

## APPLICATION FOR CONSENT TO CONDUCT SCIENTIFIC RESEARCH IN WATERS UNDER THE NATIONAL JURISDICTION OF ICELAND

### 1. General Information

|                                |                                   |  |
|--------------------------------|-----------------------------------|--|
| 1.1 Cruise name and/or number: | LSSL 2026 – Leg 1 Transit Iceland |  |
|--------------------------------|-----------------------------------|--|

|                                                                                                                                                              |                                                                          |                                                                                                                               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| 1.2 Sponsoring institution(s):                                                                                                                               |                                                                          |                                                                                                                               |
| Name:                                                                                                                                                        | Address:                                                                 | Name of Director:                                                                                                             |
| UNCLOS Program<br>Fisheries and Oceans Canada<br>(Canadian Hydrographic Service)<br>Natural Resources Canada<br>(Geological Survey of Canada/UNCLOS Program) | Canadian Hydrographic Service<br>200 Kent Street<br>Ottawa, ON<br>K1A0E6 | Christopher Hemmingway<br>(Canadian Hydrographic Service- CHS)<br>Dr. Mary-Lynn Dickson<br>(Geological Survey of Canada- GSC) |

|                                         |                                                                       |
|-----------------------------------------|-----------------------------------------------------------------------|
| 1.3 Scientist in charge of the project: |                                                                       |
| Name:                                   | Mr. Kai Boggild                                                       |
| Country:                                | Canada                                                                |
| Affiliation:                            | UNCLOS Program, Geological Survey of Canada, Natural Resources Canada |
| Address:                                | 1 Challenger Drive, Dartmouth, NS B2Y 4A2                             |
| Telephone:                              | +1 782 641 0208                                                       |
| Email:                                  | kai.boggild@nrcan-mcan.gc.ca                                          |

|                                                                                             |                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.4 Entity(ies) /Participant(s) from coastal State involved in the planning of the project: |                                                                                                                                                                                                                                                                                                                                  |
| Name:                                                                                       | Andrew Leyzack (Program Manager- CHS)<br>Michael White (Hydrographer-In-Charge)<br>Dave Sinnott (Geomatics Technical Advisor)<br>Sheila Hynes (Program Manager- GSC)                                                                                                                                                             |
| Country:                                                                                    | Canada                                                                                                                                                                                                                                                                                                                           |
| Affiliation:                                                                                | Canadian Hydrographic Service, Fisheries and Oceans Canada / Geological Survey of Canada, Natural Resources Canada                                                                                                                                                                                                               |
| Address:                                                                                    | 1 Challenger Drive, Dartmouth, NS B2Y 4A2                                                                                                                                                                                                                                                                                        |
| Telephone:                                                                                  | +1 905 630 2165 (Andrew Leyzack) +1 902 476 0194 (Michael White)<br>+1 709 725 8045 (Dave Sinnott) +1 782 641-3602 (Sheila Hynes)                                                                                                                                                                                                |
| Fax:                                                                                        | N/A                                                                                                                                                                                                                                                                                                                              |
| Email:                                                                                      | <a href="mailto:andrew.leyzack@dfo-mpo.gc.ca">andrew.leyzack@dfo-mpo.gc.ca</a> , <a href="mailto:michael.white@dfo-mpo.gc.ca">michael.white@dfo-mpo.gc.ca</a> ,<br><a href="mailto:dave.sinnott@dfo-mpo.gc.ca">dave.sinnott@dfo-mpo.gc.ca</a> , <a href="mailto:sheila.hynes@nrcan-mcan.gc.ca">sheila.hynes@nrcan-mcan.gc.ca</a> |
| Website (for CV and photo):                                                                 | N/A                                                                                                                                                                                                                                                                                                                              |

## 2. Description of Project

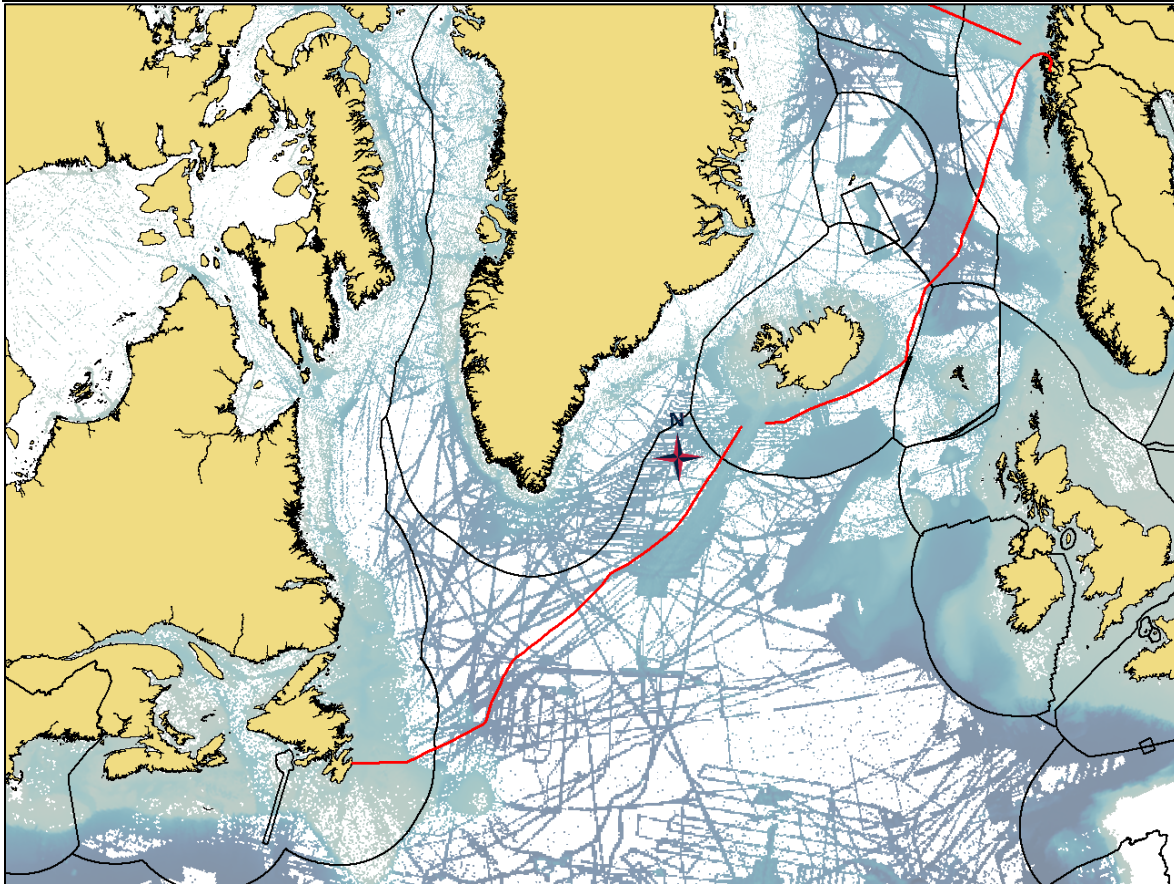
### 2.1 Nature and objectives of the project:

Canada is conducting bathymetric and geological surveys in the central Arctic Ocean to define the extent of its continental shelf beyond 200 nautical miles. Surveys are planned for both 2026 and 2027.

This will require the Canadian Coast Guard Ship, CCGS *Louis S. St-Laurent* to transit from St. John's, Newfoundland, Canada to reposition from Tromsø, Norway, crossing the Exclusive Economic Zone of Iceland. Permission is requested from Iceland to acquire bathymetric and sub-bottom data in transit using a multibeam echosounder and a sub-bottom profiler. Both instruments are hull-mounted on the vessel. Three hydrographers and one Electronics Technologist with the Canadian Hydrographic Service, Fisheries and Oceans Canada; one Geospatial Technologist from the Geological Survey of Canada, Natural Resources Canada, plus four international students (to be determined) sponsored by Canada through the Ocean Decade Alliance Initiative will participate on the transit to operate the instrument.

This marine scientific research will be conducted to increase knowledge of the Atlantic Ocean further to the Galway Statement on Atlantic Ocean cooperation signed by the EU, Canada, and the US on 24 May 2013 and the follow on All-Atlantic Research and Innovation Alliance (AAORIA). In 2022, the "All-Atlantic Declaration" was signed to revitalize collaboration among current initiatives and enhance the coordination between the Galway Working Groups, All-Atlantic Joint Pilot Actions, and related projects. The UNCLOS Program will also contribute data to the Ocean Decade Alliance's Seabed Mapping Initiative, the General Bathymetric Chart of the Oceans (GEBCO), and the International Bathymetric Chart of the Arctic Ocean (IBCAO).

The planned route between St. John's, Newfoundland, Canada and Tromsø, Norway is shown in the following map, along with bathymetric data that are publicly available in the GEBCO database.



### 2.2 Relevant previous or future research projects:

Previous MSR applications in 2015, 2016 and 2025 were approved for transits of the CCGS *Louis S. St-Laurent* between Dartmouth, NS, Canada and Tromsø, Norway through Iceland's Exclusive Economic Zone. Data acquired from those transits was filed with the appropriate department(s) in Iceland. Applications for future marine scientific research during transits will be submitted for consideration in 2027.

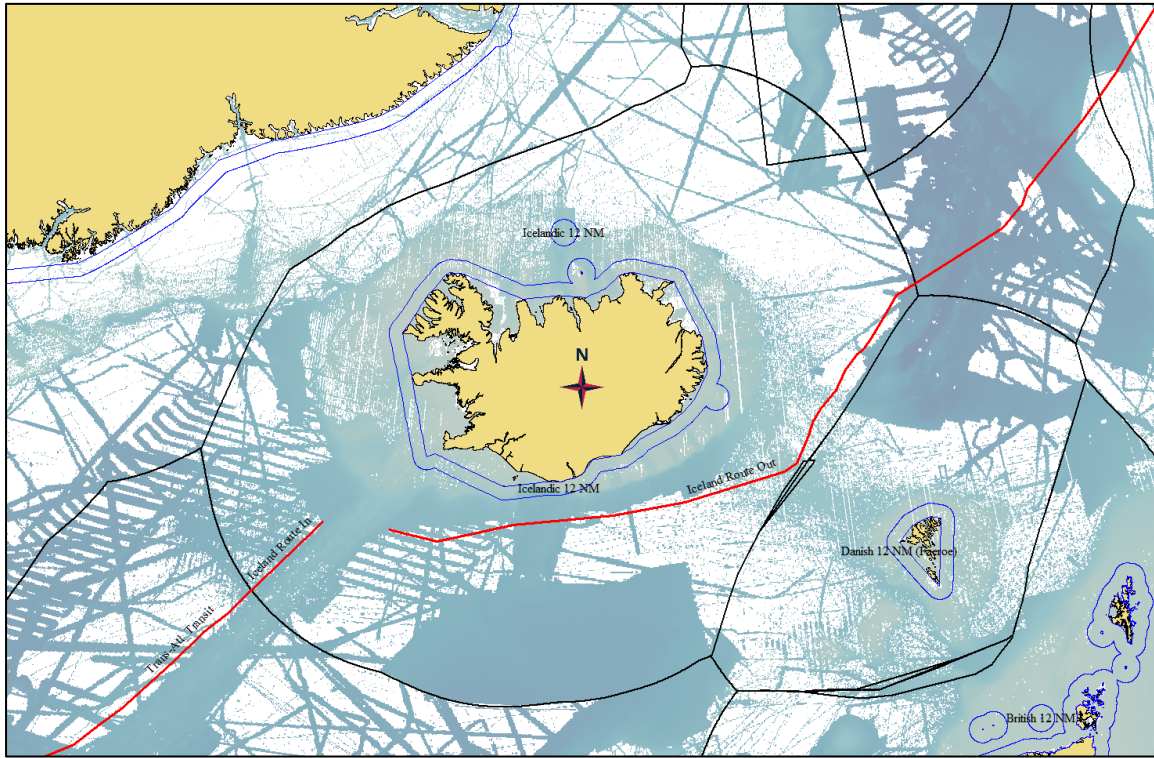
|                                                    |
|----------------------------------------------------|
| 2.3 Previous publications relating to the project: |
| None.                                              |

### 3. Geographical Areas

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| 3.1 Indicate geographical areas in which the project is to be conducted (with reference in latitude and longitude, including coordinates of cruise track/ way points):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>Bathymetric and sub-bottom profiler data will be collected along the transit from St. John's, Canada to Tromsø, Norway from the CCGS Louis S. St-Laurent:</p> <p><b>Latitude, Longitude</b></p> <p>61.351987,-28.432601 <b>Entry point into Iceland's EEZ</b></p> <p>62.527768,-26.500523 Data Logging off for transit to Reykjavík</p> <p>62.529216,-24.290502 Data Logging on after departing Reykjavík</p> <p>62.416740,-22.728256</p> <p>62.598282,-21.294882</p> <p>62.727551,-20.263788</p> <p>62.823036,-18.334025</p> <p>62.874834,-16.948267</p> <p>63.040193,-14.567860</p> <p>63.381848,-11.149714</p> <p>63.483533,-10.704196</p> <p>63.880013,-10.191589</p> <p>64.074281,-9.997762</p> <p>64.251778,-9.670581</p> <p>64.507827,-9.050156</p> <p>64.606881,-8.911790</p> <p>64.787525,-8.609687</p> <p>65.000410,-8.127382</p> <p>65.046786,-7.880046</p> <p>65.186354,-7.557184</p> <p>65.474324,-6.968878</p> <p>65.764060,-6.373064</p> <p>65.888433,-5.583381 <b>Exit point from Iceland's EEZ</b></p> |

3.2 Attach chart(s) at an appropriate scale (1 page, high-resolution) showing the geographical areas of the intended work and, as far as practicable, the location and depth of sampling stations, the tracks of survey lines, and the locations of installations and equipment.

Iceland EEZ with the planned 2026 transit of the CCGS *Louis S. St-Laurent* and a summary of direct water depth measurements available via the General Bathymetric Chart of the Oceans (2024). The route chosen parallels previous transits by the vessel in order to add to the existing multibeam bathymetry and sub-bottom profiler data coverage. Coordinates provided in Section 3.1.



#### 4. Methods and Means to be Used

##### 4.1 Particulars of vessel:

|                                                                                               |                                                                                       |
|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Name:                                                                                         | Canadian Coast Guard Ship Louis s. St-Laurent                                         |
| Type/Class:                                                                                   | LR +100A1 Icebreaker +LMC                                                             |
| Nationality (Flag state):                                                                     | Canada                                                                                |
| Identification Number (IMO/Lloyds No.):                                                       | 6705937                                                                               |
| Owner:                                                                                        | Government of Canada                                                                  |
| Operator:                                                                                     | Canadian Coast Guard                                                                  |
| Overall length (meters):                                                                      | 119.6 m                                                                               |
| Maximum draught (meters):                                                                     | 9.73 m                                                                                |
| Displacement/Gross tonnage:                                                                   | Tonnage: 11,345 GT · 3,403 NT · 4,640 DWT                                             |
| Propulsion:                                                                                   | Diesel-electric                                                                       |
| Cruising:                                                                                     | 15 knots                                                                              |
| Maximum speed:                                                                                | 18 knots                                                                              |
| Call sign:                                                                                    | CGBN                                                                                  |
| INMARSAT number and method and capability of communication (including emergency frequencies): | Iridium: 011-881-651-422-642 (Telephone)<br>Email: LouisStLaurentWH@ccgs-ngcc.gc.ca   |
| Name of master:                                                                               | Captain Wayne Duffet                                                                  |
| Number of crew:                                                                               | 55                                                                                    |
| Number of scientists on board:                                                                | 3 Hydrographers, 1 Electronics Technologist, 1 Geospatial Technologist and 4 students |

##### 4.2 Other craft to be used in the project, including its use:

None.

| 4.3 Particulars of methods and scientific instruments:                                                                                                |                                                                                                                                                      |                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Types of samples and measurements:                                                                                                                    | Methods to be used:                                                                                                                                  | Instruments to be used: |
| Bathymetric (hydrography): measurement of water depth and image of seafloor with periodic sound velocity profiles taken within the water column.      | Acoustic measurements (frequency = 12 kHz; up to 432 beams with a beam pattern swath width of 4 to 7 times the water depth; hull-mounted instrument) | Kongsberg EM-122        |
| Sub-bottom profiles (geology): measurements from which the surficial geology of the seafloor can be inferred and sedimentary structure of the subsoil | Acoustic measurements (frequency = 3.5 kHz; high resolution images of 50 m of sediment below the seafloor; hull-mounted instrument)                  | Knudsen CHIRP 3260      |

| 4.4 Indicate nature and quantity of substances to be released into the marine environment: |
|--------------------------------------------------------------------------------------------|
| None.                                                                                      |

| 4.5 Indicate whether drilling will be carried out. If yes, please specify: |
|----------------------------------------------------------------------------|
| None.                                                                      |

| 4.6 Indicate whether explosives will be used. If yes, please specify type and trade name, chemical content, depth of trade class and stowage, size, depth of detonation, frequency of detonation, and position in latitude and longitude: |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| None.                                                                                                                                                                                                                                     |

| 4.7 Indicate whether protected species be studied. If yes, please specify: |
|----------------------------------------------------------------------------|
| None.                                                                      |

## 5. Installations and Equipment

| Details of installations and equipment (including dates of laying, servicing, method and anticipated timeframe for recovery, locations and depth, and measurements):                                                                                                                                                                                                                                       |
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| Kongsberg EM-122 and Knudsen CHIRP 3260 were installed on the CCGS Louis S. St-Laurent in 2014. Both instruments are mounted in the vessel and was most recently serviced during a 2026 refit and prior to that, a 2024 dry dock of the vessel with subsequent sea-trial in July 2024 off Newfoundland, Canada. This same instrument was approved by Iceland in the 2015, 2016, and 2025 MSR applications. |

## 6. Dates

| 6.1 Expected dates of first entry into and final departure from the research area by the research vessel and/or other platforms: |
|----------------------------------------------------------------------------------------------------------------------------------|
| Project Start Date: 8 July, 2026, depart St. John's, Newfoundland, Canada                                                        |
| Project End Date: 1 August, 2026, docked in Tromso, Norway                                                                       |

|                                                                                                                                               |                       |                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------|
| 6.2 Coastal State-specific details:                                                                                                           |                       |                           |
| Coastal Area:                                                                                                                                 | Estimated Entry Date: | Estimated Departure Date: |
| Iceland EEZ                                                                                                                                   | 11 July, 2026         | 28 July, 2026             |
| Explanation of multiple entries: N/A                                                                                                          |                       |                           |
| Research will be performed: (within 12 nm? etc) Hydrography and surficial geology within Iceland's 200 nm EEZ, but not within the 12 nm limit |                       |                           |
| Extent to which Iceland will be enabled to participate or to be represented in the research project: N/A                                      |                       |                           |
| Name, affiliation and contact information for all participants from coastal state: N/A                                                        |                       |                           |

## 7. Port Calls

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|---------------------------------------------------------------------------------------|
| 7.1 Dates and names of intended ports of call:                                        |
| DD to DD July, 2026, Reykjavik, Iceland (TBC by the Embassy of Canada once available) |

|                                                           |
|-----------------------------------------------------------|
| 7.2 Any special logistical requirements at ports of call: |
| None (TBC by the Embassy of Canada once available)        |

|                                                              |
|--------------------------------------------------------------|
| 7.3 Name/Address/Telephone of shipping agent (if available): |
| N/A                                                          |

## 8. Participation of the representative of Iceland:

|                                                                                         |
|-----------------------------------------------------------------------------------------|
| 8.1 Modalities of the participation of Iceland representatives in the research project: |
| N/A                                                                                     |

|                                                              |
|--------------------------------------------------------------|
| 8.2 Proposed dates and ports for embarkation/disembarkation: |
|                                                              |

## 9. Access to Data, Samples and Research Results

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| 9.1 Expected dates of submission of preliminary report, which should include the expected dates of submission of the data and research results: |
| Submission of hydrographic and sub-bottom data in Iceland's EEZ by December 21, 2026.                                                           |

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|----------------------------------------------------------|
| 9.2 Anticipated dates of submission of the final report: |
| Submission of cruise report by 31 March, 2027.           |

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| 9.3 Proposed means for access to data (including format) and samples:                                                                                                                                                                                                                                                  |
| Data will be provided through official channels at no cost to the coastal State. Raw data will include Kongsberg multibeam data files, Applanix inertial / GNSS data files and Knudsen sub-bottom data files. Processed depth data will include Caris CSAR/BAG surfaces, ASCII grid files and sound velocity profiles. |

|                                                                                                    |
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| 9.4 Proposed means to provide coastal State with assessment of data, samples and research results: |
| Assessment of data and research results will be provided at no cost to the coastal State.          |

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|-----------------------------------------------------------------------------------------------------------------|
| 9.5 Proposed means to provide assistance in assessment or interpretation of data, samples and research results: |
| Assistance in further assessment or interpretation will be provided upon request.                               |

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| 9.6 Proposed means of making results internationally available:                       |
| Data will be submitted to the General Bathymetric Chart of the Ocean via Seabed 2030. |

10. List of Supporting Documentation

| 10.1 List of attachments, such as additional forms required by the coastal State, etc.: |              |             |                  |
|-----------------------------------------------------------------------------------------|--------------|-------------|------------------|
| Attachment Type:                                                                        | Description: | Attachment: | Submission Date: |
| N/A                                                                                     |              |             |                  |
|                                                                                         |              |             |                  |
|                                                                                         |              |             |                  |