ARCSAR

Arctic and North Atlantic Security and Emergency Preparedness Network

THIRD STAKEHOLDER EVENT

ARCSAR Addresses the Arctic and North-Atlantic (ANA) region, preparing to cope with the maritime security and safety threats that will result from increased commercial activity in the region including traffic through the northern passages, cruise traffic, and offshore oil and gas activity.

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8-9 FEBRUARY 2023

Cork

IRELAND

Summary

The 3rd ARCSAR stakeholder event took place on 8-9 February 2023 in Cork, Ireland. The event aimed to map and develop a standardised approach to innovations related to Search and Rescue and Marine Environmental Response activities in the Arctic, focusing on the need for standardisation, methods of achieving it, and the challenges and barriers involved. The event was held in a hybrid mode and featured participants from 15 countries, including JRCC, coastguards, academics, and companies. Key outcomes included identifying the need for standardisation of different categories of innovations, discussing means of standardising new innovative products, procedures, regulations, or policies that may add value to the current capabilities, exploring existing challenges and barriers for standardisation and means of overcoming them, and discussing the standardisation of learning from incidents, and simulation exercises. The event featured a series of presentations, including Anders Martinsen from UAS Norway, Mikel Dominguez from JRCC Norway, Kevin Fitzgibbon from Munster Technological University, and Natalia Andreassen from Nord University. The event also included group discussions on a variety of topics related to standardisation, with facilitators leading conversations on live saving equipment, incident investigation, oil spill prevention, and ensuring compliance with regulations. Overall, the 3rd ARCSAR stakeholder event was an important opportunity for stakeholders to collaborate, learn, and develop a shared understanding of best practices for search and rescue and marine environmental response operations in the Arctic.

V

VESSEL STRUCTURE & EQUIPMENT

L

LSA & SEA COLD SURVIVAL

C

COMMUNICATION

P

POLLUTION & INCIDENT CONTROL

N

NAVIGATION & VOYAGE PLANNING

T

PERSONNEL TRAINING & EDUCATION

ARCSAR PRIORITY THEMES CONSIDERED (FROM NEED MAPPING IN REFERENCE [1]*):

V

VESSEL STRUCTURE & EQUIPMENT

Standardisation of requirements (including maintenance schedules) for life saving equipment

(Assessed Importance 8.52, Difficulty 3.27)

Standardised protocol for incident investigation and implementation of lessons learned

(Assessed Importance 8.51, Difficulty 6.03)

T

PERSONNEL TRAINING & EDUCATION

P

POLLUTION & INCIDENT CONTROL

Standardised regulations for prevention of oil spill

(Assessed Importance 8.76, Difficulty 4.70)

Ensuring all vessels covered by Polar Code or similar regulations

(Assessed Importance 8.43, Difficulty 4.82)

P

POLLUTION & INCIDENT CONTROL

*All ARCSAR identified needs have been classified by the methodology developed in [1] into six broad categories based on the IMO Polar Code, and assigned levels of importance and difficult on a 1 to 10 scale utilising the geometric mean score of a set of relevant experts. A balanced priority set of 17 sub-needs was then found by the technique of goal programming [2], four of which are considered at this stakeholder workshop.

KEY THEMES : Policy and Standardisation

1. **Aim**: To map and develop standardised approach to innovations related to Search and Rescue and Marine Environmental Response activities in Arctic.
2. **Issues/Challenges**:
   - Need for Standardised approaches,
   - Methods of achieving a standardised approaches,
   - Challenges and barriers.
3. **Methodology:**
   - A set of key stakeholders described the current and future topic challenges pertaining to ANA product and process standardisation.
   - A set of four facilitated focus groups discussed innovations to meet specific current and future arising standardisation challenges across the ANA region.
   - A SWOT analysis was conducted for each of the four group topics and conclusions drawn.

Key Speakers

Key speaker-1: Anders Martinsen, UAS Norway.

"Air Coordination and Standardisation"

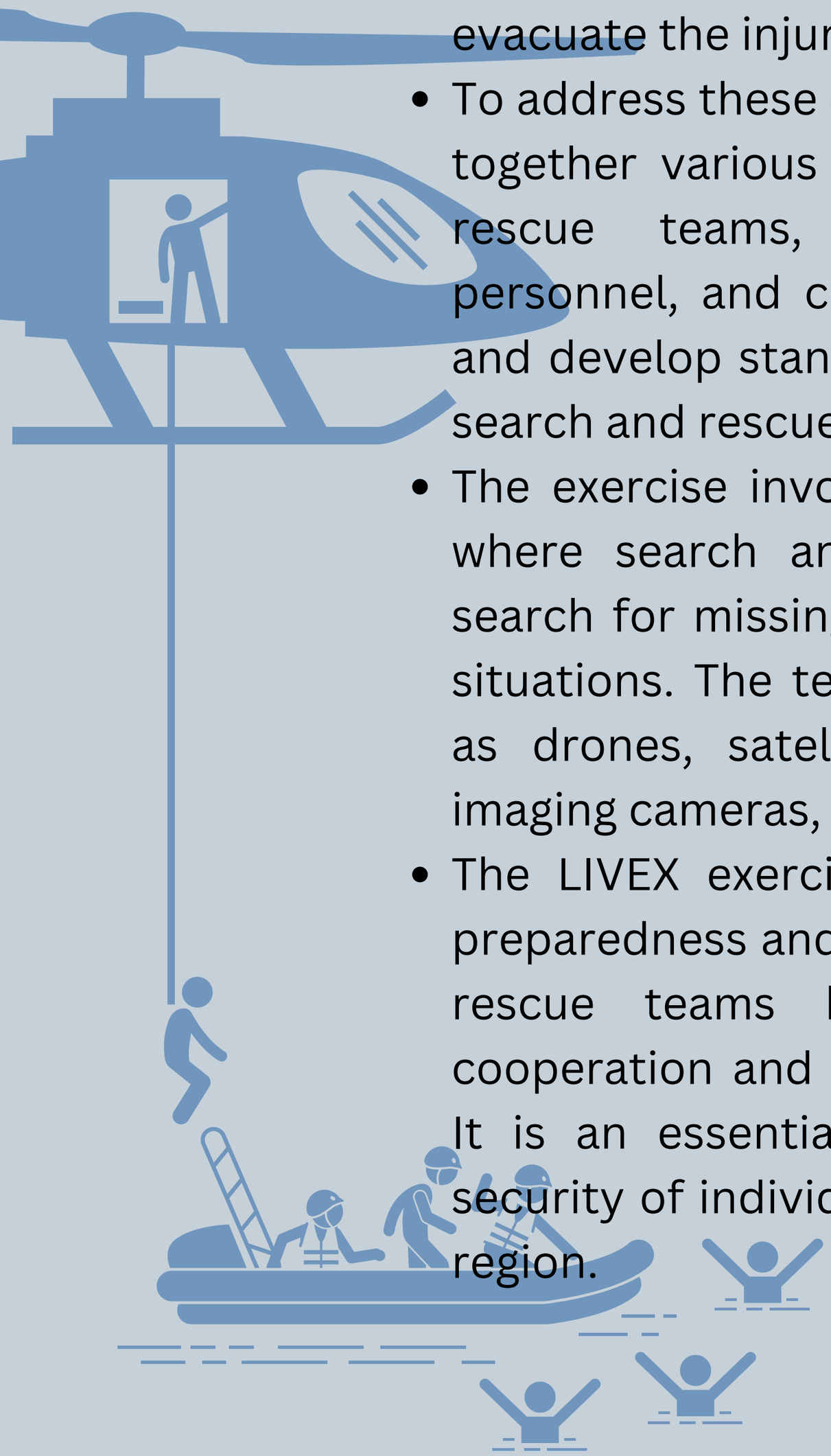
Key Points:

- The speaker shared his experience of planning for a search and rescue operation with drones, prioritising flight safety and assessing the job requirements to determine the necessary footage.
- There is currently no standardised procedure for operating drones and manned aviation in search and rescue operations, which creates challenges for individuals involved in these operations.
- There are no standards for communication protocols, equipment, or mandatory training for drone operations, which creates barriers to standardisation. Various tools such as satellite phones, VHF, and binoculars with a rangefinder are used for safety, in addition to a laser rangefinder on the drone also need a standarisation.
- Different levels of separation are used to ensure safety during the operation, even without an ACL in place.
- Standardisation is crucial for the search and rescue industry to operate efficiently and safely.
- The speaker suggested practical solutions like having minimum mandatory equipment for drone operations, standardising training, and promoting interoperability across organisations.
- These issues are cross-applicable across all topics that the workshop aims to address.
- The workshop should focus on addressing the priorities of the search and rescue industry to improve standardisation.

Key speaker-2: Mikel Dominguez,
JRCC Norway
“LIVEX Overview"”

Key Points:

- Arctic search and rescue operations present unique challenges due to the extreme weather conditions, limited visibility, and difficult terrain. The region also lacks infrastructure, such as roads and airports, which makes it difficult for rescue teams to access and evacuate the injured or stranded individuals.
- To address these challenges, the LIVEX exercise brings together various stakeholders, including search and rescue teams, government agencies, military personnel, and community members, to collaborate and develop standardised procedures for conducting search and rescue operations in the Arctic.
- The exercise involves simulating a real-life scenario, where search and rescue teams are deployed to search for missing individuals or assist in emergency situations. The teams use various technologies, such as drones, satellite communications, and thermal imaging cameras, to locate and rescue the individuals.
- The LIVEX exercise not only helps to improve the preparedness and response capabilities of search and rescue teams but also promotes international cooperation and collaboration among Arctic nations. It is an essential tool in ensuring the safety and security of individuals living and working in the Arctic region.

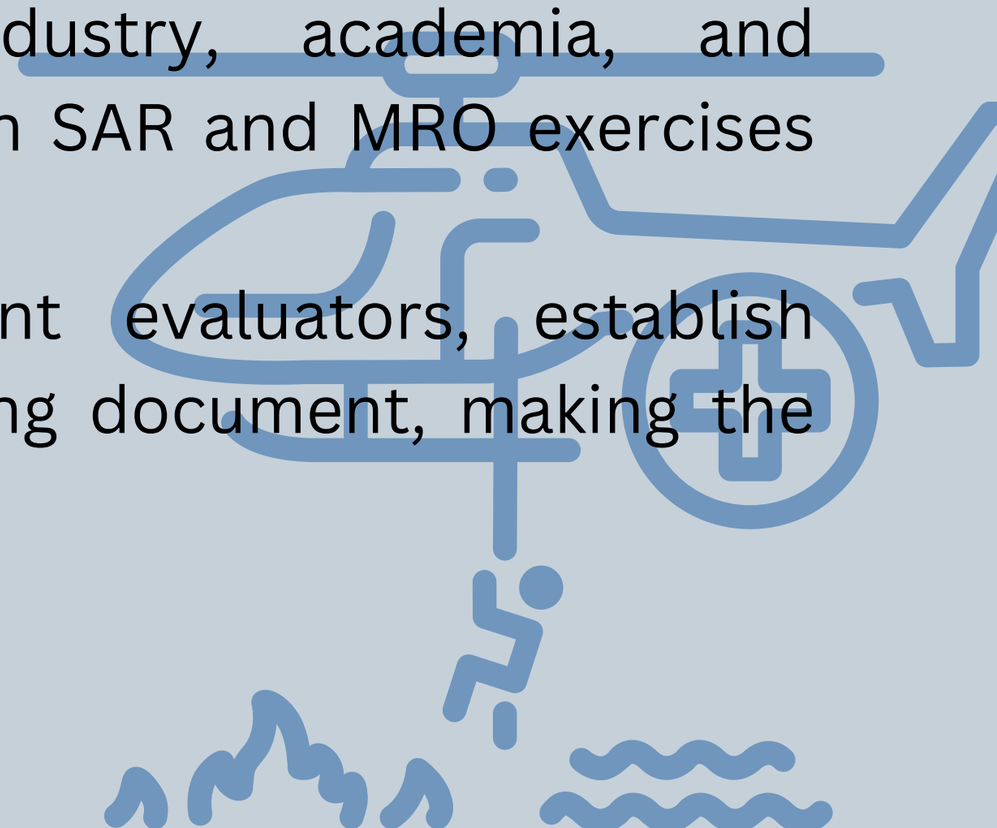


Key speaker-3: Natalia Andreassen, Nord University

"LIVEX Evaluation and Lesson Learned"

Key Points:

- **Communication with passengers:** Provide clear guidance, define crew roles, and create an instructional evacuation video for extended safety briefings.
- **Communication in muster station:** Supervise muster stations, involve guides in bridge communication, and ensure trained personnel assist passengers with safety gear.
- **Triage:** Improve medical response through easy access to crew assistance, medevac plan updates, and annual multi-casualty scenario exercises.
- **Rescue team:** Assess and communicate safe boarding methods, ensure distinguishable roles, and involve SAR service providers in exercises for enhanced coordination.
- **Evacuation safety:** Implement safety measures, inspect embarkation ladders, develop guidelines, and standardise passenger and triage tracking.
- **Muster practice:** Acknowledge passengers' limitations, include expedition guides in regular safety drills, on-board training, and complementary courses.
- **Air Coordination:** Utilise drones for documentation, develop joint risk assessments, communication plans, and ensure professional air coordination.
- **Stakeholder involvement:** Invite industry, academia, and voluntary organisations to participate in SAR and MRO exercises for multi-lateral training.
- **Exercise planning:** Utilise independent evaluators, establish subgroups, clarify roles, and use a living document, making the planning process a learning opportunity.



Group Discussions

- Topic 1: Standardisation of requirements (including maintenance schedules) for life saving equipment
- Topic 2: Standardised protocol for incident investigation and implementation of lesson learned
- Topic 3: Standardised regulations for prevention of oil spills
- Topic 4: Ensuring all vessels covered by Polar Code and similar regulations

Topic 1: Standardisation of requirements (including maintenance schedules) for life saving equipment

Strengths

- Polar Code improves safety: Standardising safety requirements for life-saving equipment reduces accidents.
- Arctic expertise: Organisations provide appropriate support and equipment based on their knowledge of Arctic conditions.
- High-quality equipment: Equipment is approved and functional, ensuring safety.
- Consistent standards: Standardisation ensures consistent quality, performance, and reliability.
- Simplified management: Clear guidelines make equipment purchase and maintenance easier to manage and maintain.

Weaknesses

- Limited flexibility: Standardisation limits customisation, decreasing effectiveness and increasing costs.
- Cost: Compliance requires investment in new equipment and maintenance, creating a financial burden.
- Resistance to change: Implementation delays or failure can occur due to resistance to new requirements or procedures.
- Communication issues: Lack of standardised communication makes it difficult to collect, analyse, and share data on Arctic incidents.
- Ineffective reporting and analysis: Incident reports are not standardised, making it difficult to identify trends and improve safety measures.

S W O T

Opportunities

- Improved interoperability: Standardisation improves cooperation between organisations with different equipment.
- International alignment: Standardisation aligns procedures across countries, improving collaboration in rescue efforts.
- Innovation: Standardisation creates opportunities for improved equipment and new technologies through fair competition.
- Consistent requirements: Standardisation establishes consistent equipment requirements and maintenance schedules, reducing costs and improving safety.

Threats

- Cost and resource challenges: Compliance may be expensive, especially for small organisations with limited expertise or resources.
- Implementation challenges and stakeholder priorities: New standards may take time to implement, and stakeholders may have different priorities, making it difficult to establish common standards.
- Variability in standards and monitoring: Environmental conditions, expensive equipment, and variability in monitoring between countries may hinder standardisation.
- Personalisation and minimum standards: Personalisation may be necessary, while minimum standards may not be sufficient, and non-compliance may create safety risks.

Topic 2: Standardised protocol for incident investigation and implementation of lesson learned

Strengths

- An awareness of a need of established procedure will create a culture of continuous improvement, where all stakeholders are encouraged to identify and report incidents and contribute to the implementation of lessons learned.
- Many institutions already have and employ multi-language systems, making it easier to communicate the incident investigation protocol and lessons learned to a wider audience.
- There is a desire to learn even from "bad" events, which will facilitate the implementation of the protocol and lessons learned to help identify areas of improvement in the organisation's processes.

Weaknesses

- Developing and implementing the procedure can be resource-intensive, and reports may discourage stakeholder engagement, causing investigation delays.
- Limited analysis capacity may hinder pattern identification, and reports are not in a common language, hindering sharing across organisations.
- Overwhelming data can make it challenging to identify critical areas for improvement.
- Voluntary adoption may lead to inconsistent implementation across the organisation.
- SAR organisations lack a shared reporting system, hindering lessons learned sharing.

S W O T

Opportunities

- GDPR-compliant sharing systems facilitate knowledge-sharing, building a culture of collaboration, and identifying best practices across industries.
- The sharing protocol builds relationships with stakeholders and maximises transparency.
- AI tools can help stakeholders engage with investigations by identifying key points in lengthy reports.
- Standardised report forms streamline the process and aid in sharing lessons learned and identifying training and preparedness improvements.

Threats

- Some stakeholders may view the protocol as unnecessary, leading to a lack of buy-in and participation.
- Significant investment in training and development may be required to ensure stakeholder participation.
- Overwhelming data may hinder extracting meaningful insights and lessons learned.
- Implementing lessons learned may be challenging, particularly if changes to culture or processes are necessary.

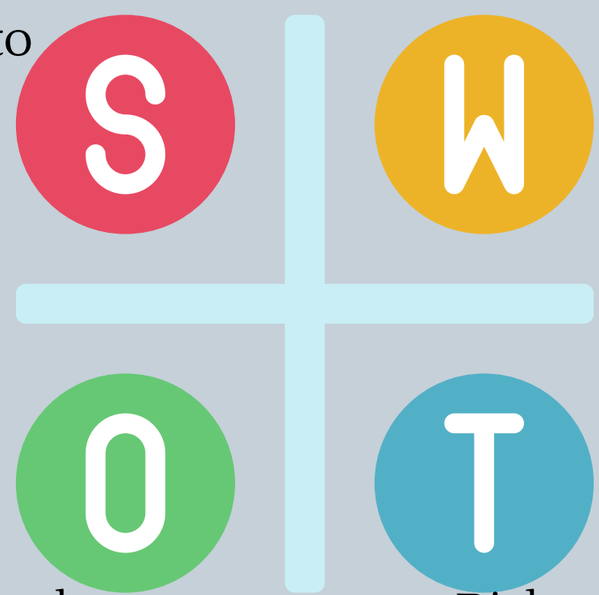
Topic 3: Standardised regulations for prevention of oil spills

Strengths

- Enhanced safety: The use of guidelines, best practices, AIS, alarms, and vessel traffic services ensures improved safety and reduces the risk of environmental disasters.
- Consistency and uniformity: Standardisation and clear guidelines for compliance and enforcement ensure consistency and uniformity in prevention measures.
- Several countries in the region have demonstrated their ability to provide excellent coverage and vessel traffic services, as well as efficient emergency services response times. These strengths, when combined through collaboration, enhance the region's ability to prevent accidents and quickly respond to emergencies.

Weaknesses

- Limited flexibility: Standardisation may not address regional concerns, creating implementation challenges.
- Cost and resistance: Compliance is costly, faces pushback, and poses challenges for smaller companies.
- Different regulations and gaps: Varying regulations and understanding gaps create barriers to standardisation.
- Long implementation time: Changing ships to the same standard takes 30 years; an adapter may be a feasible solution.
- Lack of international standard: No international standard or procedure for handover between organisations hinders standardisation.



Opportunities

- Enhanced coordination: Improved interoperability and harmonisation between nations can overcome barriers to standardisation.
- International alignment: Consistency across borders for oil spill prevention through research-led processes and cooperation.
- Innovation and expansion: Incentives to develop new prevention technologies and expand existing programs to cover other areas.

Threats

- Risks and liability: Non-compliance may lead to environmental disasters and legal liability.
- Cost and expertise: Implementation costs may outweigh benefits, and lack of expertise may hinder compliance.
- Industry complexity: Diversity of ships and organisations involved in the maritime industry makes standardisation difficult.
- Lack of adherence: Failure to adhere to guidelines and best practices can lead to accidents and oil spills.

Topic 4: Ensuring all vessels covered by Polar Code (PC) and similar regulations

Strengths

- There is general consensus among stakeholders for greater safety rules in the polar regions, creating momentum and support for the regulations.
- Regular watchkeeping requirements ensure ongoing compliance and readiness for unexpected events.
- The regulations create a level playing field for companies operating in polar regions, ensuring that all vessels meet the same high standards for safety and environmental protection.
- Compliance with the regulations can lead to increased public trust and reputation for companies that prioritise safety and sustainability in their operations.

Weaknesses

- The absence of standardised training and certification for operating in extreme Arctic conditions creates a safety risk for crew and passengers. Additionally, the gap in countries providing PC specific training may slow the adoption and implementation of regulations.
- Inadequate risk assessment or guidelines for aborting cruises in dangerous conditions could jeopardise lives.
- The "time to survival" requirement specified in the PC may not be suitable for extreme polar conditions. Additionally, the regulations only apply to a limited number of vessel types.
- A lack of qualified personnel to work in the cruise industry presents safety and operational risks. Language barriers, cultural differences, and inexperienced crew may impede effective communication and cooperation during emergencies.

Opportunities

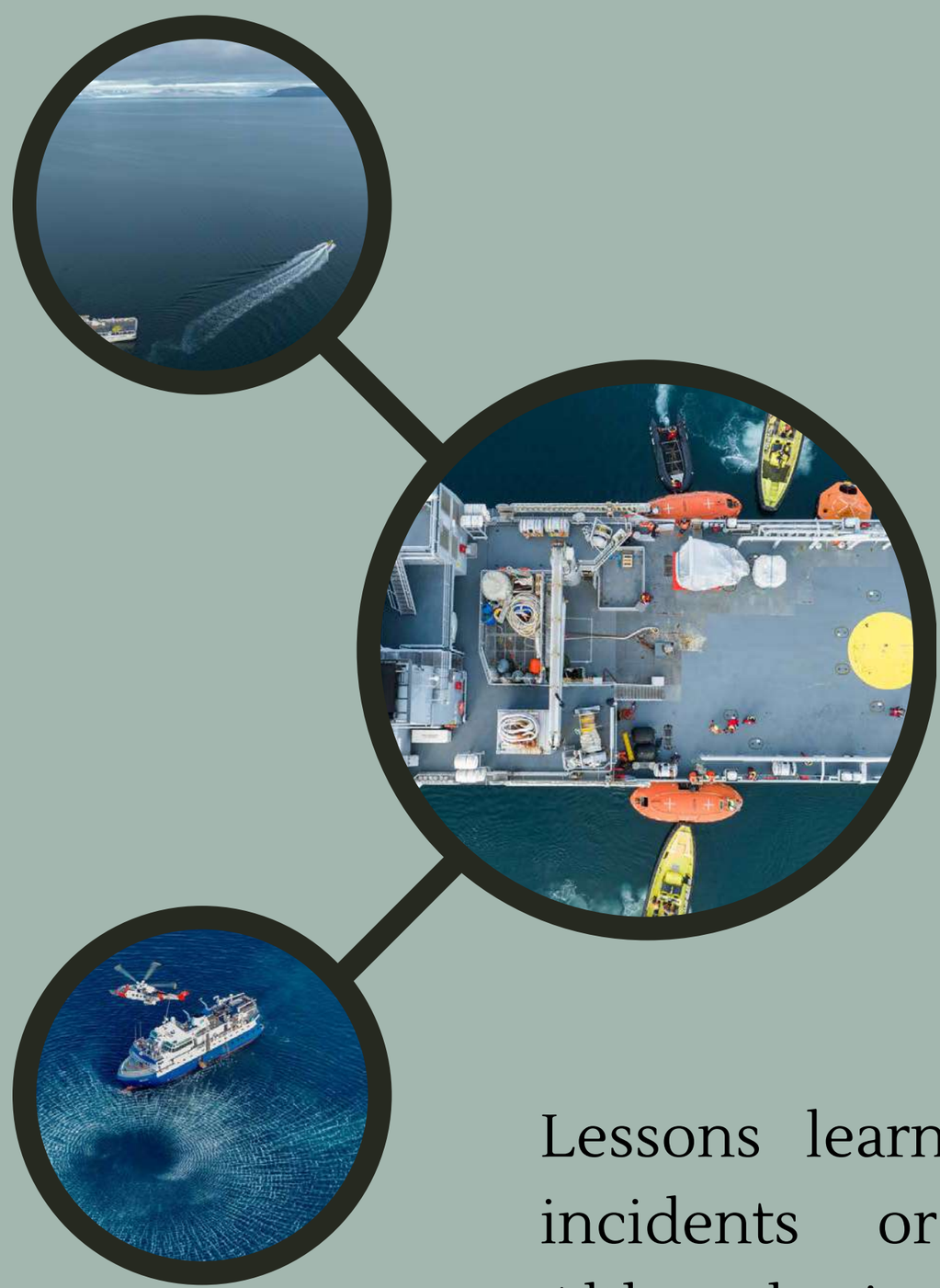
- Encourage the relevant authorities to regularly update and review the PC standards, which include the "time to survive" metric, technical requirements, and risk assessment, in order to ensure that they remain effective and relevant in improving safety in polar waters.
- Establish a center of excellence for extreme weather training and pool resources among Arctic states to improve SAR capabilities.
- Provide incentives for PC compliance to encourage adoption across the industry.
- Enforce compliance with PC regulations through port authorities to ensure vessels meet the required safety and environmental protection standards.

Threats

- Companies may prioritise cost savings over compliance, compromising safety and environmental protection, while training costs may decrease profitability.
- Inconsistent or weak enforcement of regulations may reduce industry incentives to comply, compromising safety and allowing non-compliant vessels to operate in polar regions.
- Failure to learn from past accidents may lead to repeating mistakes.
- The Polar Code's relatively low standards may foster complacency and reduce awareness of safety and environmental protection in polar regions.

Foresight and Conclusion

The need for standardisation is a theme that ran through the event and is reflected in each of the analyses of the working groups. The standardisation requirements are biased towards processes and policies rather than products, with a key desire to see good practice and lessons learned disseminated across stakeholders across stakeholder groups and territorial boundaries. The need for standardisation should, however, be balanced against the requirement for customisation in some environments, particularly when considering products, as enforcing standards that do not fit well with local conditions can be impractical and expensive. The financial implications of standardisation should also be recognised, and hence a transformation process that includes all stakeholders should be included when moving to any new common standards. The level of data and scientific analysis required in order to most effectively learn lessons is a challenge that results from the generation of more available data. This is seen an opportunity to utilise AI, machine learning and decision analytical tools to process the multiple data streams and recommend courses of action for stakeholders to consider. Equally, future and emerging technologies for effective communication, particularly in multi-lingual environments, should continue to be adapted and utilised in a standard way across Arctic and North Atlantic search and rescue and environmental response activities.



Foresight and Conclusion

Lessons learned can be either from major incidents or from simulation exercises. Although simulation exercises are costly and time consuming, it is obviously much better to learn from simulation exercises than from major incidents which cost lives, reputation, and the environment. But in what way can a lesson be truly learnt? One approach should be through feeding into standards. Standards also means procedures, protocols, guidelines and routines. There is hence a need for more research into how such feeding mechanisms from simulation exercises to standards can be systematised and streamlined, so that major incidents can be both prevented and mitigated. This is especially evident from the wealth of knowledge gained after being involved in hot wash events just after simulations. Such hot wash events are the equivalent to investigation reports commissioned after a major disaster.

References

[1] Res. MEPC.68-21. International Code for Ships Operating In Polar Waters (POLAR CODE)

[2] Jones, D., Labib, A., Willis, K., Costello, J. T., Ouelhadj, D., Ikonen, E. S., & Cainzos, M. D. (2022). Multi-criteria mapping and prioritization of Arctic and North Atlantic maritime safety and security needs. European Journal of Operational Research.

PRESENTATION & DISCUSSION GALERY

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