choi, Seong-Rak Cho, Kuk-Jin Kang, and Chun-Ju Lee



Chasing Ice – Highlights

Chair: Azmy Aboulazm
Select scenes from Chasing Ice will be shown
Approximate duration: 20 minutes.

1200-1220

CLOSING CEREMONIES

Acknowledgements, awards, and closing remarks

Location: Room A

MC: Frank Bercha and Merv Edgecombe, ICETECH Co-Chairs

1220-1250

Closing Lunch (Vistas Dining Room)
Sponsored by SNAME Arctic Section

1250-1400

MC: Azmy Aboulazm (incoming Arctic Section Chair)



Arctic
Section

See you in 2016!

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 14 is the 11th 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, is in attendance at ICETECH 14.

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!

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

and

Azmy Aboulazm, PEng
Incoming SNAME Arctic Section Chair (2014-2016)

Accompanying Persons' 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, July 28

- 3:00-8:00pm Conference Registration, Max Bell Building Foyer
- 6:30pm Exhibition Opening, Max Bell Building – Exhibition Hall
- 7:00-10:00pm Icebreaker Reception with Hors d'Oeuvres, Max Bell Building
Performers: iDuo (classical guitar and piano)

Tuesday, July 29

Daytime activities:

- 7:00-8:30am Breakfast in Vistas Dining Room; Pick up bag lunches
- 9:00am Tour bus pick up at PDC
- 9:00am-1:00pm Discover Banff and It's Wildlife Tour (with Gondola)**
- 1:00pm Tour bus drop off at PDC (*option of drop in downtown Banff*)
- 4:10pm Chasing Ice (movie screening – 75 minutes) in conference Room B

Evening activities:

- 6:00-7:00pm Social Hour – All delegates, PDC 301
- 7:00-10:00pm Conference Banquet, Great Husky Hall (Kinnear Centre)
Performers: iDuo with violinist Edward Powell

Wednesday, July 30

Daytime activities:

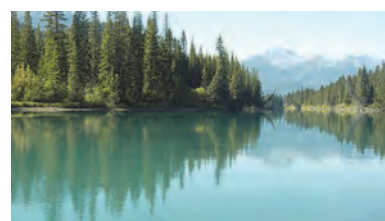
- 7:00-8:30am Breakfast in Vistas Dining Room; Pick up bag lunches
- 9:00am Tour bus pick up at PDC
- 9:00am-1:00pm Discover Lake Louise and Moraine Lake Tour**
- 1:00pm Tour bus drop off at PDC (*option of drop in downtown Banff*)

Evening activities:

- 5:30-6:30pm Social Hour – All delegates, PDC 301
- 6:45pm Bus to BBQ venue
- 7:00-10:00pm Western Barbeque at Brewster Facility
Performers: Kickstart (live band)
- 9:30-10:00pm Buses back to the Banff Centre (1st bus at 9:30, last at 10:00)

Thursday, July 31

- 7:00-8:30am Breakfast in Vistas Dining Room; Pick up bag lunches if you wish
- Accompanying person's own day to enjoy Banff.
Tours can be arranged through Discover Destination Management.
- 12:50-2:00pm Closing Luncheon in Vistas Dining Room - optional



2012 Accompanying Person's tour group at Mount Norquay



2012 Third Day Optional Canoe Tour



Photos contributed by Barbara James

Accompanying Persons' Tours

ICETECH Tours for Accompanying Persons: July 29 and 30

The accompanying persons tours led by Discover Destination Management will explore some of the Banff area's natural and cultural highlights on July 29 and 30.

Tuesday, July 29 – ICETECH Tour #1

Tour #1: 9:00 AM – 1:00 PM: Discover Banff and its Wildlife – with Gondola

The perfect introduction to your stay in beautiful Banff and Banff National Park. This tour features the spray of cool waterfalls, an ascent up a mountain, a taste of local history and a chance to spy on wildlife. To start, feel the power of the Bow Falls and the beauty that surrounds it just below the Banff Springs Hotel. Continue exploring and snap picture postcard shots from some of the best views in town - Surprise Corner on Tunnel Mountain Drive, the Hoodoos (oddly shaped pillars of glacial rock), Mount Norquay's winding road and Sulphur Mountain's peak. Take the gondola up to the 7,500ft summit of Sulphur Mountain and enjoy the panoramic view of the entire Bow Valley. You will also visit the abandoned mining town of Bankhead on route to viewing Lake Minnewanka, one of the largest Lakes in the Canadian Rockies. Your knowledgeable local guide will provide interesting tidbits and information on Banff's rich natural and human history that has helped shaped the Bow Valley for millions of years.

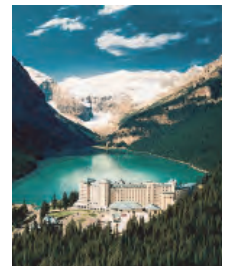


Includes: Private transport in sightseeing bus, guide, gondola tickets. Approximately 4 hrs.

Wednesday, July 30 – ICETECH Tour #2

Tour #2: 9:00 AM – 1:00 PM: Discover Lake Louise and Moraine Lake

For over a century, explorers have been making the trip to the incredible towering mountain peaks and icy blue glaciers, which are the highlights at Lake Louise. Your journey starts along the winding Bow Valley Parkway passing Hole-in-the-Wall, Johnston Canyon and magnificent Castle Mountain. At Lake Louise, enjoy free time to discover this special place with outdoor pursuits: hike, rent a canoe or try horseback riding! If you prefer, the Château Lake Louise has various shops, lounges, restaurants and fabulous architecture that will impress you for hours. On the return, visit Moraine Lake and the Valley of the Ten Peaks and ascend the rock pile lookout points to have your breath taken away by one of the world's most beautiful bodies of water.



Includes: All transportation, guide. Approximately 4 hrs.

Design Your Own Day: Thursday, July 31

You may choose to stroll through the town of Banff, with its many shops and restaurants. There are many beautiful natural areas easily accessed from the Banff Centre. We also recommend a visit to the Buffalo Nation Luxton Museum (<http://buffalonnationsmuseum.com>) and the Whyte Museum of the Canadian Rockies (<http://www.whyte.org>) during your time in Banff.

ICETECH's Tour Company

Delegates and accompanying persons can arrange additional tours of the Banff area privately through Discover Destination Management. Speak to them at the tour desk during ICETECH's opening registration, the morning of July 29, or Contact Erin Lalande. erin@discoverdm.com / 403.760.7629 ext 445



Exhibitors

The ICETECH Exhibition official opening is on Monday evening (6:30pm), and will be open throughout the conference in the Max Bell Foyer. Be sure to visit our exhibitors.

ABB Marine and Cranes

www.abb.com

(Booth #9)



ABB is a leading manufacturer of electric power and propulsion systems for ships. We are a global maritime organization, providing innovative, reliable, safe and environmentally-friendly solutions and qualified services to reduce operational costs and ensure optimum vessel lifecycle for our customers.

With direct presence and dedicated Marine Service Centers strategically located throughout the world, ABB provides lifecycle service and support wherever your business takes you.

ABB is a global leader in power and automation technologies that enable utility and industry customers to improve their performance while lowering environmental impact.

Advanced Mat Systems

www.advancedmatsystems.com

(Booth #1)



Advanced Mat Systems (AMS) specializes in designing and manufacturing a comprehensive range of customizable heated and non-heated anti-slip solutions for both offshore/onshore applications & operations, with the Advanced Mat System.

Whatever the situation, the Advanced Mat System has been proven time and time again to improve safety by preventing the leading cause of all workplace accidents and injuries: slips and falls.

Winterization: The Arctic Pad from AMS is a first-of-its-kind, all-season industrial traction pad, which provides the benefits of surface heating through self-regulating technology. This unique system is ideal for meeting various classification societies' anti-icing and de-icing guidelines for ships operating in arctic / polar environments.

ARKTOS Developments Ltd

www.arktoscraft.com

(Booth #7)



ARKTOS Developments Ltd. is the manufacturing body for the high mobility amphibious Craft known by the registered trademark of ARKTOS. The design and manufacture of ARKTOS Craft is major focus of ARKTOS Developments Ltd.

The operational abilities coupled with the exceptional strength of the ARKTOS Craft make a platform well suited to emergency evacuation, amphibious fire fighting, amphibious towing, icebreaker support, through-ice diving, seismic surveys and other scientific exploration.

ASL Environmental Sciences Inc

www.aslenv.com

(Booth #8)



ASL Environmental Sciences is a world class company with more than 35 years of experience in oceanographic, acoustic, remote sensing and ice research services. We provide clients with scientific consulting services including: Flow Measurement, Numerical Modeling, Wave Measurement & Analysis, Remote Sensing, Sediment Transport and Ice Studies.

National Research Council of Canada

www.nrc-cnrc.gc.ca

(Booth #6)



NRC Ocean Coastal and River Engineering (NRC OCRE) provides the expertise and tools to identify, adapt, and integrate advanced solutions to improve the performance of marine operations, meet the challenges of climate change and protect infrastructure, property and people from environmental risks.

Chasing Ice All delegates and accompanying persons are invited to the full movie screening: Tuesday, 1610, Room B



Acclaimed environmental photographer James Balog headed to the Arctic in 2005 on assignment for *National Geographic*, to capture images to help tell the story of the Earth's changing climate.

Chasing Ice is the story of one man's mission to change the tide of history by gathering undeniable evidence of our changing planet. Within months of that first trip to Iceland, Balog conceived the boldest expedition of his life: The Extreme Ice Survey. Balog began deploying time-lapse cameras across the brutal Arctic to capture a multi-year record of the world's changing glaciers. His hauntingly beautiful videos compress years into seconds and capture ancient mountains of ice in motion as they disappear at a breathtaking rate. *Chasing Ice* depicts a photographer trying to deliver evidence and hope to our carbon-powered planet. Trailer and detailed information at: www.chasingice.com

Sponsors

Thank you to all of our sponsors; your support has contributed to the success of ICETECH 14.

Honorary Sponsor:

SNAME

Society of Naval Architects and Marine Engineers

The international community for maritime and ocean professionals.

www.sname.org

Gold Sponsors:

Chevron Canada

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



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.

www.conocophillips.com



Silver Sponsors:



ABS Americas

Setting standards of excellence in marine and offshore classification. www.eagle.org



Lloyd's Register North America Inc.

Improving safety, quality, and performance. www.lr.org



Stena Drilling

Care, innovation, and performance.

www.stena.com

Bronze Sponsors:



Arctia Shipping

Unique technology, extensive experience and uncompromising expertise. www.arctia.fi



DNV GL

Safeguarding life, property and the environment. www.dnvgl.com



Vard Marine Inc.

High quality technical support, innovative designs, and new technology applications. www.vardmarine.com



Cover images courtesy of Frank Bercha:
The Molikpaq (original oil on canvas painting),
and *2050* – inspired by our conference theme.





ICETECH 14 – Secretariat

SNAME Arctic Section

PO Box 63090

Stadium RPO

Calgary, Alberta, Canada T2N 4S5

www.icetech14.org



Looking to the future in a warming world

