

# Ice navigation standards

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*'The navigation of the Polar seas, which is peculiar, requires in a particular manner, an extensive knowledge of the nature, properties and usual motions of the ice, and it can only be performed to the best advantage by those who have long experience with working a ship in ice conditions.'* Captain William Scoresby, *The Arctic Regions and the Northern Whale Fishery*, 1820.

Even at the time of the first forays into polar waters mariners have clearly recognised that navigating within waters infested with ice takes additional knowledge and skill beyond those needed in less challenging navigational environments. This is no less true today than it was in Scoresby's time. In 2005 Ulf Ryder, President and Chief Executive of Stena Bulk, rightly said in a *Fairplay* magazine interview: 'It takes as much time to train an ice master as it does a brain surgeon'. So why is it that the international shipping community has still not settled on a definitive list of knowledge and skill requirements for mariners operating in polar ice regimes, as it has for operating petroleum tankers or dynamic positioning vessels, say?

Today there is still no common agreed standard that we should hold mariners to for ice navigation skills (let alone what we call these experts), whereas we do recognise the special training and experience necessary to operate other specialised vessels, where specific endorsements are required on certificates of competency. Not so for navigating in ice. There remains a plethora of varying ideas about what is required, whether it should be mandatory or recommended, or even what someone who has some additional skills should be called.

The latter in and of itself causes confusion. Individuals with ice experience may be referred to as 'ice pilots' (which

causes great confusion with the more traditional title of 'pilot', whose local knowledge is used in a navigational sense to provide expertise to the master), 'ice advisors', 'ice navigators' and even 'ice masters'.

It isn't for want of trying. Ten years ago the Canadian Coast Guard, then part of Transport Canada, moved to lead the pack as it were, and quantify and define what skills and knowledge are necessary to navigate safely in polar ice regimes, to develop a skills and knowledge matrix along with complementary model courses. The entire package of required skills and knowledge and model courses was submitted to IMO, to become part of the ambitious Polar Code.

However the Polar Code never materialised as a solid requirement for vessels operating in the polar areas. The international song and dance to find a consensus that ensued, resulted in the watering down of many of the truly strongly worded requirements, and virtually ignored the need for actual experience navigating and manoeuvring in ice.

What came out were not requirements, but the loosely worded Guidelines for Ships Operating in Arctic Ice-Covered Waters. Even the global reach to both poles that the Polar Code envisioned was removed, as the extension over Antarctic waters was removed. Today, as the basis for a common standard, the Guidelines remain weak – but at least they provide a pointer towards how much further we need to go.

The IMO has not stepped up to the plate, nor have shipowners, cargo owners, or insurers; not fully or collectively at any rate. We still see a hodge-podge of attempts to develop standards. Each attempt remains a stand-alone, whether an attempt by national regulation, an industry initiative, or one of the myriad of nautical training institutes that have all recognised the need, but have acted more or less independently.

## Canadian context

Examples today are varied. The Canadian Arctic Shipping Pollution Prevention

Regulations require an 'ice navigator' onboard tankers transiting Canadian Arctic waters at all times, and on other vessels that opt to use the Arctic Ice Regime Shipping System to determine 'go-no-go' passages. Under this legislation, the ice navigator is merely required to be qualified as a master or person in charge of a deck watch, and have served in that capacity for 50 days, of which 30 'must have been served in Arctic waters while the ship was in ice conditions that required the ship to be assisted by an ice-breaker or to make manoeuvres to have avoided concentrations of ice that may have endangered the ship'.

Still in the Canadian context, as an example of non-polar ice regimes, in the eastern ice prone waters of Canada within the Gulf of St. Lawrence, the Joint Industry – Canadian Coast Guard Guidelines for the Control of Oil Tankers and Bulk Chemical Carriers in the Ice Control Zones of Eastern Canada requires the presence onboard of an ice advisor, who possesses a watchkeeping certificate valid in Canadian waters and who has sailed as 'master or senior watchkeeping officer or ice advisor during the last five-year period' with a 'minimum 15 days' navigating ice-covered waters that required the ship to make extraordinary manoeuvres or to be assisted by an icebreaker.'

IMO's 2002 Guidelines for Ships Operating in Arctic Ice-covered Waters, which are not mandatory, simply recommend that 'all ships operating in

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Arctic ice-covered waters should carry at least one ice navigator' whose qualifications are simply 'to have satisfactorily completed an approved training programme in ice navigation'. But there are no details about what this 'approved training programme' should cover.

In the Antarctic, draft guidelines were proposed that would have covered ice navigator requirements but this process, like others, has become stalled. The most recent attempt by the Antarctic Treaty Consultative Meeting in June 2008 made it clear that 'the development of a legally binding instrument for standards and operations for vessels operating in the Antarctic region' must be pursued.

A true global standard for the skills necessary to navigate safely in polar ice regimes remains elusive, even with conference after conference highlighting the dangers of *not* putting in place hard and fast skill and knowledge requirements for mariners operating in the harsh polar ice regimes. Do we need to correct this? If so, how do we set about it?

The answer to the first question remains a strong affirmative: we do need a clear and comprehensive global standard that will ensure ships operated in polar ice

regimes do so with the requisite skill to ensure the safety of crew, ship and cargoes that transit polar ice regimes. We require a common understanding of what is required, so that we all educate, operate and improve with a single focus; so that we all speak the same common language and know what to expect of ourselves and each other. When we do not even agree on what we call the people who have some kind of additional ice experience, let alone exactly what skill and knowledge they might have, how can we know what to expect of the individual we place in a position of such responsibility?

Most important, we require a legally binding framework of requirements for vessels and personnel operating in polar environments that are highly environmentally sensitive and remain remote, with little in-situ supportive infrastructure if things go wrong.

## Pushing the frontiers

Shipping is continuing to push back the polar frontiers. Where once only the hardiest and most experienced generally sallied forth into polar ice, we are seeing a rapid and steady increase in ships

transiting ice beyond the now familiar first-year ice conditions experienced in the Baltic, the St Lawrence or even the Sakhalin, Caspian and Sea of Azov.

Natural resource extraction is increasing in intensity in the 'waters' north of the Russian land mass, and soon along the northern coasts of North America. South of the equator, dramatic increases in the numbers of passenger vessels pushing towards the Antarctic have resulted in dramatic rescues, thankfully so far with no loss of life.

Recent incidents of groundings in Antarctic waters only reinforce the idea that something is missing. The popular press is constantly regaling us with accounts of imminent dramatic changes due to global climate change. The risk to the fragile environments in the high latitudes has become common knowledge around the globe while headlines herald the dawn of the era of the Northwest Passage as a highway across the north. Russia is placing huge reliance on the future financial returns from exploitation of natural resources, particularly LNG on its northern shores.

The increase in shipping in previously ignored hazardous routes, the lack of

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infrastructure to assist those who could come to grief, the lack of navigators with sufficient experience to fully appreciate the environment, then plan and carry out strategic and tactical passage planning – all will add up to increased numbers of incidents, damage and potential loss of life and environmental catastrophe.

We can list incidents in ice regimes where a unified and clear standard for ice navigation skills might have averted tragedy or damage: The *Magdalena Oldendorf* trapped in ice of the Antarctic, the *Explorer* sinking off the Antarctic Peninsula in November 2007, the *Tuvaq* damaged by ice off Iqaluit in the Canadian Arctic. However at this stage there is no value in trying to determine why we have failed to truly develop an international standard required of ice navigators. What we must do is move forward, and find ways to correct the absence of an international standard and clearly define standards necessary for mariners to navigate polar ice regimes. First we must look to what is or is not presently in place that speaks to ice navigator requirements.

## Regulations

In Canada, as mentioned above, the Arctic Shipping Pollution Prevention Regulations specify the requirements for an ice navigator on ships transiting Canadian Arctic waters but little is said of the exact skills and knowledge that would be required. South of the Arctic, the Canadian Joint Industry Guidelines (guidelines note, not requirements), require an ice advisor onboard tankers transiting ice infested waters of the east coast of Canada. In the Baltic, pilots are required and experienced ice navigators may be recommended. No requirements exist for ships transiting Russian Arctic waters, reliance there is placed primarily on the crews of the Russian icebreakers that accompany vessels in ice.

The Antarctic Treaty system has called for legally binding requirements but must rely on other jurisdictional power holders to develop and put in place these requirements. Individual ports may require some sort of experienced navigator or pilot onboard ships transiting ice infested waters, but again, these rules typically consider local navigational knowledge only, and not ice operations.

## Marine educational institutions

Globally, several forward-looking nautical institutions have worked, at first

independently, then to some extent collaboratively, to develop syllabi based on what each believes are the necessary skills and build courses upon these, some with very effective simulator sessions. The Marine Institute of Memorial University in St John's, Newfoundland; the Admiral Makarov Institute in St Petersburg, Russia; Kalmar Maritime Academy in Sweden; Meriturva in Helsinki, Finland; Instituto Universitario Naval in Argentina – all conduct various versions of courses on navigation in ice. There is no standard among them, though similarities abound. This spring, representatives of many of these academies met in St Petersburg to discuss a common approach.

## Shipping companies

The most experienced companies operating ships in polar ice regimes have recognised the need to have individuals who possess the additional skills onboard and part of the bridge team. Sovcomflot and Stena routinely send seagoing personnel to the Makarov Institute for ice navigation training. The Desgagnes Group of Quebec, Canada, conducted a week-long seminar to educate and familiarise their ships' companies in the additional skill and knowledge required onboard their vessels operating into the Canadian Arctic. Is this sufficient to ensure a full skill set is available to those mariners? That is hard to answer.

Other companies have recognised that crews that rarely, or irregularly, transit hazardous ice regimes not only do not have sufficient time in the conditions to learn, but their forays are so infrequent that skills and knowledge are lost. Where company seagoing employees cannot be expected to gain or maintain the knowledge with frequent regular transits, then additional ice advisors/pilots/navigators are brought in for specific transits to augment the regular crew. But even here, standards do not exist and one company's requirements differ from another's. Where some hire very experienced and knowledgeable ice navigators, others hire individuals who barely meet the least demanding possible definition, simply to appear to meet a guideline that has no teeth.

## Class and insurance

Class has historically focused on the construction of ships. To be fair, IACS has worked diligently and finally achieved the harmonisation of Polar Rules for construction. With that long and laborious

process now more or less in place, some of the classification societies are now beginning to focus on ice navigation requirements. They are, as yet, moving independently however, though positively at least. Lloyd's Register has done some work from the cold climate working groups; DNV SeaSkill perhaps has taken the most advanced steps in defining skills and knowledge for ice navigation.

Perhaps the quickest to react to need are those entities that provide insurance to the shipping industry. When costly payouts are required, insurance companies begin to take notice. At present, insurance warranty limits (IWL) are the basic restrictions but insurance providers are becoming aware of the increased interest in shipping in ice-covered waters. An insurance company can quickly, and almost arbitrarily, place requirements on operators to have sufficiently trained and experienced ice navigators onboard. What still remains however, is the need for collective and uniform requirements to be set by the insurance industry as a whole.

## Coming together?

So how does the global shipping industry finally come together? During a one-day seminar held last October in Montreal in conjunction with the Lloyd's List Events, Arctic Shipping North America 2008, a cross-section of mariners, shipowners, insurers, regulators and educators discussed exactly that. The author co-facilitated the session with David Jackson, Manager of Icebreaking Services for the Canadian Coast Guard. At the end of the day, the general consensus was that IMO, although it should be the global leader, is invariably bound by the slow processes required to get even the most simple consensus. Its attempt to push through the

## In a personal capacity...

*Seaways* authors are often employed in senior positions within the shipping industry, whether seagoing or ashore. They may represent international organisations, maritime authorities or ship-operating companies. Many are active in The Nautical Institute, at branch or Council level.

However when they write for our journal, they do so in a personal capacity unless otherwise stated. Their views are their own and do not necessarily represent their own organisations or the Institute.

Polar Code in the 1990s is witness to that. So if not IMO, who then should lead?

In Europe there is an ongoing attempt to deal with standardisation but it remains geographically Eurocentric. Of the representatives to this initiative, none is from North America, specifically none from Canada, a country that spearheaded legislation to ensure safer navigation of Arctic waters with its ground breaking Arctic Waters Pollution Prevention Act in the 1970s. The European effort ignores the lessons learned, and being learned, by the many experienced ice navigators that shepherd shipping through the polar waters of North America. It is not global in scope.

What of educators? Again, no global international effort is yet ongoing, though somewhat more regional international efforts have been attempted. The conference recently coordinated by Vladimir Kuzmin of the Admiral Makarov Centre in St Petersburg to bring together a global consensus was a clear step forward. (At the time of writing this article, no reports from the seminar had been published.)

Individual classification societies have recognised the need but have not yet been able to repeat the long, tedious process to develop the Polar Harmonised Rules for

construction with anything near a polar harmonised requirement for navigators, usually citing this as the concern of IMO and STCW. But, as stated, IMO is slow, and currently doesn't seem to see this issue as a priority. National flag states are not likely to step up unless, like Canada and other circumpolar states, the issue has a direct impact on their shores.

So what, truly, would push a global standardisation? At the Montreal conference, the discussions seemed to point to insurers. Who better than insurers, seeing rising costs in claims, can quickly and uniformly enact requirements for skilled personnel? Perhaps this is the answer. When forced with either higher premiums, or no coverage at all, shipowners and operators may be forced to see the need. This won't be news to those that have been trading in these areas for years, but for the myriad of newcomers, like the once-only operators, a clear requirement from their insurer would push things – in the right direction.

## IMO catch-up?

Perhaps we would then see the slow catch-up of IMO, possibly changing STCW to

include clear reference to specific ice navigation skills and knowledge in a new endorsement, with standardised model courses. National regulations would then naturally follow.

Lloyd's List Events will once again be pursuing this issue – how do we move forward to develop and require necessary standards for navigators' skills and knowledge required in polar ice regimes – in a post-conference workshop in Helsinki on 30 April, following the fifth annual Arctic Shipping Summit. The author, along with Captain Magnus Sjoquist of the Kalmar Maritime Academy will co-chair the one day workshop 'A Guide to Current and Future Requirements for Ice Navigation Training and Standards' that is intended to further encourage not just dialogue, but action. With the groundwork laid in Montreal in 2008, perhaps this will be the true catalyst to move forward.

The marine industry requires clear, legally binding, harmonised requirements for, and definition of, ice navigators for ships operating in challenging ice regimes. William Scoresby knew the skills and knowledge required were quite different in 1820. We know today. We must finally address this through collective actions.



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