

APPENDIX E: SESSION 2 – MARITIME TRAINING CENTER ENGAGEMENT

APPENDIX E: SESSION 2 – MARINE TRAINING CENTER ENGAGEMENT

Presentation

Keld Qvistgaard

The first thing we'd like to do is to give a little brief some highlights for the work we've been doing over the past year. Some of you may recall from the International Ice Charting Working Group meeting we had two years ago, in Helsinki, that we put this task together to focus on Maritime Training Center engagement. But what we learned quite quickly, during the initial phase of that work, is that we needed to learn more about the marine community and the Mariners and their needs for products and services and what were their expectations. That led to the big mariner survey we conducted last year and led to some very interesting results. And we thought, okay, this is really solid ground to go back to the original scope from 2018. So, we actually restarted our work last September to reshape our focus to the original scope.



Next slide, please. This is just very briefly about the session we are currently having. There'll be this brief report from the task team. It will take 10 to 15 minutes. Then we will shift over to a panel discussion. We actually have representatives placed on four continents for this so I really look forward to that. I foresee that we will have a lively discussion all around the globe on this topic, showing how important it is. At the end, we will summarize and we have also taken the liberty to show some possible roads forward over the next year. But I hope that the panel discussions and the ideas from the participants will also be included in the potential roads forward.



IICWG-XXI Session 2 Marine Training Center Engagement

- Report from IICWG Task Team 8 (15 minutes)
- Panel discussion, findings and potential roads forward (45 minutes)

Next slide please. Going back one year, the original task team goal was to focus on which marine training centers are actually providing courses for polar navigation. So it's simply just a learning exercise as to where these centers are located and what they are training. But also obtain a basic understanding on what the needs of these Training Center needs are. What is the type of expertise, data, and products would they like to have or use in their modules? Also, to focus a little bit on the awareness



IICWG XX Task Team 8

TASK TEAM GOAL

- Identify Mariner Training Centers providing courses for Polar navigation
- Enhanced understanding of marine training center needs for integration of ice center expertise/data/products in training modules
- Enhance training center awareness of ice center capabilities. Identify gaps, bottlenecks and areas for collaboration

TASK TEAM LEAD

Kristen L. Serungard, CDR (USCG International Ice Patrol)
Keld Qvistgaard (DMI Greenland Ice Service)

TASK TEAM MEMBERS

Alejandro de la Maza Dori6n (Chilean Navy Meteorological Service)
Cournoyer, Alexandra (Canadian Ice Service)
Pascale Bourbonnais (Fednav)
Thomas B6ggild (Greenland Pilot Service)
Oleg Folomeev (Arctic and Antarctic Research Institute)
Tatiana Alekseeva (Arctic and Antarctic Research Institute)
Bj6rn Kay (Marstal Maritime Academy)
Chris Hearn (Memorial University)
Ynse Janssens (Antwerp Maritime Academy)
Duke Snider (Marteck Polar)

of the ice service capabilities. Sometimes we have the feeling that there may be some distance between the ice service on one side and the marine training centers on the other side. To investigate that to see what are the bottlenecks? What are the challenges? And where can we find the low

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hanging fruit so we can investigate the potential for collaboration. So, we put together a task team and I was in a very lucky position that I could iterate with Kristen, from the International Ice Patrol. We also had a task team with the 10-11 members. Actually, the task team grew a little bigger over time because there were several that were interested to contribute significantly to the work. That was very positive to learn. That was good group for doing work.

So next slide, please. So, we decided that we need to learn more from the marine training center perspective. Where are the gaps? And where can we do better? What is the potential? We took the original questions and developed a questionnaire that we'd like to circulate. This time, unlike last year's survey, we didn't want to go out as wide as possible. We selected 16 training centers on four continents. The questions were formulated to very open because we would like to dive into the contents of their suggestions and gaps and ideas for future collaboration. We



TASK TEAM 8 activities

- Original questions were to formulated to a questionnaire
- 16 major marine training centers selected on 4 continents, all world-leading centres
- The 5 companies in the task team provide their business specific input on ice services vs. marine training centers
- 29 February: Questionnaire distributed to 21 recipients by email
- March → COVID-19 !
- 14 May: Survey closed, response received from 13 out of 21 recipients
- 15 May: Compilation, Survey outcome package distributed to Task Team 8
- 11 June: Task Team 8 telecon
- 20 July: Task Team 8 analysis of survey results closed
- 27 July: Draft report circulated to Task Team 8 members for review and comments
- 05 August: Task Team 8 report submitted to IICWG Secretariat for distribution to ice services
- 22 SEPTEMBER: IICWG XXI Session 2

knew there's a danger in going that path, because some responses can actually be quite long. The compilation part would be a big challenge. And that's also the reason why we wanted to reduce the number of training centers involved. We knew from the beginning that we would not be dealing with a full list of major training centers around the globe but a selection of major training centers. No training centers would actually have the feeling that they were overlooked. We had some professional companies in the task team and we also asked them to provide their business-specific input on ice services. So that was very helpful. The questionnaire was circulated in late February, and we gave the recipients one month to respond. The events of March had very significant impact on the survey so we extended the deadline for response several times. So we would be in a position where we could report to this meeting, we made a deadline. We have not received as many responses as possible but we have received responses from 13 out of 21 recipients and we are quite pleased. That led to quite a busy period of compilation and investigations on all the responses that we have received. Kristen did a very nice job of compiling the entire response package. We ended up with something like 30 pages of what I would call “gold”, of course with lots of overlap. We had one telecon in June and then we exchanged many emails on the analysis and the understanding of the survey results. In late July, we had a report ready to go out. By that time, we were also aware that we would not be able to meet physically in Buenos Aires this year so we wanted to make as much information as possible ready for the IICWG participants so they had a chance to go through the information before the meeting, rather than, at the meeting. That led to the report from the task

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team that is sitting on the Google Drive. That's basically where all the information is compiled so I'll only be going through the highlights here.

Next slide, please. A listing of the 13 institutions that responded to the survey. So again, from several continents, several countries, and that was excellent. It's the high-ranking institutions that we have decided to focus on here.

Next slide. The high level recommendations of the survey can actually be summarized in a few words. So overall, the ice services need more focus on awareness and promotion of production and expertise. And the second part of that is more focus on feedback and interactions with the marine community. That's the high level goal for the services. So, it seems like that's where we should do more to improve.



HIGH LEVEL RECCOMENDATIONS TO ICE SERVICES

- More focus on **awareness and promotion** of your current production and expertise
- More focus on **feedback and interactions** with users for implementation and improvement of production

So next slide, please. We should also consider the framework for collaboration. We're not starting from scratch because it was clear from all the survey responses that the Ice services are well recognized. We play a significant role and we are well established in many marine communities minds. We should be aware of that and actually make better use of that



FRAMEWORK FOR ENHANCED COLLABORATION

1. Ice information (background, insight, material) from ice services is essential at Polar Code courses and used widely by the serious players (mariners, training centers) → **ICE SERVICES ARE ALREADY RECOGNIZED**
2. Ice at sea is one topic out of several other important topics on Polar Code courses (regulations, crew, vessel, performance, safety...) which means limited time for focus on ice products and services → **POLAR CODE COURSES CONTAIN MUCH MORE THAN USE ICE OF PRODUCTS**. The ice services should be aware of this.
3. Many marine training centers around the Globe issue Polar Code certificates, approved by national maritime agencies (Bahamas, India, Philippines...), BUT the reality is that this mariner is not trained seriously for Polar navigation → **ICE SERVICES SHOULD NOT GO DOWN THIS PATH**
4. All marine training centers approached by the Task Team are considered "best in class" for training and preparing mariners for Polar Waters operations → **ENGAGEMENT IS A WIN-WIN FOR ALL PARTIES**

role. We should also be aware that the Polar Code courses at the marine training centers are much more than just going through ice and be able to read ice charts and observe ice. There many other parameters going into a course - regulations, crew, simulator time, stuff like that - so we should be aware that any effort that we drive into this should be very targeted and very focused. We should also bear in mind that Polar Code certificates can actually be obtained all over the globe, even in the Bahamas and Philippines. I noticed that you can actually obtain a Polar Code certificate in the Bahamas for \$500. I'm not sure about the quality but I don't think we, as ice services, should go down that path. We should be focusing on quality and that's what we have done throughout this exercise over the past year – to only work with the very serious players in this field. But we should bear in mind that it's a gray market. We've described all the task team members as the best in class. So that's basically the way we should go. We also learned that the engagement should actually be a win-win for all parties. Running an ice service is not just putting out data products. It's much more than that. It's also about seeing how the products working for them. Can they use them? And how can we actually make that they get better use of the products and the expertise that we have. So, there are many routes for improvement.

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So next slide, please. The specific recommendations from the survey actually came up with nine. If you think back one year, many of you will recall that's more or less what we found out in the mariner survey. That's a recommendation to the ice services that you can put these into your strategic decisions for the future, because it's very clear that that's where the marine community would like to see our development go. One thing is that it also suggests that we should be deploying more ice analysts on ships simply to interact with the mariners on the on the bridge and to learn more about how decisions are made at sea in ice covered waters. How ice information is used and where it's working or not working? How can ice information be twisted so it would work. That's also something for the ice services to consider. It turned out that we ended up with a very specific set of recommendations for ice services production.



ICE CENTER PRODUCTION SPECIFIC RECCOMENDATIONS

1. Make your **SIGRID3 files available** for mariners
2. Make relevant **satellite data available** for mariners
3. Develop/issue **simplified ice products**
4. Develop/issue **focused ice forecast products**
5. Develop/issue **ice statistics** as required by Polar Code
6. Develop/issue **high resolution products** for targeted users or critical ice-covered regions
7. Provide **risk-based products** (like POLARIS, isolated/few/many icebergs)
8. Any ice product must be easily **accessible, timely and accurate**
9. Deploy **ice analysts on ships** in covered waters to gain experience, interact with mariners and obtain experience in ice conditions, use of ice information and decision making on the bridge of a ship.

MAJOR OVERLAP WITH IICWG 2019 MARINER SURVEY FINDINGS !

And next slide, please. The survey also came up with there a number of specific recommendations that would improve the training of mariners. One thing that surprised me a little bit was that there's a need for a fair number of documents - handbooks describing ice observing technology, satellite analysis, setups, and illustrations with pictures, stuff like that. So not very sophisticated products but simply easy-to-use descriptions of various setups. So, that's something to consider. Also, interact with the ice services, for example, and take part in Polar Code courses and see what's going on in the simulator. How are the ice products actually used? For example, for years we have discussed the use of scalable ice products, but I think going to the ice simulator to see how scalable ice products are used in real life could be interesting. We should also bear in mind that the simulators are getting quite advanced nowadays. There are lots of interesting scenarios where we could all learn something but where we could also provide our expertise so these scenarios become as realistic as possible. Overall, the recommendations from the survey go in two directions. One is towards the ice service specific operations but also how can we actually do better for the marine training centers.



MARINER TRAINING, SPECIFIC RECCOMENDATIONS

1. **Formal documents** (WMO Sea Ice Nomenclature, WMO-574 Ice Services around the World) are essential. **updated frequently**
2. **Handbook** describing ice observation technology, including advantages and limitations
3. **Description** of ice products, services, access and a combination of ice products, targeted at mariners
4. Updated **AW**
5. **Handbook**
6. **Handbook**
7. Any type of photos com
8. **Ice service**
9. **Display an**
10. **Develop exi**
11. **Ice service:**

IICWG XXI Session 2 Panel Discussion

Panelists:

- Bjørn Kay, Master Mariner, Instructor, Marstal Maritime Academy
- Duke Snider, Ice Navigator, Martech Polar Consulting & Nautical Institute
- Guillermo Mariano Palet, Argentine Navy Captain (R), Escuela Nacional de Náutica
- Jan Lieser, Ice Specialist, Australian Bureau of Meteorology
- Tatyana Alekseeva, Head of Educational Program, Arctic & Antarctic Research Institute

So next slide, please. This is where we ended but, in my mind, it doesn't stop here. It's actually starting here. So, the next phase of this session is to hear some views from our very interesting panel.

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Panel Discussion

Introduction

The panel discussion follows on the presentation by Keld Qvistgaard on the outcomes of the surveys of mariners and maritime training institutions conducted by Task Team 8. The panel discussed the results and offered their views on the survey responses.

Moderator: Keld Qvistgaard

Panelists:

- Bjørn Kay (Marstal Maritime Academy, Denmark)
- David (Duke) Snider (Martech Polar, Canada)
- Jan Lieser (Bureau of Meteorology, Australia)
- Tatyana Alekseeva (Arctic and Antarctic Research Institute, Russia)
- Guillermo Palet (Argentine Navy Captain (R))

Key Messages

- Responses from the maritime training centers were very similar to those from the previous survey of mariners themselves.
- The Polar Code is much more than just ice charts. The ice charts of our services are only a small fraction of the entire Polar Code basic or advanced training.
- There is a need for manuals and handbooks on board vessels on how to observe ice, use ice charts and interpret satellite images.
- There is a need for online resources for remote e-learning and also to allow trainees to go back to refresh their training.
- Maritime training centers need ice information products almost as much as mariners at sea. Ice services need to promote awareness of their products and expertise with the training centers and develop more personal connections with the training centers.
- Task Team 8 has completed the work it set out to do but has identified a set of new actions to continue to make progress in engaging the maritime training centers.

Session Transcript

Keld Qvistgaard (DMI)

This is the panel intended to discuss the findings of the survey but also to share some ideas on how we can go ahead. Duke Snider is on the phone from on a ship. We are so pleased that you could actually join us you. Maybe you could give us your position from the Pacific Ocean.

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Duke Snider (Martech Polar Consulting)

Yes, that is correct. We're still off the coast of Japan waiting for 14 days quarantine before we're permitted to proceed. We can't leave until we're sure everyone on board is free of COVID. We're working just off the coast and in October, we'll head north into the Chukchi Sea.

Keld Qvistgaard

Excellent. It's fantastic to have you with us. Back to this session on marine training and your engagement. What was your initial reaction when you went through the outcome of the results of the survey?

Duke Snider

I think one of the biggest things was that it was so very similar to the previous survey that we did with users in the field. The same sort of information was coming back. And what struck me the most was that the highlight of the feedback and interaction from the users themselves, the schools, and the ice centers to find out exactly what the ice services can provide was this focused. I think you've heard me say it before that you must give the clients what they need, maybe not what you think we need. That's where the interaction is important and it came up very clearly time and time again in this survey.

Keld Qvistgaard

Exactly. I think one of the major points of the mariner survey last year was to simply serve ships where ships go. It's as simple as that. I would also like to turn over to Bjørn, what was your initial reaction on the outcome of the survey?

Bjørn Kay (Marstal Maritime Academy)

I think the first reaction on the survey was that I'm very happy to be in collaboration with DMI, Danish Meteorological Institute, because it provides us with this important information. I do simulator development for ice navigation and know the best points of contacts because I have started to teach in all regions. That means I'm not only teaching in Denmark. I teach for Canadian waters, Alaska waters, and (*unintelligible*). That brings me to the next point. In my background, when I worked for the fishery industry, I had the opportunity through good internet to get the radar picture, the ECDIS, and the vessels outside. Which bring me back to the point which I mentioned earlier – what size icebergs and growlers should be indicated on ice service charts?

Guillermo Palet (Argentine Navy -ret)

We're happy to see that some of the findings from the survey are common practice in the way we have been working. Turning our 30-year old Antarctic navigation course into the basic and advanced IMO model courses for ships operating in polar waters made us introduce some changes. We have immediate access to all Argentine ice service products and satellite imagery for our courses. Our instructor on the courses is Beatrice Lorenzo, who many of you know. She's a former employee in Alvaro's glaciological department, after serving on the icebreaker for many years. Now, she has been replaced by Constanza Salvo, who gave the presentation yesterday. We acknowledge that there is limited time during the courses for officers to fully know and understand the complexity of the task at hand when his or her ship is in polar waters. Every possible way in

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which we can help them is beneficial for safety of navigation. Thus, I welcome initiatives taken about manuals and booklets to make it easier for mariners to do a knowledgeable analysis.

Tatyana Alekseeva (AARI)

I thought it was a really great idea to combine resources at training centers. You're going to be much more international, your vessels will become much more international, so I think the ideas that you gave in your presentation can be done ... (*unintelligible*).

Jan Lieser (BOM)

First of all, congratulations to Keld and the team for compiling this comprehensive survey and compiling the answers. I was not involved in your team but I was fortunate enough to talk to one of the gentlemen who deliver the training at the Australian Maritime College (AMC). I got to talk to him before I got the results and they very much mirror the comments that I've got from him. One of the things that is obviously a theme is that the Polar Code is much more than just ice charts and that the ice charts of our service is only a small fraction of the entire Polar Code basic or advanced training. So that was one thing and also the need for resources, handbooks, online resources for trainees to go back to for refresher.

CHAT LINE

Michael Bergmann

Question to the panel for training: In other maritime areas, especially ECDIS familiarization, the aspect of E-Learning is gaining interest and substantially increases competence, especially for those who had been in academies some time ago. How do you see E-Learning within the context of training for ice navigation?

Cathy Geiger

Also in terms of e-learning, if you go this path, you need to also have e-testing to make sure that standards are being met for ice-covered seas.

Michael Bergmann

Good E-Learning should include skill assessment. This may be a concept to think about also for ice service familiarization training course

Jürgen Holfort

Open accessible E-learning lessons would also be good for the person with a certificate to go back and refresh.

Kristen Serumgard

I think the role of the ice services should be to help develop the content, but not the assessment. The execution of the training program and assessment is the Training Center's responsibility.

Richard Hall (RICHH)

The purpose of the ice agency is to deliver information about the ice conditions. The purpose of the training is to make sure the mariners understand the information delivered by the ice agencies. Listening to the comments, the training programmes build relationships and trust between the information provider and the information user - which is good. The conversations identify challenges and solutions.

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Bjørn Kay

Correct Kristen - team- and network – should be in contact to work together to give a better product for the icebreakers, Navy, SAR, Commercial Vessel and Research Vessel as well as ice classed luxury yachts!

Marianne Thyrring (DMI)

Will you allow me to introduce one of the questions which is in the chat right now. To the panel, Michael Bergman has asked - in other maritime areas, especially ECDIS familiarization, the aspect of e-learning is gaining interest and a substantial increase in content. How do you see e-learning within the context of training for ice navigation?

Keld Qvistgaard

I can provide you one comment on this because we have actually discussed that in the task team. As we mentioned, we don't see our work stopping here, but rather beginning here. It's very clear that we have a wide interface to e-navigation and that's something we are actually suggesting for the long term focus in the task team.

Bjørn Kay

Congratulations to Tatyana and her crew. I work with some students who are running these natural gas carriers from Sabetta to Europe and back and they are very pleased with your satellite and ice information, which they put in the Transas Navi-Sailor 4000 ECDIS. I think this is one of the challenges - how the ice information from the ice services can be put into an ECDIS. You will need to make a standard for this. I think this is the information which they get from AARI to the LNG tankers to Sabetta. It's really outstanding. I started to train this in our academy by doing ice charts from the NASA server, which is available free of charge.

Keld Qvistgaard

I would expect that Tatyana has a comment on this because it seems like Russia is lightyears ahead of many of us with respect to E-navigation and putting ice information into the right context, but also with respect to the mariners.

Jan Lieser

I think the question was more around e-learning rather than e-navigation. That is reflected in the comments I received from the AMC gentleman. He wanted to have online resources for teaching online and not rely on people joining a classroom. So, e-learning and e-navigation, two different things, but still very important.

Duke Snider

From the practical users' standpoint, I think we have to be very careful of putting the cart before the horse. We have to be able to provide mariners the knowledge, the basic knowledge, to do the job. Right now, that is not necessarily being accomplished. Some of the more well-developed training centers that have been teaching ice navigation for years are doing it well. But there is a huge resurgence of new schools and trainees are coming out with Polar Waters Certification who cannot read an ice chart or understand an ice image. So, there's something missing. One of the biggest problems with e-learning is quality assurance. Has the student actually absorbed the material? It's important, before we go down the road of advancing e-learning, which everyone

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wants to do because of COVID, that we make sure we are providing the material and the knowledge in the basic format. We're not getting that today. That was very apparent with a number of ships that were stopped in the Canadian Arctic because masters on board, who had certificates of Polar training, couldn't make the right messages and couldn't read ice charts. So, we have to go to the basics first. And we have to be sure that all the schools that are teaching a course that they call ice navigation are actually getting that across.

CHAT LINE

Greg Stuart

How big is the market for the training of mariners in icy waters? Do the existing training facilities meet the current market needs? How can we ensure that people do not go for the cut price options at low quality training centers?

Guillermo Palet

I agree with Duke but we also have to consider that these are IMO model courses. We have to wait for IMO to acknowledge e-learning for these courses, which has not been given yet.

Bjørn Kay

I think the simplest way, and the necessary way, is to write down a procedure and then you can show a YouTube clip to a navigator. You can do it on board for different kinds. On the basic ice course, students should understand the basic analysis of ice charts. I think you should do this as a service provider. That's what they are actually doing at AARI when they're providing ice information to ships and they are very clever to define how this should be done. The navigators are very happy. It takes maybe five or 10 minutes to make a toolbox talk about that. Some of them are very good. They are working with Polar View from the UK and other ice services as well. It's very good in practical use for them. I think the next generation, the gaming generation, will like it.

Keld Qvistgaard

One thing I'd like to focus on is what should be the mandate of an ice service to jump into this field. I have the feeling that in Argentina and in Russia, you're well developed and have well-established interactions with a marine Institute and also with the marine community. Is that a matter of specific funding or is it because you have a certain size? Or could you actually allocate those resources to do this interaction.

Guillermo Palet

Both the ice center and the academy belong to the same administration within the Navy. So, we have very close contact with them and have free access to all the products and information we can use during the courses. And so, for us, it is easy. But new academies in a country that starts providing the courses must make arrangements with an ice service.

Tatyana Alekseeva

We have a huge program of training for mariners in the Sovcomflot and our Institute gives the lectures in the framework of this training. Lectures are about six hours. We teach about hydrological information, how to use satellite images, and how to use sea ice charts. But what is going on now? Now, even when they go on the Arctic expeditions on board icebreakers with a very experienced crew, they always come to us to see an ice specialist and ask a lot about the ice and about satellites. So, maybe they don't know some things that we know. So now imagine on the

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Northern Sea Route where there are so many vessels - LNG, cargo vessels, tankers, etc. - and on board these vessels are very many navigators from South Asian countries who have had never seen ice. These lectures were enough for Russian mariners, who have experience in navigating the NSR, but they are not enough for those new to the NSR. Now, when we are developing lectures, we add much more practice. We started to add practice in the first clip after each module. We speak about satellites, then we give a practice, and so on.

Also, it is a very highly necessary to give lectures on board vessels because it's not enough to give them in the office. Even after attending a lecture in the office, they don't understand it when they get into the ice. They cannot use old editions of hydrometeorological information. For example, we provide sea ice charts once every three days and every day they receive satellite images. They understand what is on the ice chart, but they cannot correct the route because they don't understand what is illustrated in the radar image, for example. Now, I think that we have to organize, not only six hour courses as a part of training, but two or three day courses or better and on board their vessels, That is the first thing. Second, we need to make handbooks. We contacted a lot of mariners and they always ask us for this because they use thick books with a lot of information. But they need short books with a lot of examples that they can open and see, for example, a visible image in summer and in winter.

CHAT LINE

Anna Telegina (SCANEX, Moscow)

About examples of successful collaborations in Russia, I think it's important to remember not only what ice services can teach navigators, but what experienced captains can teach back in operative usage of data for their purposes and what feedback shipping companies can provide to improve the service products. This year it has been a really productive season in collaboration with Sovcomflot, I think it's a great example. Thank you all for such a good discussion.

CHAT LINE

Richard Hall (RICHH)

Question: Is there a demand for satellite images on board ships for on-board meteorological tasks? Why is there a demand for satellite images for sea ice conditions, but not a demand for high resolution ice charts automatically generated from the satellite images? The classified image will have a smaller data footprint than the satellite image.

Becki Heim - NWS Alaska

Question: Is there a need for integrated sea ice and weather information from national centers?

Bjørn Kay

Becki - from my side I think that will be useful!

Richard Hall (RICHH)

Becki - agree, Richard

Ivan Sitnikov

Is the vessel ice radar data analysis included in the training courses?

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Jennifer Lewis (NOAA)

Richard Hall has raised a question in the chat that links up to what Tatyana was asking. The question from Richard Hall concerns the demand for satellite images on board versus high resolution charts generated from satellite images. I think that has a relationship to the onboard training that Tatyana was talking about. How do you provide something that's a resource to the mariner when they're in the ice themselves?

Keld Qvistgaard

I think the short answer to that is that we need it all but to a targeted user group because it depends on the type of ship and depends on the area, whether you operate outside the ice or inside the ice. But time is running out so I would like to pose the question - where do we see the bottlenecks for an enhanced collaboration between the services and the training centers? Is it a matter of the size of an ice service? Is it a question of financial or physical resources? Or is it distance?

Jan Lieser

In terms of our services and training services, as far as I can tell, it's not a matter of size. I have interacted with the AMC in Launceston, which is just 150 kilometers up the road here in Tasmania. I have delivered and supplied sea ice analysis training. I have supported the gentleman who's actually going through the entire Polar Code training. That was based on my background at the research agency at the University of Tasmania. I was producing individual advice to ship mariners on board. I actually go on board ships and understand the questions. Why is the mariner not quite understanding what I'm seeing as a remote sensing specialist? It is obviously time consuming and it's not easy for one being alone. But it is all possible. It's not a matter of size. It's a matter of will, connection, and action.

Duke Snider

I think Jan is very right in saying it's not a matter of size, but it is a matter of resources. It must be understood that the training centers need up-to-date information almost as much as a ship at sea and there needs to be a product delivery mechanism. Ice centers have to be flexible to provide what's being asked for and focus on a product that's being asked for. I know that the ice services around the world are constrained by their budgets but, to meet a client need, you've got to put some resources behind product delivery, whether it's to a learning environment or the operating environment.

CHAT LINE

Nick Hughes (MET Norway)

I agree with what Duke is saying. It's not a matter of size, flexibility is key. As a small ice service it's essential to have personnel who can multi-task with a wide-range of skills (science background, satellite remote sensing, IT, user engagement, etc.)

Kristen Serumgard

If travel opens up, I've got some open racks on my ship. Would love to be a resource for collaboration on in situ evaluation of use of products or ice analyst training.

Jan Lieser

The support meteorologist or glaciologist is the crucial link between the service and the end user.

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Keld Qvistgaard

I'd also like to turn to Bjørn. Where do you see the bottlenecks but also the potential? It's not a secret that you and I have worked together for several years. Physically, we are located several hours apart but that doesn't seem to have been a big problem for us. Is it our personal approach that makes things work or is it something else?

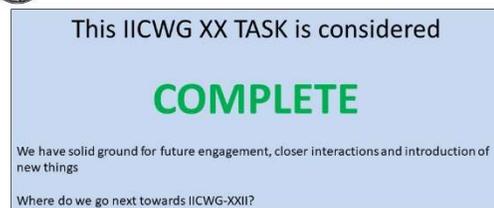
Bjørn Kay

I think the first thing is motivation. We both want to achieve something. I think everybody in Denmark will agree that the financial situation for institutions like mine is not the best. Funding of work is a very big issue. This applies to ship owners too. Because they have invested heavily in internet connections, they can do remote-controlled teaching on board ships which are running in the background. Fishing vessels have especially good internet. An issue is how to work on these platforms to make teaching possible and to implement on-line training as at least one of the simulator firms can do. You can put a Virtual Reality device on or you can scan people to run a program virtually on the ships. But all this technology takes money. So, I think, coming back to Keld and myself, I know we have a more personal approach and I think it's the same engagement we both have had in this area.

Keld Qvistgaard

I think that time is running out so we have to conclude this. But it brings us back to the findings of the survey because it was basically awareness and promotion, and feedback and interaction. I would suggest that all parties actually work with that and that also includes the ice services. They need to consider how that aspect can be brought into their strategies and into their future work to make themselves more visible, but also have real engagement. There's nothing easier than sitting in the office and being smart and clever. But we need to talk to the right people and go out and meet the right people at the bridge of a ship or a marine training center and various other places. So, I'm afraid we have to close the discussion here because we also need to conclude. We have had a very good group producing some nice results over the past year. So, we have also prepared a small outline to see how we can take this further. I'd like to thank the panel for being with us - and especially thank Duke who actually made it happen from the open ocean. I think that's really fantastic that you made it work. We were on several continents but I think it worked nicely. It's an interesting topic that we should work much more on. There's lots to talk about and also the chat actually suggested much more to work to do in this.

We have a small summary presentation. This Task Team 8 came out of the meeting in Copenhagen last year. We consider the original task as complete but it's clear for everyone that there is still lots of work to do. We have had long discussions in the task team about where we can take this collaboration, so I



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would like to take you to the next slide. It seems like there's lots of room and lots of potential and lots of ideas for shaping a new task team or a task team with a reshaped focus. I think the high level objectives that we have found after the survey here, that awareness and promotion of the ice centers and ice service expertise and products, is something we should consider, as is feedback and interaction,



Shape a NEW Task Team?:

- 2-3 Ice center representatives
- 2-3 Maritime training center representatives
- 1-2 mariners with Polar Waters experience

High Level Objectives

- Awareness and promotion
- Feedback and interactions

NEW TASK TEAM: Maritime Training Center Engagement – FOLLOW UP (outline, potential topics):

1. Collect/prepare concrete examples on **ice service specialists work and experience with the maritime training centers** through recent years.
2. Prepare **headlines for a documentation package** for mariners (what mariners must know about the Polar Waters, ice services and their products)
3. Ice center specialists **visit to maritime training centers**, including simulator, lectures and ice display
4. Maritime Training Center representatives to **visit ice centers**, including production setup
5. Prepare an example of a **data package to the Maritime Training Centers** and evaluate the use of it
6. Evaluate and improve **"Best Practices"** concerning the balance various types of ice products for navigation in ice-covered waters (balance between satellite data, level of detail, value added data and forecast products)
7. The value/benefit but also costs of an **ice specialist in different fields** (operations, development, vessel bridge, at training center)

- introduce, strengthen relations via "real" work, collaboration and joint efforts
- gain, share data, knowledge and experience
- interact with E-navigation (scalable ice information)
- report to IICWG-XXII

where we actually meet real people in real life in their environment. Also, mariners and representatives from the training centers have to come visit us in the ice services. Obviously, there may be some obstacles concerning distance and planning but I think that would be the long term. So, to shape a new task team. We had 10-11 members in the old task team and that worked fine. I have the outline of how a new task team could look like as well. We should have a balanced representation from the ice services and marine training centers, but also with mariners with solid polar waters experience. So maybe the ideal size of a group is eight people. I don't mind going to 10 or 11, as long as we get some work done. That's the key. We have prepared a number of the topics that a reshaped task team could deal with. Because it's important that we're not starting from scratch. There is already some significant work being done with some marine training centers but obviously a lot more can be done. I think it's important that we summarize that work and share the experiences that we've had through recent years. There's also a suggestion for preparing the headlines for a document to form what is important for the mariners to know about polar waters, ice services, satellite systems, and the products that come out. Visits to the training centers and also visits to the ice centers could be organized. That's also something that should be considered but also to summarize what was the actual experience that came out of that? Suggestions for preparing data packages that are going into the actual courses provided by some training centers and evaluate the use of them? Of course, we must consider best practices and the balance between too much and too little. What is it that an ice navigator should know about the ice products to navigate in ice waters? What is the perfect balance of satellite information? There are details that are added information. I don't think there's a concrete answer to that but we could come up with several examples. And finally, to focus on what is the value of having an ice specialist outside the office. Of course, to bring someone into the operating environment is one thing but to bring an ice specialist or an ice analyst onto the bridge of a ship or to work with the instructors in the training center will probably also give something. The intended outcome is basically to do real work through collaboration and joint efforts and to talk. So, it's basically to gain as you share your data and experience. That's the important part. But also, as the discussions have shown, there is a possible interaction with e-learning, but also e-navigation. We have had long discussions about scalable ice information and the use of it. I think, from the ice service perspective, we can also learn from that. And finally, report to the International Ice Charting Working Group next year. So that's the outline we have in mind for a reshaped task team.

CHAT LINE

Michael Kingston

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This is a very helpful survey and extremely important information. Well done Keld and IICWG, and all involved. I am working as a Special Advisor to the Arctic Council's Protection of the Arctic Marine Environment working group and am on the organizing Committee of the Arctic Shipping Best Practice Information Forum which as IICWG knows is a Forum for interaction between the Arctic States and all Arctic Stakeholders, including participation by Antarctic States and industry and also Non Polar Flag States, including key decision makers such as the insurance industry. There is a Web Portal for the implementation of the Polar Code www.arcticshippingforum.is as IICWG knows through great participation. IICWG are penciled in to present on 24th / 25th November at our virtual (Arctic Shipping Best Practice Information) Forum meeting. I am to reach out to John and Marianne this week for confirmation. This work is very important to relay and could be highlighted on the Portal Information page. Training is also featuring at the virtual Forum. Also, I work as a Consultant on Polar issues with IMO's Maritime Safety Division and will relay this work to the Training team and a meeting about this with IMO Maritime Safety Division would be most welcome. The pitfalls with Certificates based on incomplete ice training are very important to highlight. Michael Kingston

Marianne Thyrring

I would like to draw everybody's attention to the comment from Michael Kingston. Michael puts his finger on something, which I find is very important. We must have common and coordinated actions, not only with ourselves and the mariners, but also with the IMO which also deals with maritime safety. So, we should not stop our own activities but we should put them into a wider context. So, on that note, I would like to thank everybody for having participated.

Appendix E1: Session 2 Background Paper

In 2019, the IICWG Task Team 8 under the leadership of Keld Qvistgaard, initiated this task by undertaking a major survey of mariners operating in Polar Waters to get a better qualitative and quantitative understanding of requirements, needs, gaps, trends, and limitations of current/future products and services. The survey was conducted during March-April 2019 with the assistance of The Nautical Institute. A total of 95 responses were received with strong representation from senior mariners experienced in ice navigation. The results of that survey were reported at IICWG-XX in September 2019.

Task Team 8 continued in 2020 to conduct a new survey among selected, acknowledged training centers and the professional users in the Task Team to determine how mariners learn about ice, what resources the training centers use and would like to use, and how the Ice Services could work better with them to improve the level of knowledge about sea ice and icebergs among mariners. The primary objective was not to receive as many responses as possible but to formulate open questions and examine the details of the responses. Sixteen marine training centers around the Globe, as well as the Nautical Institute and the professionals on the Task Team, were invited to respond to the survey. The survey results and analysis are reported in the Marine Training Center Engagement Report on Observations, Potential and Recommendations (draft).

The objective of this session is to briefly report on the training center survey, to reflect on the important outcomes and recommendations, and to examine the steps that Ice Services and the IICWG can take in response to the survey. Given the time limitations and the constraints of videoconferencing, the discussion will be led by a panel of ice service representatives, mariners,

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and maritime training center representatives. Questions will be posed to specific panelists by the moderator, with room for others to comment.

Panel Discussion

Moderator: Keld Qvistgaard (DMI)

Panelists:

- Duke Snider (NI)
- Bjorn Kay (Marstal)
- Captain (R) Guillermo Palet (Argentina)
- Jan Lieser (BOM)
- Tatiana Alekseeva (AARI)

Prepared Questions

Following is a sample of the types of questions that will be posed by the moderator:

1. Of the many suggestions identified in the survey responses, are there any that your ice service could commit to implementing in the next year?
2. What do you see as the main challenges to implementing these suggestions?
 - Lack of resources?
 - Technology limitations?
 - Policy constraints?
 - Other?
3. Are there findings that are covered / not covered by your mandate/funding?
4. Could we get broad agreement across the ice services to commit to a common standard suite of service offerings? Can we select topics for collaboration / sharing in International Ice Charting Working Group?
5. The ice centers use the same standards but our pdf ice charts all look different and confuse some mariners. Ice services to phase out graphical formats and provide scalable formats instead (coordination with the e-Navigation task)?

Suggested Topics for an IICWG Follow-Up Task Team (work up to IICWG-XXII)

The difficult part of session 2 is probably to summarize and conclude the discussions. There is also very limited time for discussing and shaping the next phase.

Keld prepared the following list of topics that could produce some concrete results over the coming years. Feel free to add, modify or comment. Please bear in mind that any potential task/goal should be manageable and achievable.

- A. Collect/prepare concrete examples on ice service representative work and experience with the maritime training centers through recent years.
- B. Prepare headlines for a documentation package for mariners (what mariners must know about the Polar Waters, ice services and their products)

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- C. Ice center specialists visit to maritime training centers, including simulator and ice display
- D. Prepare a data package to the Maritime Training Centers and evaluate the use of it
- E. Evaluate and improve “Best Practices” concerning the balance various types of products for navigation in ice-covered waters (balance between satellite data, level of detail, value added data and forecast products)
- F. The value of an ice specialist in different fields (operations, development, vessel bridge, at training center)

Appendix E2: Session 2 BIOS



Keld Qvistgaard

Keld is a senior ice specialist at the DMI Greenland Ice Service. He has been with the Ice Service since 1992. Along with his expertise in Greenland/Arctic/Antarctic sea ice & icebergs, he is skilled in using high resolution satellite images, both SAR and non-SAR, for support of navigation in ice-covered waters and is the coordinator of satellite data for the Ice Service. Keld manages commercial programs for high resolution customized services to ships in Greenland waters, mariner training, and international relations with ice services around the Globe, Polar shipping, marine training centers, satellite data providers and the WMO.



Tatiana Alekseeva

Tatiana is leading engineer at the Arctic and Antarctic Research Institute (St. Petersburg, Russia) in the Center of ice and hydrometeorological support and she also works as scientific researcher in the Laboratory of ice navigation, ice regime and forecasts department. She is experienced in the processing of satellite images; sea ice charting; developing and delivering sea ice courses for navigators in the Sovcomflot shipping company; research of sea ice regimes and Arctic climate change and the influence of sea ice on navigation. Tatiana has participated in more than 30 expeditions in the Northern Sea Route, to the North Pole and the Sea of Okhotsk as a sea ice specialist onboard nuclear and diesel powered icebreakers, cargo, and research vessels.

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Jan L Lieser



Jan is a meteorologist and marine glaciologist with the Antarctic Meteorology Section at the Australian Bureau of Meteorology and adjunct researcher at the Institute for Marine and Antarctic Studies of the University of Tasmania.

Jan is the leader of the Ice Service that is provided by the Bureau of Meteorology. Besides his operational duties he maintains a research interest in polar remote sensing. He has also collected on-site polar meteorological observations and sea-ice geophysical measurements, and has researched numerical modelling of Arctic sea ice and Antarctic subglacial Lake Vostok. He was a wintering scientist at the German Neumayer Station and has participated in several field research programs in both Antarctica and the

Arctic Ocean, conducted by the Australian Antarctic Division and the German Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research. Jan has spent more than 450 days at sea, on-board icebreakers.

Guillermo Mariano Palet



Retired Argentine Navy Captain. Naval Systems degree graduate. Environmental Affairs Master course, thesis pending. Former Icebreaker Commanding Officer. Participated in 16 Antarctic Summer Campaigns onboard ships with and without ice class. Head of two winter Antarctic Stations. Argentine Navy Icebreaker Almirante Irizar ice navigation advisor during Summer Antarctic Campaigns since 2017. Antarctic Navigation

Course Director since 2009. Implemented Basic and Advanced Courses for Ships operating in Polar Waters for the Argentine National authorities. Course Director and Professor of both Polar Waters courses.

David (Duke) Snider



Duke is the CEO and Principal Consultant of Martech Polar Consulting Ltd, which provides global ice navigation services and support. He is a Master Mariner with 40 years at sea, operating many vessels in a broad variety of ice regimes in Arctic and Antarctic Polar Regions, the Baltic, Great Lakes and Eastern North American waters. Retired from Canadian Coast Guard service, he remains active at sea, holding the Polar Waters Advanced Certificate of Proficiency and The Nautical Institute Ice Navigator Level 2 Certification. Duke has authored numerous papers on ice navigation. The second edition of his authoritative book “Polar Ship Operations” was published in 2018. He is immediate Past President of The Nautical Institute

and chairs the Ice Navigator Working Group tasked with administering The Nautical Institute's global standard for Ice Navigator Training and Certification Standard.

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Bjørn Kay

Bjørn is an instructor at the Marstal Maritime Academy providing basic and advanced programs for polar code training in house, on demand, and by satellite remotely with ships at sea. Since initially sailing with the Royal Arctic Line to Greenland, he has worked on developments for ice simulation, including work with Kongsberg, Rheinmetal , Wärtsilä, and Morild Interaktiv Marine Simulators. Bjørn has worked in almost every part of the world in connection with ice and polar code training. He maintains his Master Mariner License and does practical work on board ships to educate crews.