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Period of operation: from 0001-01-01 to 0001-01-01

Λαλτβϫϫϫ: Larry Mayer

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ΔΑΝΟ: L'agit d'un projet de recherche multidisciplinaire qui profitera du passage du navire du Healy par le passage du Nord-Ouest de l'Alaska à la baie de Baffin et recueillera des données en cours qui contribueront à notre compréhension de la profondeur du fond marin (bathymétrie) et effectuera des mesures qui nous aideront mieux comprendre le changement climatique et les changements de productivité dans le PTN et l'Arctique. Toutes les mesures seront effectuées pendant que le navire est en route. Aucun échantillon du fond marin ne sera prélevé. Des échantillons d'eau et d'air seront prélevés par des systèmes «à circulation» pendant le transit du navire. Le navire profitera du transit du HEALY de l'Alaska à Nuuk pour combler les lacunes bathymétriques critiques et ajouter à l'effort croissant de cartographie complète des fonds marins. Nous effectuerons des mesures des isotopes du carbone dans le passage NW et dans la baie de Baffin pour aider à mieux comprendre les interactions océan-atmosphère-glace-terre en utilisant les mesures isotopiques de l'eau et du carbone (CO₂ et CH₄) de l'air marin et de l'eau de mer. Nous mesurerons les distributions de matière organique particulaire dans les eaux de surface à travers le passage du Nord-Ouest - Collecte à haute résolution d'échantillons de particules en suspension à travers le système d'eau de mer en surface de Healy le long de la trajectoire du navire. Nous collecterons des données gravimétriques dans le bassin arctique. Nous examinerons la productivité nette des communautés dans les eaux de surface du passage du Nord-Ouest en échantillonnant la conduite d'eau de mer scientifique en cours de Healy pour les gaz dissous. Les données seront utilisées pour calculer les taux à haute résolution du taux de production biologique (production communautaire nette) toutes les ~ 2 minutes le long de la piste de croisière. Nous collecterons l'ADN environnemental (ADNe) et effectuerons un échantillonnage optique dans les mers arctiques et le passage du Nord-Ouest pour déterminer la composition de la communauté (ADNe), la production communautaire nette de la couche mixte (PIGI), la teneur en chlorophylle de surface pour l'intercomparaison / l'étalonnage des satellites. Un levé hydrographique / de vitesse à bord sera effectué. Les principaux objectifs sont de déterminer le sort de l'eau douce transportée dans la baie de Baffin par le courant de frontière ouest du Groenland, et d'établir les voies par lesquelles la chaleur du courant est détournée vers les glaciers de la région d'Uummannaq. Les travaux ont été et seront coordonnés avec des scientifiques de la Commission géologique du Canada. Nos collègues du SGC ont effectué les premières visites d'engagement communautaire en 2013. En mai 2015 et en mars 2016, des séances d'engagement communautaire ont eu lieu à Clyde River, Qikiqtarjuaq, Pangnirtung et Iqaluit. En 2018 et 2019, des consultations communautaires ont eu lieu à Pangnirtung et Qikiqtarjuaq. COVID a empêché de telles visites cette année. Les résultats de la recherche seront communiqués lors des visites communautaires environ six mois après la fin de la saison sur le terrain et seront rendus publics. Les résultats seront également présentés lors d'ateliers dans le Nord, lors de conférences scientifiques et se traduiront par des publications dans diverses revues scientifiques, des rapports et des documents en langage clair au cours des mois et des années suivant le projet.

$\Delta \omega^b \cap \gamma^c$: Document lost Inuktitut font in pasting here -- original document is presented as attachment in document

tab.]b7N cspnDbsix6g6 xuhi5]s4]gtc3li cspQxDbsli Wix6g6 W5yx3li9l w]vDt x`M{vuR]Zg6 er6]bl1jUsJ6 witz]A6g6 cspn6bski vt6hwx6g5 gryQxDbsix3mb vt6h6bsJ5 cktQ wttQ1m]z5 bEs6 x7m]s4gC6bsli cktQ wttQ1m]z5 csp/s2X]b8N wv]]bsix6g6 ck6 yMxy0p6X9oxiz whmQIA x7m ckwos4v8iExcC/3m]zb x6ft xg6bst9IA bEs4f5. bv4fx ttC6ymJ5 ttC6bsymK5 cspQx6gk5 ckW7m]z5 clwosDm/q9l. cspn6bsJl4]b5 cspn6bsix6g5 sux3Jx4]f6t9lQ5. bEs6 NtziR]Z6gu5 tAy0]/T5g5. Wm3uR]Z6g5 x7m yMuR]Z6g5 xi6]nc5b6bK5 wMzi tAyx3J4b3ix6g5 sux3Jx2 w]m`i8izb wttQ/ziR]Z6gu8N6. 1.oxE]uj. g]C6bz WxiAm/z]s4g]CiAm/Z x6ft bEs3u cktQ wttQ1m]z5 cs[Qx3lis Ntz @)#]aT8izi B]wo xg3IA x`M{vu `k4j. Qxi4bsymT5g5 csp/symT5g5 WliQ5 WxiQxDm1mA5 x0posDm1mA5 bEs2 Ntz.2.@-/wW svx S2Mi]s4gC3ix6g6 x6ft4]f6t9IA er6]bl1ul gryQxChAm1mt4 ck6 bEs6-yM-yf-kN xbs5t4]fc5b3m]zt4 wM3uR]Z6gu5 S2Mi vt6hwli Wix6g6.3.-uA Ai]s4gC3ix6bq5]smJC`M5 bf4nsT5g5 wms2]cz`i5gi5 x6ft4]f6t9lQ5-xqJi5 vt6hwlt5 szy4b6gi5 B]wo4f5 sux3Jx2 x6f]bA5. 4.]Si]f4o vt6hwx6g6 sdmw8i3i5 wms2. x6ft4]f6t9lQ5 W7mEsN/6g6 cspQx6Xb cktQ sdmw8ic3m]z5 wmsJ6 NM5]b3IA grox3IA]s4gC6bz5 Wz1Nzi vN1Nzi9l eMufI4 vt6hwn/6Lt4 xqJu4 cspZ/6Lt5.5.lxC8 Jci4 cspQxC/6g6 cktQ kN`o5 yM]bi x4]gtc3m]zb vt6hwli x6ft4]f6t9IA B]wo4f5 hNgw8N3i5 cspn6]t5 bEs2 wmi grox6gu cspAm1mz cktQ xqtQJu s6hxlgc3m]z5 bEs2 wmi. vt6h6bsJ6 xg3IA]s4gCc5bD8N3ix6g5 cktQ xqtQJu5 bEs6 kat5yJ8N3m]z5 s6hxlgc3i5 cspnc5bD8N3ix6g5 @ uN5b]m6. 6.]x8ts msAo8. scctcc5b3ix6g6 kNu5 cspn6ti5 x7m bfZ4ni5 cspnDti5 vt6hwli srs6b6]g2 bEzi x7m x6fts2 cspQx3li kN`o5 cktQ x4]gtQ/s1m]zb bEs2 wmi, cktQ waMc5b3m]zb kNo1iR]Z6g5 bEs2 wmi, cktQ x]gtc3m]z5 wmi]ngMw5aiC6bsJ8k5.7.]X2 Wv5. x0pos3ix6g6 x6ftu. cspQxDm`ME/z cktQ x4gwTQ1m]z5 wmi bEsaT5g6 Wz1NziR]Z6g6 v`M`O5 kNziR]Z6g6 er6]b`l2 bEszi5g6, x7m cspQx3lt5 NrR]Zc5b3m]z5]sN3i6 wmi]s7m8N6gJu5g5 Wcl/4n5 yfxlw5. nNix6bK wm8Nw5g6, wm8Nw8ix6g6, hNgw8N3i5 cspn6]t5 wMsl kNi5 cspn6]t5 vNbU]Z6g5. nNctQ/K5 sXMs6ymJ5 kNo2t8k5 @]!#at9IA. k3Cw5 @]!%at9IA x7m N5yx5 @]!^at9IA, kNo1i5 vtmctcMs6g5 vq6g]ZW1u5, er6b3Jx3u5, X1i6]g3u5 x7m wcl1i5.@]! * x7m @]! (at9IA, vtmctcMs6g5 gn6t5yMs6g6 kNo1i5 X1i6]g3u5 x7m er6b3Jx3u5. k2[]x3N6 !(k6v6t5yMs6g6 vtmixMs6bq8i5 srsaju5. csp/s5b6g6 gn6tbs5bc5bD]m6g5 kNo1`k]Czb w7m]c b6r5 x3Fi`o5 Wxi4Xb Wxi4y4Xbrggw8N3j5 bf/sJ8N3ix6g6. csp/sJ5 bft]bZ4nY3ix6g5 wo8ixDbslt srs6b6gu, hNgw8N3i5 cspn3is2 u4]nk5 vtmJk5 x7m csp/sJ5 ttCDbs5b3ix6g5 xuhk5 bf/slt5 hNgw8N3i5 cspn6]t5 ttC3FQ5b6bzk5, ttC6bsJk5 x7m sco]mZ4nk5 b6rsix6gk5 srsaix6gk9l xfi scsyE/s5b3ix6g5.

Inuinnaqtun: Hapkua amihunik-havaqatiqaqhutik qauyihaiyut havaaghariyait aturahuaqhugu Healy ikaaqhuni Northwest Ikaaqvianik Alaskamit Baffin Kangiqhuanut katitiqlutik naunaitkutanik ikayuutighait ilihimattiarahuaqhugu itinia natia taryum (taryuliqiyit) qauyihailutik qauhittiarutighaptingnik hila aallannguqpallianianik aallannguqpalliayullu Ikaaqingmi Ukiuqtaqtumilu. Kinguani naunaitkutaayut tamangnit Ihivriuhqiyilluat (PI-nguyut) havaaghainik inirumayainiklu. Qauyihavangniat umiaq ikaaqtillugu. Qauyihailaitut taryum natianit. Imaqmik anurimiklu qauyihavangniat “anialattivikkut” umiaq ingilratillugu. 1-Larry Mayer. Iniqpiaqhimayumayaat Nunaulyaliuqtut Taryum Natianik 2030-nguqtinnagu. Havakvigiyumayaat ikaaqtillugu HEALY Alaska-mit Nuuk-mut, ayuqhautit naunaiyaqlugit ikayuqlutik havaghimmaaqutunik nunaulyaliuqtut taryum natianik. 2-Jeff Welker qauyihavangniat paulingnik takunaittunik ingilratillutik Northwest Ikaaqvianik Baffin Kangiqhuanillu ilihimattiarahuaqhugu taryuq-hila-hiku-nunalu ilagiingniit imaqmik atuqhutik paurmiklu (CO2 taamnalul CH4) takunaittunik qauyihaiplutik taryumi anurimik taryum imaaniklu. 3-Miguel Goni qauyihavangniat nauyunik ingilraviinik immap qaanganit Northwest Ikaaqvianit- Ingilrutiqattiaqhutik katitirivangniat tingiraqtunik takunaittunik taryum qaanganit Healy-kut taryum qaanganit haniani umiap ingilravianit. 4-Bernie Coakley katitirivangniat nunalihimaniqmut naunaitkutanik ikaaqlugu Ukiuqtaqtuq. Northwest Ikaaqvianik ikaaqtut USCGC Healy-kut katitirivangniat ilikkuuqtumik nunalihimaniqut qauyihautinik atatakaiyuq Ualinihiqimik Kivalliqimik Ukiuqtaqtuanik naunaitkutainik hivikittumi havakvingnit. 5-Lauren Juranek qauyihavangniaqtaat nauvalliayut immap qaangani Northwest Ikaaqvianit ikaaqhugu qauyihaiyut Healy-mit qauyihaiyut taryum imaanik avuhiutihimayunik tipinik qinihiaplutik. Naunaitkutait atuqtauniaqtut kitittiyaamik kayumiktunik nauttivalliavagiaghait (naallugit nayugaqnit nauvalliayut) naattaraangat ~ 2 minutes ingilravianit. 6-Andrew Margolin. Katitirahuaqtuq Avatinik DNA-nik (eDNA)qinihiaplunilu qauyihailuni Ukiuqtaqtum Taryuanik Northwest Ikaaqvianiklu naunairahuaqhugu nayugainit hanauhianik (eDNA), naallugit nayugainit nauvalliayut avugiiktunit qaanganit (PIGI), qaanganit chlorophyll-mik avuqariaghainik satellite-kut ihivriuhqiyaaamik/ihuaqhahaiyaamik. 7-Bob Pickart. Umiaqmit qauyihautiqarlutik taryum natianik/hakugingnianik qauyihainahuat aktinia qauyihaiyut. Ilihittiarumayaat qanuriningania imarittuq Baffin Kangiqhuanut Uataanullu Akukittum harvaani, uunaqtuqlu anuri harvaum qaanganit hanguvia qauyihailugu Uummannaqmut qikumayutuanut. Hapkua havaaghat parnaiyaqtauhimayut, parnaiyaqtauhimaniaqtullu qauyihaiyillu talvanngat Nunaliqiyit Qauyihaiyut Kanatamit. Havaqativut talvanngat GSC-kunnit nunallaqmiunik katimaqatiginngaqhimaayit 2013-mi pulaaqvianit. May 2015-mi March 2016-milu, nunallaqmiunik katimaqatigihimayut Kangiqtuugaapingmi, Pangniqtuumi, Iqalungnilu.2018-mi, 2019-milu, nunallaarmiunik katimapkaihimayut Pangniqtuumi Qikiqtaryuamili. Qalakyuarnaq-mut pulaaqtailivaktut ukiuq. Qauyihaiyut ilihimailiqitait naunaiqhitiyauniaqut nunallaarnut pulaaqhimagumik 6-nik tatqiqhiutit Kinguani iniqviata havaaghainik inungnullu haliyauhimanahuat. Ilihimailiqitait takupkaqtitauniaqtut katimaviinut Ukiuqtaqtumi, ayuqnaqtunik qauyihaiyut katimaviinut makpiraaliuqtaulutiklu qaffinikiaq ayuqnaqtunik qauyihaiyut makpiraangutainit, naunaitkutainit ayuqnaittukkullu uqauhikkut titiqqanit tatqiqhiutinit ukiunilu atuqtughani havaaghaum iniqvianit.

Personnel

Personnel on site: 104

Days on site: 7

Total Person days: 728

Operations Phase: from 2021-08-25 to 2021-09-13

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ሰነድ	የፍጥነት ስርዓት ለሮሲያ ስርዓት	የፍጥነት ስርዓት ለሮሲያ ስርዓት	የፍጥነት ስርዓት ለሮሲያ ስርዓት	የፍጥነት ስርዓት ለሮሲያ ስርዓት	የፍጥነት ስርዓት ለሮሲያ ስርዓት
f2021343448216- HEALY_USCG_INITIAL_TRACK_TEST	Marine Based Activities	Marine	N/A	N/A	N/A

የፍጥነት ስርዓት ስርዓት ስርዓት ስርዓት ስርዓት ስርዓት

የፍጥነት ስርዓት	ሰነድ	የፍጥነት ስርዓት ስርዓት	የፍጥነት ስርዓት ስርዓት
የፍጥነት ስርዓት	Nancy Anilniliak - Senior Administrative Officer at the time	Our collaborators on this cruise from the GSC had in- person discussions with the communities of Pond Inlet, Qikiqtarjuaq and Pangnirtung in 2019 regarding seabed surveys and marine geohazards. The specifics of the Healy cruise were not discussed in 2020-2021 because of covid and travel restrictions	2019-03-20
የፍጥነት ስርዓት	Geela Kooneeliusie	Our collaborators on this cruise from the GSC had in- person discussions with the communities of Pond Inlet, Qikiqtarjuaq and Pangnirtung in 2019 regarding seabed surveys and marine geohazards. The specifics of the Healy cruise were not discussed in 2020-2021 because of covid and travel restrictions	2019-03-01
የፍጥነት ስርዓት	Molleen Anaviapik (was contact but never met in person due to travel issues)	Our collaborators on this cruise from the GSC had in- person discussions with the communities of Pond Inlet, Qikiqtarjuaq and Pangnirtung in 2019 regarding seabed surveys and marine geohazards. The specifics of the Healy cruise were not discussed in 2020-2021 because of covid and travel restrictions	2019-03-15

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3.5 kHz echo-sounder	1	attached to ship	seabed imaging
multibeam echo-sounder	1	attached to ship	bathymetric data collection
USCG Icebreaker HEALY	1	420'x82'x29.3'	Research Vessel
CTD	1	6' x 3'	measure temperature, salinity of water
XBT	100	1'x3	measure water temperature profile while underway
XCTD	85	1'x3	measure temperature and salinity profile while underway
gravimeter	1	3'x3'x3'	Device to measure the earth's gravity field
Flow-through sensors	4	3'x2'1'	Several devices to monitor the properties of the seawater and air by passing seawater (or air) through them as vessel is underway. A detailed list of these sensors if provided in the documentation at the end of the application.
underwater glider	1	5'x3''11	IF time permits an autonomous glider will be launched in Baffin Bay towards the end of the leg. This glider will be retrieved by the scientific party of the next leg. The glider will be measuring water properties.

በበፍጥነቱ ላይ ለሚገኝ ስራ ለማድረግ ማስፈራሪያ ማድረግና ማስፈራሪያ ማድረግ

ሥራ ስም የሥራው አገልግሎት የሥራው ዓላማ	የሥራው አገልግሎት የሥራው ዓላማ	የሥራው አገልግሎት የሥራው ዓላማ	የሥራው አገልግሎት የሥራው ዓላማ	የሥራው አገልግሎት የሥራው ዓላማ	የሥራው አገልግሎት የሥራው ዓላማ	የሥራው አገልግሎት የሥራው ዓላማ
Diesel	fuel	1	12202915	12202915	Gallons	Vessel has Diesel Electric propulsion and carries all fuel it needs
Bleach	hazardous	1	5	5	Liters	cleaning sample holders
Ethanol	hazardous	1	5	5	Liters	Sample preservation

ΔL^{9b} ΔC^{9b} CΔJL^{9b} C^{9b}

$\mathcal{D}^c \supset \mathcal{C} \dot{\mathcal{I}}^{\mathfrak{S}_b} \mathcal{A} \mathcal{D}^{\mathfrak{S}_b} \mathcal{C} \mathcal{D}^{\mathfrak{S}_b} \mathcal{A}^{\mathfrak{S}_b} \mathcal{D}^{\mathfrak{S}_b}$	$\mathfrak{S}_b \mathfrak{a}^{\mathfrak{S}_b} \Delta \Gamma^{\mathfrak{S}_b} \mathcal{C}^{\mathfrak{S}_b} \mathcal{C}^{\mathfrak{S}_b} \sigma \mathcal{A}^{\mathfrak{S}_b} \angle^{\mathfrak{C}}$	$\mathfrak{a} \mathcal{P}^{\mathfrak{C}} \Delta \Gamma^{\mathfrak{S}_b} \mathcal{C}^{\mathfrak{S}_b} \mathcal{C}^{\mathfrak{S}_b} \sigma \mathcal{A}^{\mathfrak{S}_b} \angle^{\mathfrak{C}}$
0		

$\triangleleft^b C d^c$
$$\Delta^b C d_{\sigma} \sim \Delta^a \sigma^a$$

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Waste disposal	ᐳᓂᑖᓂᓃᓂ ᐳᐳᐳᑕᐳᔪᓂᓃᓂᓃᓂᓃᓂ	500 lbs	Please see Waste/Garbage Disposal Plans in attached documents	Please see Waste/Garbage Disposal Plans in attached documents
Waste disposal	ᐳᓂᑖᓂᓃᓂ ᐳᐳᐳᑕᐳᔪᓂᓃᓂᓃᓂᓃᓂ	20,000 gallons	Please see Waste/Garbage Disposal Plans in attached documents	Please see Waste/Garbage Disposal Plans in attached documents
Waste disposal	ᐳᒫᐳᑦ ᐳᓂᓃᐳᓂᓃᓂᓃᓂᓃᓂᓃᓂ	125,000 gallons	Please see Waste Management Plans in attached documents	Please see Waste Management Plans in attached documents
Waste disposal	ᐳᓂᑖᓂᓃᓂ ᐳᐳᐳᑕᐳᔪᓂᓃᓂᓃᓂᓃᓂᓃᓂ	300 lbs	Please see attached Garbage/Waste Management Plan	Please see attached Garbage/Waste Management Plan

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None. The vessel will be transiting. There will be no samples taken except of water and air using flow-through systems on board the vessel. It is self-contained with respect to waste disposal and meets all national and international environmental standards. Measurements made of bathymetry, air and water properties as well as productivity and eDNA records will be made publicly available when analyses are completed and will aid in better understanding for the environment of the region.

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

The Coast Guard Cutter HEALY (WAGB - 20) is United States' newest and most technologically advanced polar icebreaker. On this expedition the HEALY will be transiting from Seward Alaska to Nuuk Greenland through the NWP and will be collecting bathymetric data, and sampling water and air using flow-through systems. When crossing Baffin Bay, the HEALY will make a number of CTD casts (measuring salinity, temperature and depth). The HEALY is classified as a medium ice-breaker designed to conduct a wide range of research activities, providing more than 4,200 square feet of scientific laboratory space, numerous electronic sensor systems, oceanographic winches, and accommodations for up to 50 scientists. HEALY is designed to break 4.5 feet of ice continuously at three knots and can operate in temperatures as low as -50 degrees F. Length, Overall 420'0 (128 meters) Beam, Maximum 82'0 (25 meters) Draft, Full Load 29'3 (8.9 meters) Displacement, Full Load 16,000 LT Propulsion Diesel Electric, AC/AC Cycloconverter Generating Plant Drive Motors 4 Sultz 12Z AU40S2 AC Synchronous, 11.2 MW Shaft Horsepower 30,000 Max HP Propellers 2 Fixed Pitch, 4 Bladed Auxiliary Generator EMD 16-645F7B, 2400 kW Fuel Capacity 1,220,915 GAL (4,621,000 liters) Cruising Speed 12 knots @ 105 RPM Max Speed 17 knots @ 147 RPM Icebreaking Capability 4.5 ft @ 3 knots (continuous) 8 ft (2.44 m) Backing and Ramming Science Labs Main, Bio-Chemical, Electronics, Meteorological, Photography Accommodations 19 Officer, 12 CPO, 54 Enlisted, 35 Scientists, 15 Surge, 2 Visitors For this expedition there will be 104 scientists and crew aboard the vessel. The vessel will leave Seward Alaska on 25 August and arrive in Nuuk Greenland on 13 Sept. The ship track is presented as a map in The Waste management plan is provided in the Documents section. As a Coast Guard cutter, HEALY is also a capable platform for supporting other potential missions in the polar regions, including logistics, search and rescue, ship escort, environmental protection, and enforcement of laws and treaties. Ballast water: Ballast operations are conducted in accordance with the Vessel Environmental Manual. Healy has segregated ballast tanks, so operations are conducted outside of 200 nautical miles as far as practicable. Healy has a ballast capacity of 1,000,000 gal. Ballast is untreated. If ballast is taken on within 200 NM, the water is exchanged outside 200 NM and the tanks are flushed. • Bilge water: Bilge water is put into the Oily Water Holding Tank (9,000g). The bilge water is processed through the Oily Water Separator and only discharged overboard if it contains less than 15ppm. The OWS is only operated outside 12 NM. Any bilge water that is not processed is held until return to port where it is offloaded and disposed of commercially. The oil removed via the OWS is stored in a separate Waste Oil tank. • Deck Drainage: Deck drains on the weather decks and in the Hangar drain directly overboard. Internal Deck drains from machinery spaces are routed to the Oily Water Tank, and non-machinery drains go to the Grey Water Tank. • Grey and black water: Healy utilizes a vacuum eductor system to collect black water in the Black Water Tank (1000g). The Grey water system is gravity drained, and is collected in the Grey Water Tank (13,300g). The Black water is pumped into the Grey Water tank automatically when the Black Water Tank reaches 800g. The Grey Water tank is pumped overboard manually by the engineering watch stander. No treatment chemicals are added to either tank. Healy pumps roughly 6,000g of grey/black water overboard each day underway (high end estimate with full science party). Dumping of grey/black water is only conducted outside of 12 NM from land. • Solid waste: Food waste is ground up in a food disposal system, and added to the grey water tank, where it is pumped overboard. Solid waste such as cardboard and trash is stored for disposal in port. • Waste oil: Waste oil is stored in the Waste Oil tanks (combined 17,000g) and is kept until it can be offloaded to a commercial disposal company. • Hazardous or toxic waste: Hazmat is contained in designated and secure locations throughout the ship. The crew includes three Marine Science Technicians who are US Coast Guard career hazmat specialists and responsible for Healy hazmat. Detailed information on protocols, storage locations, and crew responsibilities is contained in the attached Hazmat Program. • List all applicable regulations concerning management of wastes and discharges of materials into the marine environment Per the Commanding Officer's Standing Orders, Healy does not discharge sewage inside of 12 NM from land regardless of operating area in order to comply with the highest standard set by international regulations. Trash is stored in a shipping container on the weather decks and is not dumped overboard outside of exceptional circumstances. Healy does not discharge wastes within designated Marine Sanctuaries. • Provide detailed Waste Management, Emergency Response and Spill Contingency Plans See Attached. • Does the vessel(s) possess an Arctic Pollution Prevention Certificate? If yes, indicate the date of issue and the name of the classification society. No. • Describe the source of fresh water and potable water. Healy operates two flash-type distilling units to create potable water. The distillers are not operated within 12 NM of land, nor within harbors, rivers, inlets, bays, or landlocked waters. • Indicate whether ice-breaking will be required, and if so, approximately where and when? No ice operations are planned for the Northwest Passage Transit. • Discuss any possible impacts to caribou migration, Inuit harvesting or travel routes, and outline proposed mitigation measures. No impacts anticipated. • Indicate whether the operation will be conducted within the Outer Land Fast Ice Zone of the East Baffin Coast. For more information on the Outer Land Fast Ice Zone, please see the Nunavut Land Claims Agreement (NLCA), Articles 1 and 16.14. Healy will transit outside the Outer Land Fast Ice Zone. • Describe whether any part of the project will be located outside of the Nunavut Settlement Area and whether any other regulatory requirements must be met (e.g. CEAA). Healy's Northwest Passage transit will include both the Inuvialuit Settlement Region and Nunavut Settlement Area. Vessel complies with all international and national regulations -- Waste disposal management plan is provided in Documents section.

SECTION H2: Disposal At Sea

Ballast water: Ballast operations are conducted in accordance with the Vessel Environmental Manual. Healy has segregated ballast tanks, so operations are conducted outside of 200 nautical miles as far as practicable. Healy has a ballast capacity of 1,000,000 gal. Ballast is untreated. If ballast is taken on within 200 NM from land, the water is exchanged outside 200 NM

SECTION 11: Municipal Development

[illegible]

Vessel will transit through deepest waters of NWP and across Baffin Bay.

[illegible][illegible]

Miscellaneous Project Information

[illegible]

Cumulative Effects

We do not envision any adverse environmental impacts from the transit of the vessel.

Impacts

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Physical																							
Designated environmental areas																							
Ground stability																							
Permafrost																							
Hydrology / Limnology																							
Water quality																							
Climate conditions																							
Eskers and other unique or fragile landscapes																							
Surface and bedrock geology																							
Sediment and soil quality																							
Tidal processes and bathymetry																							
Air quality																							
Noise levels																							
Biological																							
Vegetation																							
Wildlife, including habitat and migration patterns																							
Birds, including habitat and migration patterns																							
Aquatic species, incl. habitat and migration/spawning																							
Wildlife protected areas																							
Socio - Economic																							
Archaeological and cultural historic sites																							
Employment																							
Community wellness																							
Community infrastructure																							
Human health																							
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Marine Based Activities		-	-	-	-	P	P	-	-	-	P	P	-		-	-	-	-	-	-	-	-	
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