PROJECT PLAN

Version 3.6 - 11.04.2019

SAREX SVALBARD

Brief description of the project.

SARex Svalbard is a project that runs over 2 years. Each year there will be carried out at least one full scale, field exercise in the vicinity of Svalbard. Through use of full-scale tests and exercises, the project will develop new knowledge. Representatives from academia, official authorities, material-, and equipment-suppliers, service providers, industry and public bodies will exercise an active role throughout the project.

SARex Svalbard will address practical and operational challenges and issues related to survival, search and rescue, and preparedness against acute pollution (oil-spill), with the aim to map gaps and find solutions.

The project's Steering committee, consisting of selected public bodies and business organizations - will determine which specific issues that should be prioritized.
In addition to the members of the steering committee, SARex Svalbard will gather a strong academic consortium consisting of national and international participants. Together with the industry, they will be involved and engaged, in order to work on finding solutions to the selected issues.

The project will generate experience-based and empirical data that can be used by the participants for further development of materials, equipment, methods, procedures, processes, guidelines and regulations. The project will also help to identify relevant clusters to develop new and innovative solutions to issues revealed during the project period.

Place and date

Narvik, 010219

Tor Husjord
CEO
Maritime Forum North

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Project Manager
Maritime Forum North

Innhold

Narvik 1 februar 2019

Tor Husjord	**Morten N. Jørgensen**
CEO	**Project Manager**
Maritime Forum North	**Maritime Forum North**

1. OBJECTIVES AND FRAMEWORK

1.1 BACKGROUND

The last decade(s) there has been an increased focus on the High North in many different aspects, such as politics, industry, transport and search and rescue to mention a few.

The Government's High North Strategy *"The High North Strategy - between geopolitics and social development"* (2017) states:

"The fishing vessels go further north and the trawlers are getting bigger. Exploration and drilling for oil and gas is moved northwards. Cruise traffic in the arctic waters is increasing. The volume of oil and gas transported on tankers through Norwegian waters was doubled from 2014 to 2016 and is expected to increase further. The increased activity provides opportunities for economic growth, but also increases the risk of accidents with consequences for life, health and the vulnerable arctic environment

The strategy also refers to the work by the Norwegian Maritime Authority with the International Maritime Organization (IMO) to establish regulations for the operation of ship in polar waters (The Polar Code) [2]. The Polar Code was effective on January 1st, 2017.

"Svalbardmeldingen" (Parliamentary Report No. 32 (2015-2016) on SVALBARD) is another important reference document, in which chapter 10 - Civil protection, rescue and emergency preparedness begins with: "*Society faces a variety of challenges in the area of civil protection and emergency preparedness. Preventing and reducing vulnerability, so that society can better handle incidents and crises and quickly restore societal functions if an undesirable incident occurs, is a priority. The Government will continue to intensify its efforts to strengthen civil protection and emergency preparedness; see the budget proposal for 2016 for the Ministry of Justice and Public Security (Prop. 1 S (2015–2016))».*
Furthermore, it says: *"Long distances and a demanding climate pose additional challenges. Local emergency preparedness, moreover, is not of a scale to deal with major or simultaneous incidents. Preventive measures are therefore critical. It is also extremely important that the various agencies cooperate and coordinate, and that they plan and prepare for resources to be provided from the mainland in the event of major incidents".*

The Governor's own "Risk-and vulnerability analysis", describes a number of issues that have a direct bearing on SARex Svalbard. The Governor points out in particular: *"Response time, weather and climatic conditions will be decisive factors during rescue operations in maritime accidents. The response time may vary from a few hours to a few days. Limited infrastructure and large distances mean that maritime accidents in Svalbard waters can have more serious consequences for life and health than similar events near the mainland. Another important limitation is the capacity of the rescue resources. Often, a civilian vessel will be the closest resource, and the help from another vessel will be random, depending on the vessel's capacity and the extent and character of the accident."*

In 2013, Maritime Forum North took the initiative of establishing the SARiNOR project with the purpose to "… outline the current status of Norwegian Search and Rescue (SAR) operations at sea in

the High North.” The main findings are described in SARiNOR’s Roadmap to Norway’s Arctic Policy [4]. The project was funded by Ministry of Foreign Affairs and the project partners. The specialist content is based on contributions from leading actors in search and rescue that are experienced and active in these areas.

The first SARiNOR project was concerned with rescue of people in the Arctic. It was followed by a new project, SARiNOR 2, with focus on contingency against acute pollution and salvage operations, as an obvious continuation of the first SARiNOR project.

The SARiNOR projects were then followed up by an initiative from The University of Stavanger who conducted three consecutive field expeditions in 2016 [5], 2017 [6], and 2018 [7], one week each year. The main purpose of these three field experiments was to investigate if it was possible the achieve the goals and functional requirements provided by the Polar Code with existing safety equipment approved by the International Convention for the safety of life at Sea (SOLAS) and identify key factors with the largest impact on survival.

In late 2018, Maritime Forum North was urged by the representatives from University of Stavanger to take over the management, continuation and follow-up of findings from the SARiNOR and SAREX findings.

The Government lists in its strategy for the High North, a number of prioritized issues. Within environmental protection, safety and emergency preparedness, "proper activity" is a key point, where the Government has, among others listed the following goal:

- Strengthen safety and preparedness related to increased activity in the north.

Maritime Forum North has, with the commitment of financial support of NOK 10 million from the Ministry of Foreign Affairs through "Arctic 2030", established SARex Svalbard as one of several contributions in order to reach this goal. By offering a unique arena to industrial partners, NGOs, GOs academia and others, who directly and / or indirectly plays a part in Arctic waters.

1.2 Outcome and Outputs

The Ministry of Foreign Affairs has provided the following framework for outcome and output of the project:

Main Goal:

SARex Svalbard shall contribute to improved preparedness, increased safety and probability of survival in accidents and disasters in Arctic waters.

Outcome 1:

Through full-scale exercises and tests, - develop materials, equipment, technology, procedures, and practical expertise related to survival, evacuation, search and rescue as well as environmental preparedness in Arctic Waters

Outcome 1 – Indicators

- Activities and field trips completed
- Improved equipment
- Reports from exercises and tests
- Publishing the project's activities and results.

Output 1.1

Norwegian and other authorities will gain access to knowledge and experiences that are important in the preparation and publication of guidelines and regulations.

Output 1.1 – Indicators

- Establish and/or update guidelines
- Use of experience and data in international forums

Output 1.2

New technology, new standards and improved solutions

Output 1.2 – Indicators:

- Establish new projects based on results from SARex Svalbard
- Applications to NFR and IN
- New products, standards, methods, and procedures.

Output 1.3.

Establish widely available experience-based and empirical data

Output 1.3 – Indicators:

- Publications from the project

Outcome 2

Establish a common platform for sharing ideas and challenges across sectors with interests, responsibilities and authority in connection with maritime operations in cold climate.

Outcome 2 – Indicators:

- Seminar and exercises
- Publications
- Activities and field-trips competed at Svalbard/tests

Output 2.1

Mutual understanding of the mechanisms involved in emergency operations in a cold climate.

Output 2.1 – Indicators:

- Activities and field trips to Svalbard
- Participation in collaborative exercises

Output 2.2

Establish best practices regarding equipment and operational issues across national borders.

Output 2.2 – Indicators:

- Publishing
- Conducting seminars and establishing collaborative forums
- Identify, exploit and disseminate existing knowledge.

The support period is from November 2018 to June 2020, and the final report must be submitted to Ministry of Foreign Affairs by the end of 2020 at the latest.

1.3 IMPORTANT PRINCIPLES IN THE PROJECT:

- *SARex Svalbard will focus on search and rescue, environmental protection, as well as accidents and disasters.*
- *SARex Svalbard will deliver new knowledge and expertise in maritime operations in Arctic waters.*
- *SARex Svalbard will produce experience-based and empirical data that participants and others can use to find new and innovative solutions for materials, equipment, procedures and methods.*
- *SARex Svalbard will work on further development of the results/findings, to solve important issues linked to the project's prioritized activities.*
- *SARex Svalbard shall be a stand-alone, objective third party that generates and communicates new knowledge and expertise.*
- *SARex Svalbard will provide participating units/vessel crews with expertise, practice and training.*

1.4 WORKING PLAN

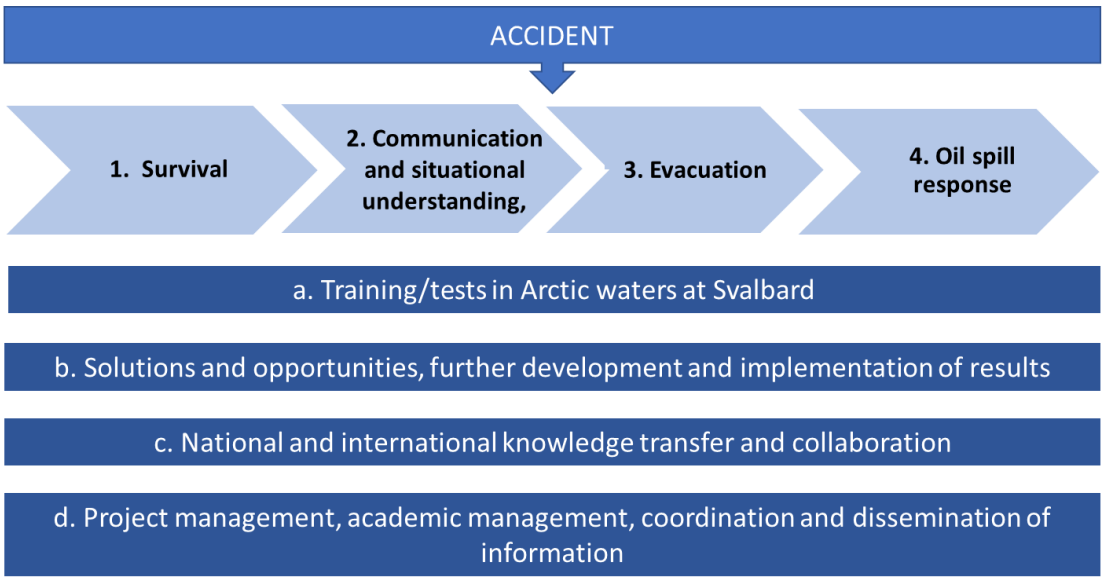
To achieve to outcomes and outputs defined by the Ministry of Foreign Affairs in section 2, we will organise the project and activities in four working packages (WPs) with specific focus areas

- **WP#1. Survival:**
  The Polar Code [2] requires life-saving appliances that ensures survival for a minimum of five days. But the robustness of the equipment is just one of many factors that influence the ability to survive in polar surroundings. Biological responses due to stress, cold, darkness, lack of sleep and limited or incorrect nutrition (fluid and food intake) are also of great importance. The purpose of this WP is to identify challenges and risk-reducing measures related to these factors in order to increase the likelihood of survival in cold climate, both as an individual and as a group.
- **WP#2. Communication and situational understanding**
  The purpose of this WP is to identify challenges and risk-reducing measures related to challenges in communication and reporting information about a situation in Arctic environments. This, in turn, shall ensure that involved personnel at all levels in all parts of an event in the Arctic, have a recognized picture, situation awareness and common understanding.
- **WP#3. Evacuation**
  The purpose of this WP is to identify challenges and risk-reducing measures related to evacuation after an event in the Arctic. Future evacuation solutions must make dry evacuation possible and safeguard evacuation to a protected area. This is particularly important in areas where cold climates imply an obviously increased risk of hypothermia. It is therefore necessary to develop life-saving appliances which enable dry evacuation to shore, and which provide adequate protection against strong cold. The work package could include all types of evacuation, of both single, small and large groups of people.
- **WP#4. Oil spill response.**
  The purpose of this WP is to identify challenges and risk-reducing measures related to oil spill response in cold climate. The consequences of an acute oil spill will depend on a range of factors, including equipment, tactics and techniques used to limit or prevent the exposure of the spill to the environment. Knowledge of the environmental impact on these factors will be of great importance to the outcome.

These subjects are chosen, based on the experiences and findings from the SARiNOR projects [4] and subsequent SARex expeditions ([5],[6],[7]) and the Polar Code [2]. Each of the working packages is described in attachments to this project plan.

The work on, and content of these four WPs rests upon - and will help to meet the four over all objectives described in the Project description and depicted in the figure below.

a. Training/tests in Arctic waters at Svalbard
b. Solutions and opportunities, further development and implementation of results
c. National and international knowledge transfer and collaboration
d. Project management, academic management, coordination and dissemination of information



Objective A: Training/tests in arctic waters at Svalbard

Each year, a field-trip will be conducted in Arctic waters at Svalbard. Using full-scale tests and exercises defined by the partners, the project will provide unique practical knowledge on use of materials, equipment, procedures and methods in cold climate. By doing this in arctic surroundings one will be able to gain experiences under real "cold climate conditions" which will not be possible in simulated environments.

Huge distances, fast-changing weather- and ice conditions, increasing wind in combination with low temperatures will identify risk and uncertainty factors related to emergency response in the High North, on all levels. Good and reliable cooperation and communication between many independent actors could mean the difference between life and death for a given number of people. CG Svalbard is considered as very suitable, and she will be used as a base and primary exercise platform. This also for - if necessary - being able to operate / practice under changing ice conditions and / or inside the ice.

Objective b: Solutions and opportunities, further development and implementation of results

Personnel, equipment, tools and already existing infrastructure will under SARex Svalbard be exposed to real cold-climate conditions. Equipment / tools will be handled / used by personnel with varying experience from operations in cold climate. Experiences from the project will help develop the technology and equipment required to meet national and international requirements (e.g. the Polar Code) imposed on operations in the Arctic. This will in turn contribute to solve issues related to operations in cold climate, close identified gaps and create new opportunities for the supply-industry and other business players. In addition, personnel safety under such conditions will be focused.

Objective c: National and international knowledge transfer and collaboration

The Arctic has globally become a "new" business arena where increased activity provides revenue, but also cross-sectoral, national and international challenges in emergency preparedness and

response. Sharing information is a high priority objective for this project. SARex Svalbard is unique in its form as results and findings will have consequences for both national and international regulations related to operations in the Arctic. SARex Svalbard will therefore contribute to the transfer of experience and a stronger collaboration across sectors and nations.

OBJECTIVE D: PROJECT MANAGEMENT, ACADEMIC MANAGEMENT, COORDINATION AND DISSEMINATION OF INFORMATION

The project management is, in close cooperation with partners and other actors, responsible for preparing a detailed work description and activity plan and reports directly to the Steering Committee and Maritime Forum North. Project management shall facilitate exercises/tests so that partners and others benefit from the project. This includes planning and conduct of specific activities, and coordinating logistics before, during and after the field-trips.

1.5 TIMELINE

Activity	2018		2019												2020											
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Management																										
Main activities							I			II		III				IV	V			III						
Reports/audits																		Prepare reports								
Annual Conf.																										

1.6 MAIN ACTIVITIES

I	Main task	Subtasks	Result
Field trip CG Svalbard May 2019	Provide unique practical knowledge about the use of materials, equipment, procedures and methods in cold climates in order to identify challenges and risk-reducing measures related to survival and evacuation.	See Sub-project plans for each WP and cruise plans for each Main Activity	Improved emergency preparedness, increased safety and increased likelihood of survival in cold climates
II	**Main task**	**Subtasks**	**Result**
Field trip CG Svalbard August 2019	Provide unique practical knowledge about the use of materials, equipment, procedures and methods to identify challenges and risk-reducing measures related to communication and gathering of information in general, and in Arctic environments in particular. Ensure that involved actors at all levels of an event in the Arctic have the most accurate picture of and equal understanding of the situation.	See Sub-project plans for each WP and cruise plans for each Main Activity	Improved emergency preparedness, increased safety and improved collaboration / communication on all levels

III	**Main task**	**Subtasks**	**Result**
Oil-spill respons exercises «Øvelse Svalbard» 2019/2020	Provide unique practical knowledge about the use of materials, equipment, procedures and methods to identify challenges and risk-reducing measures related to oil spill response in general, and oil spill response in cold climates in particular.	See Sub-project plans for each WP and cruise plans for each Main Activity	Improved preparedness and increased safety related to oil spill response in the cold climate
IV	**Main task**	**Subtasks**	**Result**
Exercise MS Gann February 2020	Provide unique practical knowledge about the use of materials, equipment, procedures and methods to identify challenges and risk-reducing measures related to the evacuation of a larger number of people, including injured.	See Sub-project plans for each WP and cruise plans for each Main Activity	Increased safety, and reduced risk during evacuation-ops.
V	**Main task**	**Subtasks**	**Result**
Field trip CG Svalbard Winter 2020	Provide unique practical knowledge about the use of materials, equipment, procedures and methods in cold climates in order to identify challenges and risk-reducing measures related to Survival, Evacuation and Oil Protection in the cold climate.	See Sub-project plans for each WP and cruise plans for each Main Activity	Improved emergency preparedness, increased safety and reduced risk related to survival, evacuation and oil spill in cold climate

1.7 TIME AND RESOURCE OVERVIEW

For each main activity, a draft plan (scope), must be prepared - that outlines in detail the primary and secondary activities that are planned to be carried out. The four WPs could depend on access to smaller capacities/timeslots on more than one main activity/Field-trip. This requires early planning and coordination across the WPs and with participants so that the scope for each main activity, and the outcome of it is optimal.

Main activity I	**Timeline** (Weeknr 2019)																	
May 19 -CG Svalbard	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**
Planning																		
Execution																		
Milestones																		
Desition points																		

Main activity II	**Timeline** (Weeknr 2019)																	
Aug 19 - CG Svalbard	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Planning																		
Execution																		
Milestones																		
Desition points																		

Main activity III	**Timeline** (2019)									**Timeline** (2020)								
Oil-spill respons exer/ «Øvelse Svalbard»	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**
Planning																		
Execution																		
Milestones																		
Desition points																		

Main activity IV	**Tidsplan** (ukenummer 2019/2020)																	
Feb 20 - MS GANN	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**	**51**	**52**	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Planning																		
Execution																		
Milestones																		

Desition points																		

Main activity V	**Timeline** (Weeknr 2019/2020)																	
Winter 20 CG Svalbard	**47**	**48**	**49**	**50**	**51**	**52**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Planning																		
Execution															?	?	?	
Milestones																		
Desition points																		

2 ORGANIZATION OF THE PROJECT

Maritime Forum Nord is the project owner, and leads the steering committee, which will consist of representatives from key partners. The project management is a group of three.

The industrial actors / stakeholders in the project make up the reference group. In addition, the project is affiliated with a Media Consultant.

Project owner: Maritime Forum North (MFN)
Responsible for the Project RP: Tor Husjord, MFN
Steering Committee (SC): Tor Husjord, MFN (Head)
Steve Olsen, Norwegian Coast Guard
Johan M. Ly, The Norwegian Coastal Administration,
Dpt: John Evensen
Lasse Karlsen The Norwegian Maritime Authority,
Dpt: Anita Strømøy
Morten Mejlænder-Larsen, DNV GL
John Hammersmark, The Norwegian Shipowners Association
Olaf Eriksen, Tromsø Skipperforening
Hans Sande, Master mariner, CEO, Norwegian Maritime Officers Association
Tor Eivind Moss, NOFO

Media consultant: Øystein Ingilæ

Project Management (PM):

Morten N. Jørgensen: Commander Sr., 35 years' experience in the Royal Norwegian Navy, 6 years as commander of the CGV Svalbard, with extensive experience of search and rescue in the Arctic.

Annette Meidell, Dr. Ing., professor at University of Tromsø in applied mathematics within the field of Materials Science, member of the Board of directors in Maritime Forum.

Terje B. Løyning: Dr. Scient., 17 years' experience in polar oceanography at the Norwegian Polar Institute, former associate professor at University of Tromsø, several years as commander in the Norwegian Navy and the Norwegian Home Guard with experience in military and civil contingency planning.

3 PROJECT MANAGEMENT

3.1 DECISION POINTS

DP #	Due Date	Remark
DP1 (SC)	**28.01.2019**	Consequences for the project in case of insufficient cash contribution?
DP 2 (SC)	**08.02.2019**	How many and which main activities should the project include?
DP 3 (PM)	**04.03.2019**	*Scope for Main activity I (Field trip May 2019 CG Svalbard)*
DP 4 (PM)	**01.04.2019**	*Scope for Main activity II (Polar field trip august 2019 CG Svalbard)*
DP 5 (PM)	**01.04.2019**	*Scope for Main activity III (Oil spill response exercises 2019/2020)*
DP 6 (PM)	**01.09.2019**	*Scope for Main activity IV (Field trip in winter 2020 MS Gann)*
DP 7 (PM)	**01.09.2019**	*Scope for Main Activity V (Field trip in winter 2020 CG Svalbard)*

3.2 REPORTS

The grant agreement between the Ministry of Foreign Affairs and Maritime Forum North regarding SARex Svalbard, contains guidelines for what, when and how to report.

The grant from the Ministry of Foreign Affairs of NOK 10 million is paid as follows:

- November 2018: NOK 3 mill.
- April 2019: NOK 4 mill.
- October 2019: NOK 3 mill.

MFN has received NOK 3 million in advance payment for partial funding of costs running up to 1 April 2019. Before the next payment takes place, MFN must have submitted:

- An updated account for the Project for the period 1 January - 1 April 2019, with a reference to the latest approved implementation plan and budget.
- A progress report for the same period.
- An accounting report for the same period.

These reports shall document the financial need to justify the next disbursements of NOK 4 mill. This disbursement shall cover the period between April 2019 and October 2019. The disbursement of

NOK 3 million in October 2019 shall cover the period up to June 30, 2020. Revised accounts / reports by state-authorized audit.

PROGRESS REPORT

The progress report shall describe the results achieved during the reporting period. The report should be designed in a way that enables a direct comparison with the last approved application, implementation plan and budget.

FINANCIAL REPORT

The financial report should consist of accounting and a comparison with the last approved budget.

FINAL REPORT

The final report shall describe Project results achieved during the support period. The final report shall be delivered to Ministry of Foreign Affairs within six months from the end of the support period - by latest 31 December 2020.

The final report should, as a minimum contain the following:

- law terms given by the Ministry of Foreign Affairs
- An assessment of the project's social impact
- A description of the most important lessons learned
- An assessment of the sustainability of the results achieved.

TECHNICAL AND ACADEMIC REPORTS

The project will generate experience-based and empirical data that can be used by the participants for further development of materials, equipment, methods, procedures, processes, guidelines and regulations. The project will also help to identify relevant arenas and clusters to develop new and innovative solutions to issues revealed. The project management is responsible for coordinating academic participation and involvement, and to safeguard their interests in the project. The project management is also responsible for ensuring that tests and surveys are in line with current scientific standards and that methods and results / collected data are documented and published in relevant reports.

3.3 MILESTONES

nr	date	milstone	Responsibility
01	28.01.2019	Decision point 1 according to section 3.1	SC
02	08.02.2019	Decision point 2 according to section 3.1	SC
03	01.03.2019	Progress report for the period 1.nov 18-31.des 18 to MFA	MFN
04	01.03.2019	Financial report for the period 1.nov 18-31.des 18 to MFA	MFN
05	01.03.2019	Updated implementation plan and budget to the MFA	MFN
06	01.03.2019	Decision point 3 according to section 3.1	PM

07	31.03.2019	Exp.plan Main activity I May cruise CG SVALBARD 2019ready	Head of Expedition
08	01.04.2019	Decision point 4 according to section 3.1	PM
09	01.04.2019	Decision point 5 according to section 3.1	PM
10	01.05.2019	Exp.plan Main activity IIAug cruise CG SVALBARD 2019ready	Head of Expedition
11	01.06.2019	Auditor's report w/annual accounts for the project to MFA	MFN
12	01.06.2019	Exp.plan Main activity III (Exercise Svalbard 2019) ready	Head of Expedition
13	01.09.2019	Exp.plan Main activity IV (Winter cruise MS GANN2020) ready	Head of Expedition
14	01.09.2019	Decision point 6 according to section 3.1	PM
15	01.09.2019	Decision point 7 according to section 3.1	PM
16	01.10.2019	Exp.plan Main activity V (febr. cruise CG SVALBARD2020 ready	Head of Expedition
17	01.03.2020	Progress report for the period 1 January 19-31.des 20 to MFA	MFN
18	01.03.2020	Financial report for the period 1 January 19-31.des 20 to MFA	MFN
19	01.03.2020	Updated implementation plan and budget to MFA	MFN
20	01.06.2020	Auditor's report w / annual accounts for the project to MFA	MFN
21	30.06.2020	Empirical reports - SARex Svalbard completed.	PM
22	31.12.2020	Final report to MFA	MFN

4 RISK ASSESSMENT

4.1 RISC FACTORS

The biggest risk factors in the project are related to finances. Reduced subsidies or declining contributions from the players could have major consequences for the number of activities, which in turn results in reduced outcome for the players.

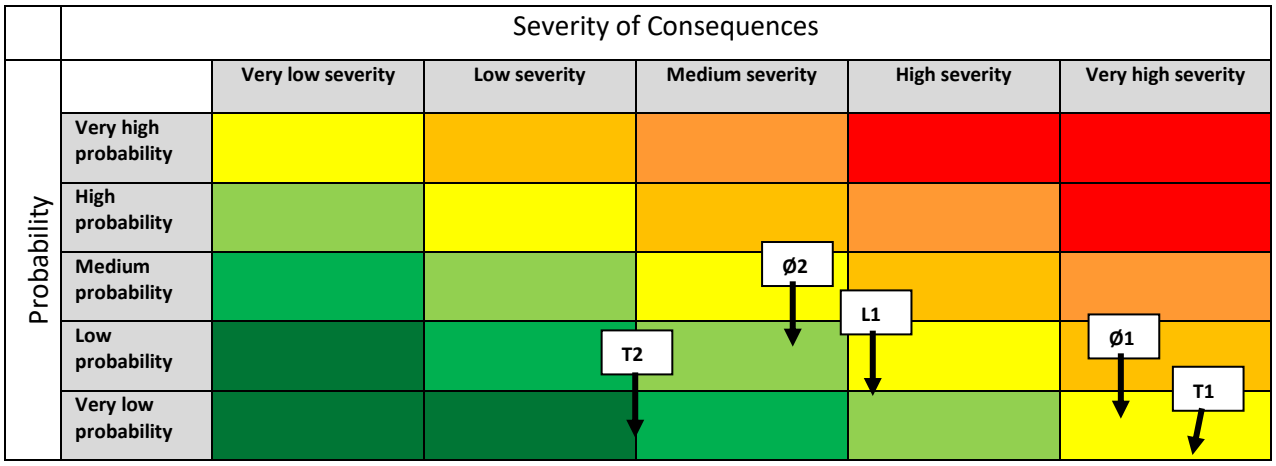
- Ø1 reduced subsidy
- Ø2 reduced cash contribution

The second major risk factor is related to availability of participating seagoing units, where accessibility of CG Svalbard is the most important. Alternatively, other vessels with ice-class may be used (MS Lance), but will not give the same output.

- T1 reduced availability CG Svalbard
- T2 reduces availability MS Gann

The third risk factor of importance is logistics. Failing logistics could give the players reduced outcome. It is therefore crucial that the various main activities are logistically planned at the earliest possible time.

- L1 failing logistics



4.2 RISK MANAGEMENT

Ø1 and Ø2: Economic risk can be difficult to compensate. Timely and rational planning, continuous budget follow-up and active management of the project will reduce risk**.**

T1 and T2: Early warning of reduced availability is needed to reduce risk. Reduced availability of CG Svalbard may, given early warning, be partly compensated by making MS Lance available. Some activities can also be carried out with support from MS Gann. Reduced availability of MS Gann can be compensated by increasing the number of primary activities on the other planned field-trips.

L1: Early planning and coordination with participating industrial actors is crucial to reduce risk. Time for planning the field-trip in May 2019 (Main activity I) is very short. This increases the risk for failing logistics during this trip. Risk can be reduced by making subsequent field-trips/main activities available for the activities planned for main activity I.

5 FINANCE

Grant from the Ministry of Foreign Affairs-, NOK 10 million (28 per cent) is a partial funding. Other public support / own contribution-, NOK 4,447,013. (12 percent) - Total public contribution 40%

Private cash contribution / own contribution 21,670,520 (60 per cent).

Commitment of about 1.2 MNOK pr 10th April 2019. Maritime Forum North continues to apply and find private funds.

6 CONTRACTS AND AGREEMENTS

Reference to Grant agreement between the Norwegian Ministry of Foreign Affairs and the Maritime Forum North SA. To be filled in, as contracts and agreements are entered into.

- An agreement has been entered with Per Morten Vigtel. He will be the steering committee's secretary, and he will contribute to the political implementation of the project's findings and recommendations.
- An agreement has been entered with Øystein Ingilæ as a media consultant

Contracts and agreements with various players in the project will be prepared as needed.

7 REFERENCES

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[5] Solberg, K. E., Gudmestad, O. T., and Kvamme, B. O. (Eds.), 2016: SARex Spitzbergen April 2016 Search and rescue exercise conducted off North Spitzbergen. Exercise report., Report No. 58, University of Stavanger, September 2016.

[6] Solberg, K. E., Gudmestad, O. T., and Skjærseth, E., (Eds) 2017: SARex2 Surviving a maritime incident in cold climate conditions. Exercise report., Report No. 69, University of Stavanger, November 2017.

[7] Solberg, K. E. and Gudmestad, O. T. 2018: SARex3 Evacuation to shore, survival and rescue, Report No. 75, Stavanger University, December 2018.

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ATTACHMENT 1 TO THE OVERALL PROJECT PLAN SAREX SVALBARD

WP 1: SURVIVAL

The Polar Code [2] requires life-saving appliances that ensures survival for a minimum of five days. But the robustness of the equipment is just one of many factors that influence the ability to survive in polar surroundings.

Biological responses due to stress, cold, darkness, lack of sleep and limited or incorrect nutrition (fluid and food intake) are also of great importance.

The purpose of this WP is to study and identify challenges and risk-reducing measures related to these factors in order to increase the likelihood of survival in cold climate, both as an individual and as a group. The WP will focus on, and find measures related to the following:

1.1. LEADERSHIP, MANAGEMENT AND KNOWLEDGE

1.1.1. KNOWLEDGE

The effect of increased knowledge on survival in polar regions (eg: if key personnel, through courses and/or training beyond what is common, has gained new expertise - what impact will this have on survival, both individually and in groups?).

Findings and experiences from the SARiNOR and SARex expeditions, show that the level of knowledge, training and expertise, greatly influences the ability to survive. The level of knowledge varies widely depending on which personnel group one belongs to. Officers on a vessel are educated and trained to take care of themselves and others in stressful situations. They are expected to automatically take the lead in a crisis. Other parts of the crew cannot be expected to do so. Passengers on a cruise ship will not have the necessary knowledge and experience and cannot be expected to take a leading role.

An assumption is that by increasing knowledge and expertise, the demand for equipment specifically designed for the environment it is supposed to function will increase, which in turn will force manufacturers to develop such equipment.

1.1.1.1. STUDY THE EFFECTS OF ON-SITE LEADERSHIP AND MANAGEMENT IN AN ARCTIC ENVIRONMENT

An area that will be of interest to study more closely in this project is to what extent leadership and organisation affects the ability to survive under demanding conditions in cold climates, both as an individual and in groups. There is ongoing research within subjects of leadership and organization of activities where the situation and environment may change rapidly, and decision making is under pressure in terms of time and risk. One of our academic collaborators, The Chalmers University of Technology, work with development of leadership and management of search and rescue operations both in their research- and education programs. They want to extend their knowledge by including the polar perspective, and by this include factors as the cold environment, darkness, distance, communication and limited resources. They want to compare this with other studies of the same matter, and by this map the differences and common features. They collect their data through observations, video recordings, interviews, etc. The researchers have experience as search and rescue personnel at sea and understand the importance of making observations without disturbing the ongoing activity. This research group has experience with dissemination of results into the IMO regulations

and has succeeded in changing the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual vol. III. They will cooperate with the Nord University and the Arctic Safety Center in Longyearbyen.

1.1.1.2. INVESTIGATION AND MEASUREMENTS OF HUMAN BASIC NEEDS IN A SURVIVAL SITUATION

1.1.1.2.1. NUTRITION

IMO polar code §8.2.3 states that it should be means to provide sustenance for 5 days whether you evacuate to water in lifeboat or life raft, ice or land. The average need for energy intake during everyday conditions for men is about 2600 kcal and for women about 2200 kcal. When resting, the need is halved (Health Directorate 2018). No supply of nutrition will result in death after 40-60 days, provided that the fluid requirement is met. The US Coast Guard requirements for nutrition in a life raft, are energy bars that contain 600- to 1400 kcal (200 kcal per bar) and requirements for liquid containers that should not freeze.

The question is how much nutrition is needed as a minimum for survival in 5-day cold climates? Although carbohydrates are an energy source that is easily applicable, a high proportion of carbohydrates in marine emergency rations may not be optimal for survival by cold exposure and where heat production from tremors is crucial.

It is also not clear how to ensure enough fluid that should be 1100-2200 ml per day per person and how to store it without freezing.

During evacuation, one is seated most at rest in the raft or tent, and in this context, tremors become crucial for maintaining heat production. By tremor, one can increase heat production up to 5 times the resting metabolism compared to physical activity where one can increase it 25 times

Cold and extreme weather conditions will increase energy and liquid consumption. This will vary with age, gender, body weight, bag and electrolyte balance, core impetus, will affect the need for fluid and nutrition and thus survival.

This field experiment will measure blood sugar because:

The brain requires nutrients and oxygen to meet the basic needs of the brain's nerve cells. The brain consumes 15% of the total energy converted in the metabolism process when we rest. The need is 7.5 times higher than the average energy consumption of other tissues in the body. The brain can normally only use glucose as an energy source that is continuously collected from the blood (glucose) and has only a storage capacity of 2 minutes. Other energy reserves such as fat are used to a small extent as it is difficult for nerve tissue to use fat as an energy source. If there is not enough sugar in the blood to nourish the brain, this may cause the mental function to deteriorate in a short time. Cognitive failure may lead to irrational actions in connection with survival and evacuation. When the blood sugar drops below two to three mmol it may affect the mental function.

1.1.1.3. BIOMETRIC DATA

1.1.1.4. DEVELOP A MODEL FOR «EXPECTED TIME TO RESCUE»

1.2. EDUCATION/TRAINING

Findings from SARiNOR and subsequent SARex expeditions shows that people's physical and psychological state, both before and after an accident, will affect their ability to stay alive. The capability of the individuals concerned, together with their training and expertise, will affect how this phase is tackled. Crew members on a merchant vessel, who know one another and have been carried out regular drills and training together, will have better prospect for coping in these situations than will cruise ship passengers.

The importance and effect of adequate education and training will be studied by establishing 5-6 test groups, with 10-12 people in each group and where knowledge and experience related to survival in cold climate varies. One reference group with pre-defined leadership (personnel with adequate education and training), and other groups without prior defined leadership, and where knowledge and experience, age and gender composition vary.

Objective: Identify the importance of knowledge, practice and training and what effect this has on the ability to survive in the Arctic environment. Based on observations of the situation and environment the outcome could be a collection of "Standing Operating Procedures" that can be used by personnel with less experience and training.

1.2.1. DEFINE REQUIREMENTS FOR EDUCATION AND TRAINING FOR THE WHOLE CREW (NOT ONLY OFFICERS)

Based on the findings, define custom requirements for education and training among crews and officers on board. In addition, identify minimum requirements for passengers' knowledge of the equipment and the procedures that will be used when an event occurs, and the significance of such knowledge.

1.3. EQUIPMENT

1.3.1. REQUIREMENTS FOR EQUIPMENT WHEN EVACUATING FROM SHIP TO SHORE

1.3.1.1. LIFEBOAT

The Polar Code sets out requirements for a "ventilated environment that will protect against hypothermia, as well as food and drink for a minimum of five days".
The ability to cope with the situation and increase the likelihood of survival, will depend on the conditions outside and inside of the lifeboat. These conditions will be affected by several significant factors, including the lifeboats design and capacities, outside temperature and weather conditions, how many people are inside the lifeboat, their condition, ventilation, sanitation, and fluid and food availability and so on. Time to Rescue will be the single factor that enhances each of the above.

The trials will include testing of lifeboats under varying conditions and in different environments, in order to experience the impact of these factors on the people on board.

Objective: Identify the most important factors associated with staying in a liferaft over a certain period of time, and their significance for survival as well as to determine how challenges identified during these trials would best be solved.

1.3.1.2. NAVIGATING LIFEBOAT

Navigating and manoeuvring a lifeboat can be challenging in itself. When this is to be done in stressful situations under the climatic conditions prevailing in the Arctic, a high degree of situational understanding is required.
Equally important will be the knowledge of the lifeboat's lmtations, capacities and its seagoing characteristics.

Time to rescue will, also in this context, be crucial. Availability of fuel and fresh water as well as how far from the nearest "safe haven" one may be, could affect the outcome.

The trials will include maneuvering and navigating a lifeboat in different environments and under varying conditions, over a given period of time, in order to identify the most significant factors that could affect the ability to survive.

Objective: Identify the most important factors associated with the navigation and maneuvering of lifeboats, which affect the ability to survive, and provide the best possible basis for developing equipment that will help increase this ability.

1.3.1.3. ANCHOR, TOWINGLINE, ETC

Maritime operations in the Arctic are very demanding compared to similar operations in southern waters. Equipment that is exposed to arctic conditions must thus be able to withstand the additional challenges the Arctic environment creates. Extreme climatic conditions are the most important key factor in this perspective. The equipment must be robust, and, in the case of vital equipment, it should be redundant.
Equipment on lifeboats and liferafts is particularly vulnerable to these climatic conditions and can have serious consequences if it does not work properly. Since time to rescue may be unknown, the equipment must function satisfactorily over a given period of time. SARex Svalbard will aim to test such equipment under different climatic conditions, to identify any weaknesses or inadequacies.

The trials will include testing of equipment such as towinglines and anchor associated with lifeboat and liferaft, and expose them to various external forces and stress over a certain period of time including different weather-, and ice-conditions.

Objective: Identify weaknesses and vulnerabilities in existing equipment, including towing lines and anchors associated with lifeboats and liferafts to provide the industry with the necessary basis for further development of such equipment.

1.3.1.4. DRY EVACUATION

Cooling / hypothermia in Arctic environments is the greatest danger to which one is exposed. One of many-, and perhaps the most important finding from SARiNOR and subsequent SARex expeditions related to survival, is to stay dry in order to avoid hypothermia. If the body core temperature begins to sink, one’s capacity for selfcare is reduced, and the negative development can escalate further.

Experience from previous expeditions shows that it is essential that the lower body is dry on those who are evacuated to shore. Solutions must therefore be found so that

everyone can be evacuated without getting wet. Equipment must be simple, easy to handle and located on board the lifeboat/survival craft.

The activity includes:

• Identification of a safe evacuation site

• Evacuation to MOB boat and rafts

• Dry evacuation from ship to shore

• Some of the evacuated players will be "severely wounded" and ambulance personnel use the opportunity to test how these people can be brought from the shore, back to MOB boats and then brought on board the “Polarsyssel”

The activity can be carried out anywhere. CG Svalbard (with MOB-boats), Polarsyssel with Red Cross participants and rafts will be included in one or more of the field-trips.

Objective: Identify and find solutions for dry evacuation.

1.3.2. SPECIFY THE CONTENTS OF PSK/GSK – TAKING IT ONE STEP FURTHER

Experiences from previous sarex expeditions shows that the equipment intended to safeguard the individual's welfare, (PSK) and in groups (GSK) is deficient and in some situations inadequate.

The experiments will involve testing suppliers' equipment on persons and groups with varied knowledge and experience, under varying conditions and in different environments, in order to uncover gaps between the equipment's existing capacities and the actual need.

Objective: Specify adequate PSK and GSK content.

1.3.2.1. CRITERIA

1.3.2.2. DOCUMENTATION

1.3.3. DISTRIBUTION OF PSK AND GSK FROM THE VESSEL TO WHERE IT WILL BE USED - CHALLENGES

1.3.3.1. PROCEDURES AND KNOWLEDGE

ATTACHMENT 2 TO THE OVERALL PROJECT PLAN SAREX SVALBARD

WP 2: Communication and situational understanding

The purpose of this WP is to identify challenges and risk-reducing measures related to challenges in communication and reporting information about a situation in Arctic environments. This, in turn, shall ensure that involved personnel at all levels in all parts of an event in the Arctic, have a recognized picture, situation awareness and common understanding.

The WP will focus on, and find measures related to the following:

2.1. GATHERING OF INFORMATION

2.1.1. USE OF DRONE-TECHNOLOGY IN SAR

The project wants to identify opportunities and limitations of drone technology in the collection of data to build and provide a recognized picture. The use of drone equipped with EO / IR sensors will help to provide increased decision-making and situational awareness for decision-makers.

A live video feed to the OSC / Coordinator responsible and / or an analyst will be able to secure an overall picture of the event, it will also help to obtain relevant additional information using zoom capacity and or thermal camera.

If the necessary security measures can be established in the area, the project will also make experiments involving drone and manned helicopter in interaction.

The trials will include planning the operations and coordinating as necessary with all participating and affected actors, including the communication between tactical (OSC, etc.) and operational entity. Stream video / pictures to OSC and others as needed. Carry out a closer inspection of parts of the "action site", or of special activities, with more details according to the wishes of the OSC, including testing communication and collaboration. Identify and map interference from other devices on data streaming (the radar on the SeaKing helicopter). The drone has to be operated from “Polarsyssel”.

2.1.1.1. STANDARDIZATION OF PROCEDURES FOR USE IN SAR

Based on drone technology experiments and testing, develop standardized operating procedures for the use of drones in Search and Rescue operations.

2.1.1.2. REGULATORY LIMITATIONS

Identify and establish regulatory limitations in general, and within RO3 operations in particular.

2.1.1.3. BUILD AND PROVIDE A RECOGNIZED PICTURE, DEVELOP AND PROVIDE DECISION MAKERS WITH A COMMON SA

2.1.1.4. DRONES FOR USE IN ICE-NAVIGATION

2.1.1.5. DRONES AS COMMUNICATION PLATFORM/RELAY-STATION

2.1.1.6. INTEGRATE INFORMATION IN EXISTING SYSTEMS (RADAR+SATELLITE IMAGE)

2.1.2. EXTENDING VDES FOR ICE-CHART/ICE-REPORTING, SEARCH PATTERN, EATON, RECOMMENDED ROUTS ETC.

2.1.3. WEATHER AND ICE REPORTING

2.1.3.1. DEVELOP AND TEST EQUIPMENT FOR IDENTIFICATION, CLASSIFICATION AND PRESENTATION OF ICE THICKNESS, STRENGTH AND CONCENTRATION.

Ice thickness, strength and concentration are important parameters to consider in connection with maritime operations in the Arctic. It is therefore desirable to identify weaknesses and vulnerabilities of existing technical solutions in order to develop more efficient and reliable sensors.

2.1.4. USE OF IR, NIGHT VISION, RADAR - TO ENSURE CORRECT SA UNDER REDUCED VISIBILITY AND DARKNESS.

The winter season in the Arctic is characterized by dusk and darkness, fog and dense snow showers. Darkness and poor visibility constitute additional factors related to search and rescue in polar regions, and there is a need to develop equipment that can contribute to increased situational awareness and understanding of the situation, under reduced visibility and darkness.

Detection of persons or objects in the sea is difficult as sea waves cause these objects to be visible only occasionally. A rotating radar must point toward the object while the object is visible to the radar, and this must be repeated over some time to establish a detection. Thermal cameras can be directed in the approximate direction where the object is assumed to be located, but here too the object is required to be observable and in the line of sight when the camera is pointed towards the object. In addition, the object will have the same temperature as the sea after about 30 minutes, thereby reducing the effect of thermal camera, ref: https://www.airmedandrescue.com/features/rescues-waves

ISPAS has developed a relatively small radar with electrically controlled antenna that can search over a range of 100 degrees within 0.2 seconds out to a distance of several kilometers with varying distance resolution. As the radar sweeps over the area very quickly and repeats this continuously, an object that floats in the waves at times becomes visible. By using statistical algorithms it will then be possible to determine what is waves and what are stationary objects.

The aim of the experiment is to test the ability to detect people wearing a life suit, in the sea at low temperatures. The aim is to test the radar in a relatively realistic scenario, where the temperature in air and in the sea causes rapid cooling of objects and persons in the water.

2.2. COMMUNICATION

2.2.1. RANGE AND COVERAGE

2.2.1.1. TESTING IN AREAS WITH BAD COVERAGE, AWARENESS AND IMPROVEMENT

2.2.1.2. INCREASE MARITIME VHF RANGE AND COVERAGE, DOCUMENTING REQUIREMENTS/NEEDS AND ACTIVITY

2.2.2. HOW DOES TEMPERATURES EFFECT EQUIPMENT?

2.2.2.1. THE POLAR CODE REQUIRES COMMUNICATION EQUIPMENT TO BE AVAILABLE FOR 5 DAYS. SUGGEST PROCEDURES FOR USE (ON/OFF) OF THE EQUIPMENT IN ORDER TO SECURE ITS FUNCTIONALITY FOR 5 DAYS.

2.2.2.2. EMERGENCY COMMUNICATION, TEST OF DURABILITY, RANGE AND COVERAGE IN COLD CLIMATE/LOW TEMPERATURES.

2.2.2.3. BATTERY DURATION/RANGE EPIRB/AIS SART IN COLD CLIMATE/LOW TEMPERATURES.

2.2.3. EFFECTS OF ICING

2.2.3.1. EFFECTS ON ANTENNAS

2.2.3.2. EFFECTS ON OTHER EMERGENCY-, AND COMMUNICATION EQUIPMENT – EPIRB, AIS SART

ATTACHMENT 3 TO THE OVERALL PROJECT PLAN SAREX SVALBARD

WP 3: EVACUATION

The purpose of this WP is to identify challenges and risk-reducing measures related to evacuation after an event in the Arctic. Future evacuation solutions must make dry evacuation possible and safeguard evacuation to a protected area. This is particularly important in areas where cold climates imply an obviously increased risk of hypothermia. It is therefore necessary to develop life-saving appliances which enable dry evacuation to shore, and which provide adequate protection against strong cold. The work package could include all types of evacuation, of both single, small and large groups of people. The WP will focus on, and find measures related to the following:

3.1. EVACUATION OF LARGE GROUPS OF PEOPLE, INCLUDING INJURED

If an evacuation becomes necessary, it must be well organized and carried out in a professional manner. Evacuating a vessel will always be demanding, and it will only be done in situations where the conditions on board are such that one becomes safer after having been evacuated. The crew must be able to operate the rescue equipment and on passenger ships they must at the same time guide and assist passengers. During mass evacuation, panic can occur. Evacuate 100+ motivated people.

The activity includes:

- Agreement with MS Gann to find the time and place of the exercise (10 February 2020 Bodø)
- Perform an organized evacuation under safe conditions
- Monitor human behavior during evacuation (human factor element)
- Evaluate leadership qualities of those who take lead when inside liferafts/lifeboat
- Repeat activity to get information from a larger group
- Return to Gann, who now plays the role of the ship coming to rescue.
  Safe "salvage-ops"

The activity requires extreme attention to Health, Safety and Environment (HSE) since this test involves young people. Personnel insurance must be clarified. Medical personnel and doctor must be available.

Objective: Investigate the scenario of mass evacuation. Improve procedures. Over all management training within the liferaft / lifeboat.

3.1.1 PERSONNEL CONTROL

3.1.1.1 ORGANIZING ON SITE, SITUATION UNDERSTANDING

3.1.1.2 MANAGEMENT ON SITE, INCLUDING TRIAGE IN MAJOR ACCIDENTS

- Challenges in coordination of large-scale rescue operations/evacuation in the Arctic environment.
- Increase expertise on procedures for coordination and management, as well as on information flow during evacuation.
- Team management within different groups of personnel and in interaction with others during an evacuation episode.
- Tagging of evacuated personnel

3.1.2 EVACUATION SHIP TO SHIP, VIA LIFERAFT/LIFEBOAT- REQUIREMENTS

Maritime operations in the Arctic will have to take into account a number of additional factors as a result of extreme environments. The most important factors are related to climate, inadequate infrastructure, large distances and a limited number of emergency resources. This means that "time spent" becomes crucial.

In this perspective, it is necessary to find the «time-thieves». Further to identify the most timeconsumeing activities. This is particularly important in operations where the outcome is dependent on «time spent». Evacuation is such an operation.

Any factor that can cause delay and thereby increase the evacuation time must be identified. All measures identified must be evaluated and prioritized to make the evacuation operation efficient.

The experiment will involve studies of the assessments made and the decisions taken prior to and during an evacuation operation, and what effect these have on the result. Further, observe and document time used for each activity related to an evacuation. operation

Objective: identify any factor that can cause delay and evaluate and prioritize measures in order to make the evacuation more efficient. Which activities are disproportionately time consuming and why.

ATTACHMENT 4 TO THE OVERALL PROJECT PLAN SAREX SVALBARD

WP 4: OIL SPILL RESPONSE

Survey conducted in conjunction with the SARiNOR 2 project shows that the northern regions have clear additional challenges for preparedness against acute contamination of the environment and salvage operations at sea. The additional challenges are related to establishing and maintaining a robust readiness with enough capabilities to address the expected activity increase in the area.

The decisive difference from the mainland is the enormous geographical distances in combination with a small population and very limited infrastructure. The additional challenges in the northern regions are also of operational nature, where one of the underlying drivers is the Arctic nature and climate. Low temperatures affect all levels of an operation designed and conduced to save the environment and other values. Icing, fog/poor visibility, polar low pressure will also make the conditions demanding both for personnel and equipment

The purpose of this WP is to identify challenges and risk-reducing measures related to oil spill response in cold climate. The consequences of an acute oil spill will depend on a range of factors, including equipment, tactics and techniques used to limit or prevent the exposure of the spill to the environment. Knowledge of the environmental impact on these factors will be of great importance to the outcome. The WP will focus on, and find measures related to the following:

4.1. TESTING OF EQUIPMENT – OIL-BOOMS – SKIMMERS – BOATS AND PERSONNEL IN COLD CLIMATE

4.1.1. COORDINATION BETWEEN VESSELS/BOATS

4.1.2. EQUIPMENT/BOOMS

4.1.3. TRAINING OF PERSONNEL

4.1.4. LIMITATIONS RELATED TO ICE-CONDITIONS, ICE-CONCENTRATION, ICE-FLOES ETC

This WP will depend on access to smaller capacities/boats on several of the 4 field-trips, where one, together with other participants, can test out all or parts of necessary communication equipment, surveillance equipment or other equipment used, or that can be used in activities in the Norwegian Coastal Administration and / or NOFO.

Test how to make an assessment of ice - size of ice floes - propagation of ice with focus on ice conditions when operating in the artic. Cooperation with BW, meteorological- and other who have projects within Oil-spill response is desired. It is desirable to compile this information with satellite images taken within the same time frame, in order to get better ice forecasts in our waters.

ATTACHMENT 5 TO THE OVERALL PROJECT PLAN SAREX SVALBARD

PARTNERS, STAKEHOLDERS AND COMMUNICATION STRATEGY

STAKEHOLDERS

Actor	Description
The Norwegian Maritime Authority,	Key partners and members of the Steering Committee (SC). The SC, consisting of selected public bodies and business organizations, shall be an active Committee that decides which issues the project will prioritize.
The Norwegian Coastal Administration,	
The Norwegian Coast Guard	
Petroleum Safety Authority Norway	
The Norwegian Clean Seas Association for Operating Companies NOFO	
The Norwegian Shipowners Association	
Maritime Forum North (MFN)	
DNV GL	
Norwegian Seafarers Union	
Andøya Space Centre	Based on the wishes, needs and identified challenges associated with the various activities of the project that arouse stakeholders' interest, they participate to varying degrees and in different parts of the project. The project will be designed to give the industry the knowledge and experience they need to further improve their work towards increased safety and improved preparedness in the Arctic. The Governor of Svalbard, Joint Rescue Coordination Centre and a number of organizations and service providers, who in a given emergency situation will interact with each other, are important contributors to the project.
ENI Norway	
Fisheries and the Aquaculture Industry Research Council	
Joint Rescue Coordination Centre (JRCC)	
Norwegian Organisation of Managers and Executives (Lederne) I Statoil	
Lundin	
Shell AS Norway	
The Norwegian Oil and Gas Association	
Norwegian Seafarers' Union	
Tromsø Skipperforening	
NORUT Narvik	
Norwegian Hull Club	
Norwegian Society for Sea Rescue	
RV Lance/Northshore AS	
SINTEF Ocean	
The Governor of Svalbard	
UiT - University of Tromsø	The project aims to gather a strong academic consortium consisting of both national and international participants. They will to varying degrees and in different parts of the project, be involved and engaged together with the supplier industry in order to work out solutions to the project's identified challenges.
UNIS – The university Center in Svalbard	
Nord University	
NTNU - Norwegian University of Science and Technology	
Western Norway University of Applied Sciences, Campus Haugesund	
Chalmers, Gøteborg	
Others	Unions is well represented in the project, as is insurance, both of which are interested in finding good solutions to identified challenges in connection with operations in the Arctic.

KEY PARTNERS INTEREST IN THE PROJECT

THE NORWEGIAN COAST GUARD (CG) has the responsibilities in the supervision of fisheries, protection of the environment, search and rescue, and customs control activities. The CGs main contribution to SARex Svalbard is to provide the CG vessel KV Svalbard with the crew included for 7 days each year, to conduct the field exercises of SARex Svalbard. The CGs assessment is that the SARex field exercises and the experiences gained from this project are of high value to the CG and the CG activities.

THE NORWEGIAN COASTAL ADMINISTRATION (NCA) is a governmental institution that will be central to the SARex Svalbard in contribution of tugs, vessels and survey resources in connection to emergency and preparedness to immediate oil-spill in cooperation with other important actors. The NCA expect the project to deliver good information and knowledge of how a cold climate affect the functionality of the survival safety equipment and at the same time gain knowledge and experience of how to use available equipment. In addition, the NCA is concerned about the safety of the personnel, and how this can be handled the best suitable way. The NCA state that this is also an important information to the co-working actors when it comes to establish rules and regulations to secure maritime operations in the framework of the polar code.

THE NORWEGIAN CLEAN SEAS ASSOCIATION FOR OPERATING COMPANIES (NOFO) NOFO is responsible for oil spill response on behalf of the operating companies on the Norwegian shelf. The same applies to the High North and the Arctic.

By participating in SARex Svalbard, the organization can contribute to, influence and develop suitable resources, procedures and knowledge about environmental protection in the High North and the Arctic in a practical, efficient and resource-efficient manner.

NOFO and the Norwegian Coastal Administration have a close and fruitful cooperation on oil spill response, whether this concerns exercises that can be coordinated, or testing and development of new equipment. This collaboration will ensure that the project will benefit from a comprehensive

base of knowledge and experience.

THE NORWEGIAN SHIPOWNERS' ASSOCIATION represents the shipowners in the project SARex Svalbard. The shipowners express that the whole maritime cluster already have gained benefits by the active participation of The Norwegian Shipowners' Association in the project. They point out the best thing within the project is to test a lot of different equipment under realistic circumstances, and that the manufacturers get feedback on the functionality of their equipment. This feedback is used to improve the equipment, and the shipowners get access to practical experiences using the equipment in an extreme environment. Several shipowners have used the experiences from the field experiments in 2018 to improve the quality of their "personal survival kit" (PSK) and "group survival kit (GSK). Further, it is emphasised that the way the SARex field exercises are conducted and documented, makes the project relevant and object to references and the results are used actively by many different organizations around the world.

THE NORWEGIAN MARITIME AUTHORITY is the governmental organization of management and supervision of safety work to protect life, health, environment and material values on all vessels in Norwegian Territorial Waters. Through the participation in the SAREX Svalbard project, the Norwegian Maritime Authority wish to attain more knowledge about an area in which maritime activity will increase in the future. By active participation the Norwegian Maritime Authority will be a relevant actor with

knowledge about the northern areas and the Arctic wich will be usefull in their daily work to develop Norwegian rules and regulations.

THE PETROLEUM SAFETY AUTHORITY NORWAY is an independent government regulator with responsibility for safety, emergency preparedness and the working environment in the Norwegian petroleum industry. By our participation in SAREX Svalbard, we wish to identify risk and uncertainty-factors connected to emergency and preparedness in the northern areas. The Petroleum Safety Authority Norway assess the importance to give our co-workers the possibility to attain practical experience in the northern areas by participation in field exercises and in testing of safety systems and safety equipment. This provide professional insight that is difficult to attain otherwise.

DNV GL is a global quality assurance and risk management company, authorised by most of the largest maritime nations to approve and issue necessary certificates in connection with international rules and conventions from the IMO. From 1. January 2017, the IMO Polar Code was implemented for all SOLAS ships. The main purpose of the Polar Code is to identify the additional challenges for maritime operations in Arctic waters, and to identify actions and precautions to mitigate the increased risk. It has been proven difficult to specify and get hold of equipment for navigation, communication and search and rescue that is adapted to the polar environment. In order to improve the ability to define specific demands to this equipment, it is mandatory to collect more information and produce more knowledge. Specifically, functionality of the equipment in low temperatures (i.e. colder than – 25°C) in combination with icing, polar light in winter and wet conditions, must be tested in real circumstances. The SARex project has so far given the DNV GL valuable knowledge, but there is still a large need to prolong and expand this full-scale test work in a complex and realistic environment. SARex Svalbard is an important project to DNV GL.

MARITIMT FORUM NORD (MFN) is a political independent organisation without any commercial bindings. MFN has the responsibility of the SARex Svalbard project management and is the responsible applicant on behalf of the partners in the project.

THE JOINT RESCUE COORDINATION CENTER NORTHERN NORWAY (JRCC NN) have the main responsibility in Norway to conduct search and rescue operations at sea, in air and on land in the Arctic. By the participation in the SARex Svalbard project, the JCRR NN wish to achieve more insight in how the functionality of precautious demands in the Polar Code in practical terms, and to expand the knowledge of how JRCC NN can prepare for a “Maritime Mass Rescue Operation (MRO) in the Arctic with the main goal to save lives in a safe environment. The SARex Svalbard project is a perfect arena, and so far the only arena where Norwegian SAR-operators can exercise SAR and oil recovery in a realistic environment in waters with sea ice.

THE RESEARCH INSTITUTIONS are represented by the University of Stavanger, NORD University, UiT The Arctic University of Norway, The university Center in Svalbard (UNIS), NTNU (Trondheim), The University College Vestlandet, Chalmers University of Technology (Sweden), Maritime Institute Willhelm Barentz (The Netherlands), Memorial University of New Foundland (Canada) and Technische Universität Hamburg (Germany). By their participation in the SARex Svalbard project the research institutions will get access to unique knowledge, competence and experience that can be exploited in future research and education.

THE GOVERNOR OF SVALBARD is the Government's supreme representative on the archipelago and has the role of both Chief of Police and county governor and is the central authority in terms of planning as well as crisis management in the field of social security and emergency preparedness. The Governor has a very important role both in preventing unwanted incidents and dealing with incidents occurring. By participating in SARex Svalbard, the Governor wishes to acquire new knowledge and experience in order to strengthen competence in her own organization, as well as to be able to prepare better for unwanted events that may pose a threat to life, health and the environment.

COMMUNICATION STRATEGY

The head of Maritime Forum North (MFN) is responsible for the project (RP), and takes care of all external communication. The head of the Steering Committee (SC) is responsible for communication between the SC and the Reference Group (RG), as well as between the SC and Project Management (PM) and Academic Management (AM). Communication (internal and external) that is required for detailed coordination and physical participation in various activities, can be delegated to PM and AM, which in turn can delegate to HWPs.

The project involves a large number of participants and many activities on different levels. Two primary lines of communication are established:

1. Communication with, and co-ordination of participants' contributions and involvement in the various activities shall take place continuously, and primarily between the HWPs and the individual actor/participant.
2. HWPs reports to PM/AM, who in turn reports to head of the Steering Committee. Head of SC informs the reference group (RG).

Actor	Why	What	How	Responsible
«A»	Ensure a common understanding between the Steering Committee (SC) and Project Management (PM)/ Academic management (AM), and keep the SC adequately informed about status, and ensure that orders and input from SC continuously accrues to PM and AM	-Status -Orders/input from SC til PM/AM	**SC-meetings**, Specially designed website: **SAREX.no** for the project, status-meetings, workshops and information via email.	-Head of SC -PM/AM
«B»	Ensure a common understanding between participating actors, PM and AM. Ensure that industrial	-Status	Annual conference Specially designed website: **SAREX.no,**	-SC -PM/AM

	participants and public participants gain the maximum benefit from the project.	-Inputs from industry and others	Skype, telephone and e-mail	-Head of WPs
«C»	Must ensure a common understanding between the participating academic institutions and AM/PM, and that the "academia" is sufficiently informed and involved in all parts of the project.	-Status -Inputs from «Academia»	Meetings, Specially designed website: SAREX.no, Skype, telephone and e-mail	AM
«D»	Inform about the status of the project	-Status	telephone and e-mail	RP, PM