



ᓄᓇᑭᑦ ᐃᓚᑎᑦᑎᐱᐅᑦ ᑲᑎᓚᐱᐱᑦᑎᑭᑦ ᐅᐱᑦᑲᑦᑲᑦ ᑭᑦᑭᑦᑲᑦᑲᑦ #126009

## One Ocean Expedition - Norwegian tall ship through Northwest Passage and the Nunavut region in 2025

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New

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Scientific Research

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**Period of operation:**

from 2025-08-05 to 2025-09-02

ᐱᑦᑎᑦᑎᑦᑎᑦᑎᑦ:

Haakon Vatlé  
Stiftelsen Seilskipet Statsraad Lehmkuhl  
Bradbenken 2, skur 7  
Bergen Vestland 5003  
Norway  
ᐅᑦᑲᑦᑲᑦᑲᑦ: 004797537984, ᐱᑦᑎᑦᑎᑦᑎᑦ:

Non-Technical Project Proposal Description One Ocean II Expedition – Arctic Future Pathfinders

Jørgen Berge, UiT The Arctic University of Norway (UiT) One Ocean Expedition is a global project, and a recognized part of the UN Decade of Ocean Science for Sustainable Development (2021-2030). The main goal is to create attention, stimulate ocean science, and share knowledge about the crucial role of the ocean for sustainable development in a global perspective. Statsraad Lehmkuhl is one of the largest and oldest tall ships in active use, and she is run by a non-profit foundation. In 2022/23, she completed the first One Ocean Expedition, a 20-month long circumnavigation of the world. In April 2025, One Ocean II will embark on another expedition, starting in 2025 in Bergen with a stop in Nice, France, where it will be a part of the One Ocean Science Congress and the UN Ocean Conference. The general research questions addressed during the circumnavigation of the One Ocean II expedition are:

- How do biodiversity and indicators of human pressures vary over the world's ocean?
- What is the distribution and vertical displacement of mesopelagic sound scattering layers across the world's ocean?
- What are the physical characteristics of the regions and water masses we pass through?
- Is there a correlation between observations, models and satellite measurements, and can the measurements be used to improve weather and ocean forecasting?

UiT The Arctic University of Norway has chartered the vessel to sail through the Northwest Passage in the autumn of 2025 and the homeland of Inuit, Yupik, Unangan and Athabaskan peoples. The backbone of the voyage will be an interdisciplinary course for master's students and doctoral fellows. There will also be a scientific program for this portion of the expedition. Our aim is to identify local Arctic challenges and make them visible on a wider public scale. We are interested in contributing to a better understanding of the Arctic biome and environment, as well as the future challenges local and global communities are facing by climate-driven changes in the Arctic. Research and teaching with a focus on social sciences are of interest for amplifying voices of Indigenous rights holders to a larger scientific and public audience. Our research evolves around:

- Assessment of fish and zooplankton populations
- Biodiversity assessment using physical sampling, morphological and molecular (environmental DNA) analyses
- Biotechnology: exploring marine bioactive compounds
- Understanding changes in sea ice thickness
- Technology: safe and sustainable operations in remote areas with demanding weather conditions
- Arctic Memoryscapes – documenting changes in Arctic coastal and underwater heritage
- Information literacy by integrating Indigenous knowledge, experiential learning, and Extended Reality technologies
- Ocean literacy: understanding and stewardship of marine environments through integrating diverse knowledge systems and emotional literacy
- Documenting, revitalizing, and integrating management and conservation practices of Indigenous peoples
- Creative futures thinking using experiential learning and worldbuilding through the course running on-board
- International relations: interplay between the Arctic and Arctic local and Indigenous societies with global political, economic, security processes
- Arctic linguistic landscapes
- Didactics: students' perspectives on teaching and learning processes in collaborative interdisciplinary project work
- Epidemiology and impact of diet transitions in Indigenous populations
- Health studies: impact of onboard watch system on health and wellness of OOI participants

There are a range of sensors mounted to the ship which will measure the occurrence of marine mammals, currents, weather patterns, ocean temperature, and ocean light conditions. A vessel flow through system will continuously collect water samples. At certain stations along the voyage, water and organism samples will be collected from the marine environment. For this, we will use Niskin bottles (water samples), towed nets and fishing rods (zooplankton and fish), and boxcorers (sediment extraction from the seafloor). Most of the social sciences will take place on board and involve studies with the cruise participants themselves and their experiences. Extended reality and artificial intelligence are some of the tools that will be used. Some researchers will conduct interviews with local communities. Marine data collected with the vessels sensors will be made publicly and globally available through NMDC (<https://nmdc.no/en>) following FAIR data principles within 12 months. Preliminary results generated under way will be shared with the community at organized events during the planned stops on land. The voyage through the Northwest Passage will start in Nuuk on August 5th, 2025, and end in Anchorage October 4th, with planned stops in:

- Miitimatilik/Pond Inlet (August 14) OR Resolute/Qausuittuq (August 17) (for border and immigration – weather and ice depending)
- Uqsuqtuuq/Gjoa Haven (August 22-26)
- Ikaluktutiak/Cambridge Bay (August 29 to September 2)
- Siqnaq/Nome (for US border and immigration)

▷Δ&NDC:

Description de la Proposition de Projet Non-Technique Expédition One Ocean II – Explorateurs de l'Avenir Arctique (Arctic Future Pathfinders) Jørgen Berge, UiT The Arctic University of Norway (UiT) L'Expédition One Ocean est un projet mondial, reconnu dans le cadre de la Décennie des Nations Unies pour les Sciences Océaniques au service du Développement Durable (2021-2030). L'objectif principal est de créer de l'attention, de stimuler la science océanique, et de partager des connaissances sur le rôle crucial de l'océan pour le développement durable dans une perspective globale. Le Statsraad Lehmkuhl est l'un des plus grands et des plus anciens grands voiliers encore en activité ; il est géré par une fondation à but non lucratif. En 2022/23, il a réalisé la première expédition One Ocean, un tour du monde de 20 mois. En avril 2025, une autre expédition, One Ocean II, débutera à Bergen, avec une escale à Nice, en France, où elle prendra part au Congrès Scientifique One Ocean et à la Conférence des Nations Unies sur l'Océan. Les questions de recherche générales abordées lors du voyage maritime de l'expédition One Ocean II sont les suivantes : • Comment la biodiversité et les indicateurs de pressions humaines varient-ils sur les océans du monde ? • Quelle est la distribution et le déplacement vertical des couches de diffusion acoustique mésopélagiques à travers les océans du monde ? • Quelles sont les caractéristiques physiques des régions et des masses d'eau que nous traversons ? • Existe-t-il une corrélation entre les observations, les modèles et les mesures satellitaires, et ces mesures peuvent-elles être utilisées pour améliorer les prévisions météorologiques et océaniques ? UiT (The Arctic University of Norway) a affrété le navire qui franchira le Passage du Nord-Ouest et la patrie des peuples Inuit, Yupik, Unangan et Athabaskan en automne 2025. L'élément central du voyage sera un cours interdisciplinaire destiné aux étudiants en master et aux doctorants. Un programme scientifique est également prévu pour cette partie de l'expédition. Notre objectif est d'identifier les défis locaux de l'Arctique et de les rendre visibles à une échelle publique plus large. Nous souhaitons contribuer à une meilleure compréhension du biotope et de l'environnement arctiques, ainsi qu'aux défis futurs auxquels les communautés locales et mondiales sont confrontées en raison des changements climatiques dans l'Arctique. La recherche et l'enseignement axés sur les sciences sociales visent à amplifier la voix des titulaires de droits autochtones auprès d'une audience scientifique et publique plus large. Notre recherche s'articule autour de : • Évaluation des populations de poissons et de zooplancton • Évaluation de la biodiversité à l'aide d'échantillonnage physique, d'analyses morphologiques et moléculaires (ADN environnemental) • Biotechnologie : exploration des composés bioactifs marins • Compréhension des changements dans l'épaisseur de la glace de mer • Technologie : opérations sûres et durables dans des zones éloignées avec des conditions météorologiques exigeantes • Paysages mémoriels arctiques – documentation des changements dans le patrimoine côtier et sous-marin de l'Arctique • Littérature informationnelle en intégrant les connaissances autochtones, l'apprentissage expérientiel et les technologies de réalité étendue • Connaissance des océans : compréhension et gestion des environnements marins par l'intégration de systèmes de connaissances divers et de la littérature émotionnelle • Documenter, revitaliser et intégrer les pratiques de gestion et de conservation des peuples autochtones • Réflexion créative sur l'avenir en utilisant l'apprentissage expérientiel et la création d'univers dans le cadre du cours dispensé à bord • Relations internationales : interaction entre l'Arctique et les sociétés locales et autochtones de l'Arctique avec les processus politiques, économiques et de sécurité mondiale • Paysages linguistiques arctiques • Didactique : perspectives des étudiants sur les processus d'enseignement et d'apprentissage dans le cadre de projet interdisciplinaire collaboratif • Épidémiologie et impact des transitions alimentaires dans les populations autochtones • Études de santé : impact du système de surveillance à bord sur la santé et le bien-être des participants de OOI Une gamme de capteurs montés sur le navire mesurera la présence de mammifères marins, les courants, les conditions météorologiques, la température de l'océan et les conditions lumineuses de l'océan. Un système de flux à travers le navire collectera en continu des échantillons d'eau. À certaines stations le long du voyage, des échantillons d'eau et d'organismes seront prélevés dans l'environnement marin. Pour cela, nous utiliserons des bouteilles Niskin (échantillons d'eau), des filets remorqués et des cannes à pêche (zooplancton et poissons), et des carottiers (extraction de sédiments du fond marin). La plupart des sciences sociales se dérouleront à bord et impliqueront des études avec les participants du voyage maritime et leurs expériences. La réalité étendue et l'intelligence artificielle sont quelques-uns des outils qui seront utilisés. Certains chercheurs mèneront des entretiens avec les communautés locales. Les données marines collectées avec les capteurs du navire seront rendues publiques et seront mondialement disponibles via NMDC (<https://nmhc.no/en>) en suivant les principes FAIR des données dans un délai de 12 mois. Les résultats préliminaires générés en cours de route seront partagés lors d'événements organisés

$\Delta_{\mathcal{M}^b \cap \mathcal{C}}:$

Inuinnaqtun: Kimilguuaktuni Hanayakhak Uktugutait Tagiumi Autlaaktut – Ukiuktaktumi Hivunikhait Kinikhiayut Uørgen Berge, UiT Ukiuktaktumi Universitiit Norway (UiT) Atauhik Tagiumi Kinikhiayut hilakyuami hanayakhak ovalo ilitagiyauphimayut ilanganut UNkuni KuliitUkiuni Tagiut Kauyimayatinik Tamamtitailligiyinik Hanatiligiyyit (2021-2030). Kitkaniitut tikinahuaktaithanalutik tuhaktitauyakhainik, pipkailugit tagiumi kagitaualigiyiit Kablunaatitut ovalo atukatigiilugitkauyimayait ikpinagutainik havaangit tagiumi tamaktitailligiyiit hanatiligiyyiit hilakyuamiihumagiayinnut. Statsraad Lehmkuhl atauhiuyuk anginikhaak ovalo utuktaquyut umiat atuktutovalo munagiyaupuk maniliungituni Tunngaviit. Ukiumi 2022/23, umiak inikhimayait hivuliuplutikAtauhik Tagiumi Umiaktuktut, 20nik tatikikhiutini umiaktukhimayut hilakyuami tamaat. Aprilmi2025, One Ocean II atulaniakatuk aalamik umiktuklutik, piliklutik ukiumi 2025 Bergenmitnutkaklutik Nicemi, France, nani ilauniaktut Ataguhik Tagiut Kauyimayatukangit KablunaatitutKatimakyuualutik ovalo UNkuni Tagiumi Katimakyuaktunut.Kimilguuaktuni apitkutikaktut munagiyauphimayut umiaktuuktitlugit umianga One Ocean Iiumiaktuutait hapkoa:• Kanuk aalatiitjutait ilanganut ovalo naunaiyautainik Inuit aktuktivaktait aalatkiini ilanganuthilakyuami tagiut?• Hunat tunikhaitjutait ovalo kungmut himautait nipiit pikataklikat tamaat hilakyami tagiuni?• Hunat takulaakatut hunavaluit aviktukhimayuni ovalo Imani ilanganut umiktukhimayainik?• Aatjikutiliukpakpaa kitkanit takulaaktainit, atuktainik ovalo kungmuaniitut naunaiyagutaitovallo hapkoa naunaiyagutait atulaakaat ihuakhaitjutainik hilat ovalo tagiutkanugitniagutainut?UiT Ukiuktaktumi Universitimi Norwaymi atuinalikpaktait umiak autlaagiaganik iluanutUkiuktaktumi Tagiut Ukiakhani 2025 ovalo angilgagit Inuit, Yupik, Unangan ovalo AthabaskanInungit. Talvaniinmata umiaktuktut atugumayainut ilanga iniktiliktut ilihaktut ovalo inikpianiaktutilihaktutlu. Pikaniaktuklu kaguyimayakaktunik pilhimatjutikhait hamani ilanganut umiaktuktuni.Pinahuaktavut naunaiyaklugit talvani Ukiuktaktumi ayokhalaagutait ovalo takupkainahualugitamigaitunut Inuit. Piyumayugut ikayukluta nakuutkiyamik Ukiuktaktumi ilanga ovalo avatilingaovallo hivunikhainik ayokhalaagutait talvani ovalo ilanganut hilakyuamut nunalaat pikataniakliktaithilat aalangugutaini Ukiuktaktumi. Kimilguuaktut ovalo ilihaktut piniaktut Inuligiyiit kauyimayainikpiyumayaut angilinahualugit kanugitjutait tuhagutikhainut Nunakakaaktut nangminiigutaitamigaitunut kablunaat kauyimayatukangit ovalo Inuinut. Kimilguuaktavut ilauniaktut tamaathilakyuami aalanguktiliktuk ilanganut:Kimilguuklugit ikalungit ovalo nunauyait ilangaIlauyunut hunavaluit kimilguuklugit atuklutik takuyakhainik kimilguutait, ilanganiitut ovaloiluaniitut (Avatilinganit DNAnit) kimilguulugitHunavaluit: kinikhiayut tagiumi ilanganut pikaktutKangikhinahualugit aalangugutait tagiumi hikuit ivikhiutaitAtugutikhait: naamaktunik ovalo tamaktitailligutikaktunik havaangit avaliituni inukangituttagiungit pikakataktut hilat kanugitjutainikUkiuktaktumi Memoryscapes – titiganiaktait aalangugutainik Ukiuktaktumi hinaat tagiuni ovaloataani ilanganutTuhagutikhainik titigautainut hapkonanit ilaukatauyut Nunakakaakhimayut kauyimayainut,pikataliktait ilihagutikhainut ovalo Takia kanugitjutait atugutainitTagiut taiguagutait: kanikhinahualugit ovalo munagitjutait tagiumi avatingit ilanganutlaukatautjutainik aalangugutait kauyimayainut atuktaini ovalo ihumaalugutainik taiguagutikhaitTitigaklugit, pinahuafaalugit ovalo ilaukatigilugit munagitjutikhait ovalo minguiktiligutaitpikatagutainik NunakakaakhimayutHanalutik hivunikhainik ihumatjutait atuklugit uktugutikhainik ilihagutikhainut ovalohilakyuamut hanatjutait ilanganut ilihanaituinut umiktuktitlugitNunakyuami ilaukatautjutait: ilaukatigiyait kitkanit Ukiuktumi ovalo Umiktaktuni nunakaktutovalo nunakakaakhimayut ilanganut hilakyuangani paalitiit, hanatiligiyyit, tutkuktuitjutaitilanganikUkiuktaktumi ukautait ilanganutPitkutilingit: Ilihaktut ihumagiyaait ilihagutainut ilanganiitut havakatiigiutikhait ilangithanayakhami havaatKauyimayait hunavaluit ovalo ikpinautait nigihimayainik aalanguktigutainik NunakakaagatiqitiAniaktitailligiyiit ilihagutait: Ikpinagutait kaanganiillaktitlugit umiami

kungiagutainut ilanganutaniaktitailigiiyiit ovalo naamaktiligutait OOIImi  
 ilaukatauyunutPikaktut naniitjutait naunaiyagutait kaangani ukiak kanuk naunaiyaniaktuk  
 pikatagutainik tagiumihugaat, nuutitigutait tagiut, hilait kanugitjutait, tagiumi unakutait ovalo  
 tagiumi kauyimaligaagatkanugitjutait. Umiakut katitigutait imanik ilanganut pikatainaniaktait  
 katitiklugit imaitkimilguugutainik. Ilangani nunami naunaiyagutait ilanganut umiaktukviit,  
 imait ovalo hunavaluitkimilguuktauniaktut katitiklugit tagiumi avatilinga. Hafumunga,  
 atuniaktut Niskinik hikuliangit puut(imat kimilguukhimayait) atukataklugit kivyaktuutit ovalo  
 ikalukhiugutait (hunavalunik ovaloikalunik), ovalo boxcorers (hunavaluit pikataniaktait tagiut  
 ataaniit). Ilangit Inuligiyyit kauyimayaitpiniakatut ilihagutainik umiaktuktut ilauyut inminik  
 ovalo kauhimaliktait. Takitjutaini takuniaktaitovalo takunahugiyait kauhimayait ilangit  
 hanalgutait atuniakatut. Ilangit kimilguuktiit piniaktutnunainik nunalaat.Tagiungit  
 katitikhimayut katitigutaini umiat naunaiyagutaini takupkainiaktut Inunut ovalo  
 hilakyuamipihimayait ilanganut NMDCni (Kagitauyakut: <https://nmdc.no/en>) pitaagumik  
 FAIRmi katitikhimayutihumagiyait ilangani 12ni tatkihutimi. Hivuliit takuhimaliktait  
 pipkailiktut ublumi takukatiginiaktaitnunalaani katimakatigiilugumik nutkakvikhainut nunainik.  
 Umiaktuktitlugit ilanganut UkiuktaktumiTagiut piliniakatut Nuukmit August 5mi, 2025, ovalo  
 nutkaklutik Anchorage October 4mi,paknaiyaktut nutkaklutit hapkonani:Miitimatalik  
 (August 14mi) OVALUNIIT QausuittuqMI (August 17MI) (nutkakviit  
 kimilguuktaulutikKimilguuktinit Inunik-Hilat ovalo hikuut kanugitaanga)Uqsuqtuuqmi (August  
 22-26)Ikaluktutiakmi (August 29mit September 2mut)Siqnazuq/Nomemi (Amialikat nutkakviit  
 ovalo tikikatuktut Kimilguuktiit)

## Personnel

Personnel on site: 110

Days on site: 45

Total Person days: 4950

Operations Phase: from 2025-08-05 to 2025-09-02

Closure Phase: from 2025-08-13 to 2025-09-05

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ᑭᓇᓕᓯᚾᖅ	ᐱᓃᖅ	ᑲᑐᔨᐱᖅᑎᓯᚾᖅ	ᖅᓴᓴ ᑐᔨᖅᑎᑕᐅᓴᐅᓴᐱᐱᖅᓴᖅ
Information is not available			

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<b>ᐱᑦᐸᓴᓂᐸᓄᓇ ᐃᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ</b>	<b>ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ</b>	<b>ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ</b>	<b>ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ</b>	<b>ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ</b>
ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ	in the process of applying	Not Yet Applied		
ᐱᑦᐸᓴᓂᐸᓄᓇ	Enviornmental Impact Screening Committee (EISC), application in progress	Not Yet Applied		
ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ	Feedback from Parks Canada After discussing with our colleagues, we can confirm there is no Parks Canada specific permit requirement from a nautical or scientific perspective for your expedition	Active		
ᐱᑦᐸᓴᓂᐸᓄᓇ ᐱᑦᐸᓴᓂᐸᓄᓇ	In the process of applying	Not Yet Applied		
ᐱᑦᐸᓴᓂᐸᓄᓇ	Government of Canada Application for consent to conduct marine scientific research	Applied, Decision Pending		

### Project transportation types

Transportation Type	ᄠᆞᆫᆯᆡᆫ ᄇᆡᆮᆺᆸᆡᆫ ᄇᆡᆮᆺᆸᆡᆫ	Length of Use
Water	Sail Training Ship Statsraad Lehmkuhl, Crew change in Cambridgebay	

### Project accomodation types

Δρ<sub>α</sub>β,



## ሐረግ ስርዓት

ለፍጅ ልሳሳት ሐረግ ስርዓት ለሰራተኛው ልሳሳት ፍጅ ስርዓት ስርዓት ስርዓት ስርዓት

ሰራተኛው ስርዓት ስርዓት ስርዓት	ሰራተኛው	ሰራተኛው - ሰራተኛው	ሰራተኛው ስርዓት ስርዓት
Kongsberg Discovery EK80 (38, 120, 200 kHz)	1	N/A	Single-beam echosounder, hull mounted sensor
RDI 75 kHz, Kongsberg Discovery CP 300 kHz	1	N/A	Acoustic Doppler Current Profilers, Hull mounted
WS700-UMB Smart Weather Sensor	1	N/A	Temperature, relative humidity, precipitation intensity, precipitation type, precipitation quantity, air pressure, wind direction, wind speed, radiation Mast mounted sensor
Three Ocean Sonics hf hydrophones	1	N/A	record passive acoustics, hull mounted sensor
WS100 Radar Precipitation Sensor / Smart Disdrometer	1	N/A	Mast mounted sensor for Rain/precipitation quantity, rain/precipitation type (Rain, snow, sleet, freezing rain, hail)
Apogee SI-421-SS. Narrow field of view infrared radiometer sensor	1	N/A	Mast mounted Sea Surface skin temperature
CTD rosette	1	n/A	Temperature, conductivity, dissolved oxygen, chlorophyll A, turbidity, backscatter pH, PAR Seabird SBE19plus V2 SBE43 DO CHL-a & TURBIDITY ECO-FLNTU SATPAR PAR-LOG ICSW, SATPAR SURFACE/REFERENCE PAR SBE18 pH
Ferrybox, sensors of flow through system	1	N/A	installed on board Temperature, conductivity, dissolved oxygen, turbidity, chlorophyll A
Quantum SQ-522 PAR sensor	1	N/A	Mast mounted sensor, Optical sea awareness
WP2 plankton net, mesh size of 180 micrometer.	1	N/A	Zooplankton Zooplankton net deployed from vessel
Onboard filtration and qPCR/sequence analyses and water filtered for post cruise lab analysis	1	N/A	Water samples for eDNA analysis, Water samples collected from vessel flow through system and water bottles on CTD rosette (12x2.5l) for microplastics analysis, isotope analysis
Box corer	1	50cm x 50cm	seafloor sediment extraction
Multicorer	1	6 corers à 10cm diameter	seafloor sediment extraction

በበዓልገቢጋጋ ምሽትገቢ ልሳሳ ምሽትገቢ ልሳሳ ምሽትገቢ

ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ
Arctic grade Marine Gas Oil Sulphur content <0.05%Alternativt Marine Gas Oil Sulphur content <0.05%.Usually only filled 85%	fuel	3	1179	3537	Cubic Meters	Fuel for the sailingship Statsraad Lehmkuhl
16% Formaldehyde	hazardous	1	0.1	0.1	Liters	preservation of benthic invertebrates
Ethanol	hazardous	6	1	6	Liters	preservation of benthic invertebrates anf fish larvae
4% Formaldehyde	hazardous	8	1	8	Liters	preservation of zooplankton samples

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ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ	ምሽትገቢ ልሳሳ ምሽትገቢ
0		

$\triangleleft^b \mathbb{C} d^c$ 

$\Delta^b C d r n \sigma \Delta^c \sigma^c$

<b>ᐱᑕᓚᖅ ᐸᒃᔪᑦ ᐳᑲᑯᑦ</b>	<b>ᑭᏍᐬᑦ ᐶᑵᐴᑦ</b>	<b>ᑭᏍᐮᑦ ᐶᑵᐴᑦ ᑫᑭᐰᑦ ᐶᑵᐴᑦ ᐸᒃᔪᑦ ᐳᑲᑯᑦ</b>	<b>ᑭᏍᐬᑦ ᐶᑵᐴᑦ ᐶᑵᐴᑦ</b>	<b>ᑫᑫᑆᑫᑉ ᐸᒃᔪᑦ ᐳᑲᑯᑦ</b>
Waste disposal	ᐶᑵᐴᑦ ᐸᑈᐿᑦ ᐳᑲᑯᑦ	N/A	we will keep our waste on board the ship until we reach anchorage to avoid stressing the area	N/A
Marine Based Activities	ᑭᏍᐬᑦ ᐸᒃᔪᑦ	N/A	The ship has treated sewage on board which according to international regulations	only cleaned and treated Sewage will be released

**◀◁▷▶C♯<sup>c</sup>D<sup>c</sup> ◀<sup>b</sup>D<sup>♭</sup>C▷F<sup>c</sup>L<sup>c</sup>**

Aquatic species, including habitat and migration / spawning --> hunting, spawning areas will be avoided. Effect on migration will be minimal as the ship will only sail through the areas, with short station stops of <24hours along the way for sampling activities.

# **Additional Information**

**SECTION A1: Project Info**

**SECTION A2: Allweather Road**

**SECTION A3: Winter Road**

**SECTION B1: Project Info**

**SECTION B2: Exploration Activity**

**SECTION B3: Geosciences**

**SECTION B4: Drilling**

**SECTION B5: Stripping**

**SECTION B6: Underground Activity**

**SECTION B7: Waste Rock**

**SECTION B8: Stockpiles**

**SECTION B9: Mine Development**

**SECTION B10: Geology**

**SECTION B11: Mine**

**SECTION B12: Mill**

**SECTION C1: Pits**

**SECTION D1: Facility**

**SECTION D2: Facility Construction**

**SECTION D3: Facility Operation**

**SECTION D4: Vessel Use**

**SECTION E1: Offshore Survey**

**SECTION E2: Nearshore Survey**

**SECTION E3: Vessel Use**

## SECTION F1: Site Cleanup

## SECTION G1: Well Authorization

## SECTION G2: Onland Exploration

## SECTION G3: Offshore Exploration

## SECTION G4: Rig

## SECTION H1: Vessel Use

LOA (in reference to fees etc.): 84,60 mLPP: 72,40 mMax Beam (Hull only): 12,60 mMoulded depth: 7,32 mMax. Draft: 5,50 mMax. Air draft above sea level: 48,00 mHighest mast above main deck: 45,00 mFuel tank capacity: 90 m3Fresh water capacity in tanks: 120 m3GRT: 1516 tNRT: 454 tDisplacement: 2231 tNumber of sails: 22Total Sail area: 2026 m2Max. speed: Engine: 10 knots / Sail: 17 knotsCrew and traineesMax. number of voyage trainees 150Crew: 25Seating area below deck: 80 + 96MachineryMain Engine: Bergen Diesel-KRM6 -750 rpm 827 kWGear: Volda ACG - 450Propulsion system: Rolls Royce / Kamewa: CCP 4 bl. dia. 2,25 m 794 kWBow thruster: Rolls Royce Type 45 TV 270 kWSteering gear: Rolls Royce /Frydenbø HS 40Generator 1 og 2: Caterpillar – C 7.1 -150 kWShaft generator: ABB, PTO 300 kWBatteri: Kongsberg Marine 360 kWhEmergency generator: Volvo Penta-TAMD 71B/Stamford 90 kWElectrical power system: 400 V – 50Hz, 230 V - 50Hz - three phaseMain switchboard aft: ABB - 230 VMain switchboard forward: Rolls Royce/ TB- Austevoll 400 V / 230 VEmergency switchboard: TB- Austevoll 230 VHSG switchboard: Rolls Royce / TB AustevollAutomation: Rolls Royce: ACONSafety equipmentMOB rescue boats: (2) 6 person Zodiac 600 w/ 90 / 80 HK outboardsLiferafts: (2) 65 person DKR + Viking open(4) 50 person DKS Viking(8) 25 person DK+ VikingEvacuation slides (Inflatable): (2) Viking MinislidesSurvival suits (Full body): (181) VikingLifejackets (Thermal): (195) adult / 40 (16) child / 10 infantFirefighting equipmentAddressable alarm system: ACON IAS systemEngine room: Halotron inert gas remote extinguishingEmergency generator room: Halotron inert gas remote extinguishingAccommodation and storage areas: Marioff Hi-fog water mist extinguishingBattery room: Marioff Hi-fog water mist extinguishingNavigation equipmentRadar (ARPA): (2) X-Band KM 25 KwECDIS (Full): (2) K-NAV Stand AloneAIS: Simrad AI 70Navtex: Furuno NX 700 BGPS: Kongsberg SeaPos 320Gyro compass: Simrad /Robertson GC 80Echo sounder: Skipper GDS 101Doppler Speed Log: Furuno DS 80Radio Station GMDSS A3MF/HF: Sailor CU5100 250W DSCVHF: Sailor RT5022 DSCSAT-C: Sailor 6110 mini-CEPIRB: Tron 30 S MK IIRadar Transponder: Tron SARTSatcom Voice/Data: Sailor VSAT 900 High PowerSatcom Voice/Data: Iridium Pilot Captain PhoneInternal communicationPA/Intercom: Vingtor Marine VMP-32/FUEL: arctic grade marine gas oil.Sulphur content <0.05%

## SECTION H2: Disposal At Sea

## SECTION I1: Municipal Development

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## Miscellaneous Project Information

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## Cumulative Effects



## Impacts

[illegible][illegible]
$$(P = \langle b \rangle_{\mathbb{A}^1} \cap \Gamma^{\mathbb{A}^1} \mathbb{A}^{\mathbb{A}^1}, N = \langle b \rangle_{\mathbb{A}^1} \cap \Gamma^{\mathbb{A}^1} \mathbb{A}^{\mathbb{A}^1} \cap \langle \mathbb{A}^1 \rangle_{\mathbb{A}^1} \cap \Gamma^{\mathbb{A}^1} \mathbb{A}^{\mathbb{A}^1}, M = \langle b \rangle_{\mathbb{A}^1} \cap \Gamma^{\mathbb{A}^1} \mathbb{A}^{\mathbb{A}^1} \cap \langle \mathbb{A}^1 \rangle_{\mathbb{A}^1} \cap \Gamma^{\mathbb{A}^1} \mathbb{A}^{\mathbb{A}^1}, U = \langle b \rangle_{\mathbb{A}^1} \cap \Gamma^{\mathbb{A}^1} \mathbb{A}^{\mathbb{A}^1})$$

## List of Project Geometries

- |   |          |   |
|---|----------|---|
| 1 | polygon  | Station work area 2   |
| 2 | polygon  | Station work area 1   |
| 3 | polyline | Polyline is alternativ route, if weather conditions or other conditions demands/allows us |
| 4 | point    | Polyline is alternativ route, if weather conditions or other conditions demands/allows us |
| 5 | point    | Polyline is alternativ route, if weather conditions or other conditions demands/allows us |
| 6 | point    | Polyline is alternativ route, if weather conditions or other conditions demands/allows us |



7 point	Polyline is alternativ route, if weather conditions or other conditions demands/allows us
8 point	Polyline is alternativ route, if weather conditions or other conditions demands/allows us
9 point	Polyline is alternativ route, if weather conditions or other conditions demands/allows us
10 point	Polyline is alternativ route, if weather conditions or other conditions demands/allows us
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17 point	Ikaluktutiak