Decision Statement from the Federal Minister of Environment and Climate Change

Issued under section 161.5 of the *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act*

To:
MOBE Project Team
c/o Dr. Feiyue Wang, Principal Investigator
University of Manitoba, Winnipeg, Manitoba

Regarding authorization of
the Multi-Partner Research Initiative Offshore Burn Experiment (MOBE)

Project Description

The Multi-Partner Research Initiative's MOBE project proposes to conduct experiments involving controlled in situ burns of oil utilizing various technologies, practices, and procedures in a real world environment off the coast of Newfoundland and Labrador. The project aims to address major knowledge and technology gaps related to in situ burn efficiency, window of opportunity, and environmental effects. The information gained from this research may support the future consideration of in situ burning as an alternative response measure in Canada's oil spill response toolkit. The project consists of one test burn (releasing 1 cubic metre of oil) and five experimental burns (releasing up to 10 cubic metres of oil for each burn).

Conduct of the Assessment

The authorization process requires projects to undergo assessment of three key areas: environmental impact, science merit, and engagement with potentially impacted Indigenous communities. Projects must demonstrate sufficient scientific merit as to offset their potential environmental impacts. The proponent must also demonstrate that they have conducted engagement that sufficiently fulfils the Government of Canada's duty to consult with potentially impacted Indigenous communities.

Under section 161.5 of the *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act*, the provincial Minister (Minister of Industry, Energy and Technology) must provide approval before the federal Minister (Minister of Environment and Climate Change, also called Minister of the Environment) may authorize the project. The Province of Newfoundland and Labrador conducted a separate review and approval process in parallel with the federal review, and the provincial Minister of Industry, Energy and Technology has provided approval for the project.

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Decision on Environmental Impacts

The environmental impact review panel examined the potential impacts of the project on six key environmental and socioeconomic resource categories, assessed the efficacy of the proponent's suggested mitigation measures, and suggested conditions and mitigation measures that could be implemented to reduce the environmental impact of the project.

In accordance with Environment and Climate Change Canada (ECCC)'s review process, I have determined that the MOBE project poses a low but manageable overall risk to the environment. I came to this conclusion after considering the report of the environmental impact review panel on the project and developing a list of conditions and mitigation measures that I consider appropriate to mitigate the project's risk of environmental impacts.

Decision on Science Merit

The science merit review panel assessed the MOBE project against five key criteria, assigned an overall rating to indicate the general confidence of the review panel in the scientific merit of the MOBE proposal, and suggested conditions that could be implemented to ensure that the project achieves maximum scientific merit.

In accordance with ECCC's review process, after considering the report of the science merit review panel on the MOBE project and developing a list of conditions that I consider appropriate to ensure that the science merit of the project is achieved, I have determined that the project possesses an overall high degree of science merit.

Decision on Engagement

The scope and depth of proponent engagement efforts were assessed by ECCC. The Department made efforts to reach out to all communities previously engaged by the proponent to determine their level of satisfaction with the engagement and to collect additional comments or concerns to incorporate into the environmental impact review.

In considering the authorization of the MOBE project, I took into account the concerns and interests raised by Indigenous groups during consultation with the proponent and ECCC, which were summarized in an engagement report produced by the Department. I am satisfied that the consultation that was carried out is consistent with the Crown's duty to consult, that the project is unlikely to impact the section 35 rights of Indigenous rights holders, and that the concerns raised by participating Indigenous groups were appropriately addressed.

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Decision on Authorization

I have determined that the science merit of the MOBE project sufficiently justifies the risk of environmental impacts that it poses. The duty to consult potentially impacted Indigenous communities has been fulfilled by the engagement conducted by the proponent and ECCC. Therefore, in accordance with section 161.5 of the *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act*, I authorize the proponent to carry out the MOBE project, subject to specified conditions (Annex A). This authorization is valid until December 31, 2023.

Issuance

This decision statement is issued in Ottawa by

on the 17th day of October 2022

The Honourable Steven Guilbeault, Minister of the Environment

Attachment

Multi-Partner Research Initiative (MPRI) Offshore Burn Experiments (MOBE)

Definitions and Conditions of Authorization

Definitions

[[1]ECCC; [2]*Canada Shipping Act, 2001*; [3]*Canadian Environmental Protection Act, 1999*; [4]*Fisheries Act*; [5]Canadian Coast Guard; [6]*Migratory Birds Convention Act, 1994*; [7]Proponent; [*](modified from original definition)]

Benthic habitat[1]: See Fish habitat.

Clean-up operations[1]: Operations to be conducted by the Canadian Coast Guard to remove deposited substances and burn residues from the environment following an experimental or unplanned release.

Decontamination[1]: Removal of deposited substances from vessels, equipment, and personnel.

Deposited substance[1]: Pre-weathered crude oil (likely of the Hibernia-type), and / or herder (ThickSlick 6535), and / or igniter (gelled gasoline).

Deterrence device[1]: A device designed to reduce or eliminate the presence of birds, marine mammals, or sea turtles from an area.

Emergency zone[2]: Pursuant to the *Canada Shipping Act, 2001* Section 175.1 (2) (d), an area where a Pollution Response Officer may: (i) direct any vessel within that emergency zone to report its position to him or her, (ii) direct any vessel not to enter or not to leave the emergency zone, and (iii) direct any vessel within the emergency zone in respect of routes, speed limits and pilotage and equipment requirements.

Encounter[1]: A bird, marine mammal, or sea turtle that has interacted with or come into contact with vessels, equipment, or personnel, or has been physically impacted by experimental activities.

Environment[3]: The components of the Earth and includes (a) air, land and water; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; and (d) the interacting natural systems that include components referred to in paragraphs (a) to (c).

Enforcement Officer[1]: A person designated as a Fishery Officer under the *Fisheries Act*, and an Enforcement Officer under ECCC administered legislation and is employed within the Enforcement Branch of Environment and Climate Change Canada.

Environmental Emergencies Officer[3*]: A person or a member of a class of persons designated as an enforcement officer under Section 217 of the *Canadian Environmental Protection Act*.

Experimental activities[1]: Activities being conducted for science purposes during the in-field trials, as described in the proposal, as well as all associated plans.

Experimental release[1]: Deposited substance released into the water in a controlled manner as part of planned experimental activities.

Fish[4]: Includes (a) parts of fish, (b) shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and (c) the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.

Fish habitat[4]: Water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas.

Herder[1]: A surfactant used to contract and thicken oil slicks. The MOBE trials will use ThickSlick 6535.

Indigenous communities[1]: Indigenous communities that the proponent identified and consulted with during the drafting of the proposal.

In-field trials[1]: The component of the MOBE project that takes place at sea, during which the experimental activities take place.

Laboratory testing[1]: Components of the project that do not take place at sea and / or do not involve placing deposited substances into the environment.

Level I spill[5]: A controlled discharge of 10 m^3 of oil with the expected outcome, as per experimental plan.

Level II spill[5]: A discharge of oil that does not have the expected outcomes, including up to the whole amount of 10m^3 of oil being released per experiment without being burned.

Level III spill[5]: An uncontrolled release of up to 18 m^3 of oil from the storage tank holding the oil to be used in the experiments. This response relates to the accidental release of the entire volume of oil stored in the tank on the deck of a contracted research vessel due to a full rupture of the tank.

Migratory bird[6*]: A migratory bird as defined in the *Migratory Birds Convention Act, 1994*, and includes the sperm, eggs, embryos, tissue cultures and parts of the bird.

Mitigation measure[1]: Measure taken to mitigate, prevent, or counteract the potential adverse environmental consequences of an activity.

Monitor[1]: Regular, intentional surveillance of a particular variable.

Nighttime[1]: Hours between sundown to sunrise

Observed[1]: Noted through visual or electronic means.

Oil spill modelling[1]: Analysis conducted to determine movement of spilled oil through the environment. Modelling may take into account numerous variables, including, but not limited to, type of oil spilled, wind speed and direction, water temperature, and water currents.

Oil spill response plan[1]: Plan developed by the Canadian Coast Guard that details operations to take place during and following an experimental or unplanned release.

Oiled[1]: A bird, marine mammal, or sea turtle that has contacted oil.

Plans[1]: Documents to describe the set of actions and / or procedures to be taken as part of a planned process in order to achieve stated goals. Plans should outline all parameters under consideration for all decision-making points.

Presence (wildlife)[1]: A bird, marine mammal, or sea turtle observed to be in or near the emergency zone.

Proponent[1]: Dr. Feiyue Wang and all members of the project team named in the proposal

Proposal[1]: Wang F., et al. 2022. Multi-Partner Research Initiative (MPRI) Offshore Burn Experiment (MOBE), Revision 6.0. A project proposal submitted to Environment and Climate Change Canada (ECCC). University of Manitoba, Winnipeg, MB, Canada.

Recovered[1]: Deposited substances, released into the environment and removed through clean-up operations.

Residue[1]: A by-product remaining after a burn, consisting of weathered oil that has had most of the light fractions burned off.

Smoke[1]: Exhaust gasses and particles released from the combustion of oil.

Smoke plume trajectory modelling[1]: Analysis conducted to determine movement of smoke through the atmosphere. Modelling may take into account numerous variables, including, but not limited to, type of substance burned, smoke composition, air temperature, humidity, and wind speed and direction.

Special areas of importance[7*]: Marine and coastal areas within the Newfoundland and Labrador Shelves that have been formally designated as protected under provincial, federal or other legislation and processes, or have been identified through relevant forums and processes as being otherwise special or sensitive due to their ecological or socio-cultural characteristics and importance.

Stakeholders[1]: Those groups the proponent identified and consulted with during the drafting of their proposal.

Stranded bird[1]: A bird grounded on a vessel or platform, found dead or alive, that may be injured, exhausted and/or unable to take flight. Strandings occur due to factors such as heavy wind, disorientation during flight (e.g., fog), and attraction to artificial lighting from structures.

Unplanned release[1]: Deposited substance released into the water, in a controlled or uncontrolled fashion, due to unforeseen circumstances and not released as part of the planned experimental activities.

Vessel[6]: A boat, ship or craft designed, used or capable of being used solely or partly for navigation in, on, through or immediately above water, without regard to the method or lack of propulsion, but does not include a fixed platform.

Conditions

These conditions do not relieve the proponent from any obligation to comply with other legislative or other legal requirements. It is the proponent's responsibility to ensure that all necessary permits (federal and provincial) have been obtained before in-field activities begin, and that they remain in compliance with federal and provincial legislation at all times.

The experimental release of a substance for the purposes of section 161.5 of *the Canada–Newfoundland and Labrador Atlantic Accord Implementation Act* is authorized, subject to all of the following conditions:

1. Planning

1.1 The proponent must submit all plans and information detailed in Schedule 1 to Environment and Climate Change Canada no less than 6 months before in-field trials proceed.

1.2 All plans detailed in Schedule 1 must receive written approval from officials at Environment and Climate Change Canada prior to commencement of in-field trials.

2. In-Field Trials

2.1 Prior to any experimental release, the proponent must collect an individual representative sample of each substance or mixture of substances intended for release, including the oil, igniter, and herder, and provide each sample to an ECCC Enforcement Officer with an accompanying chain of custody containing the following information:

2.1.1 Date, time, and location each sample was collected.

2.1.2 Description of the storage vessel or container from which each sample was collected and the means and manner of collection.

2.1.3 Name, telephone number, and position title of each person who collected and subsequently handled the sample through the chain of custody.

2.1.4 The signature of the person providing the chain of custody to the Enforcement Officer certifying the samples are representative of the substances intended for release and the information in the chain of custody is true and complete.

2.2 The proponent must adhere to all mitigation measures and experimental procedures described in the proposal as well as the associated plans (outlined in Schedule 1) as approved by Environment and Climate Change Canada.

2.3 An Environment and Climate Change Canada Environmental Emergencies Officer and Enforcement Officer must have full access at all times during the in-field trials. If the presence of these officers is not possible at any time during the in-field trials, arrangements must be made and agreed to by the officers.

2.4 The proponent must receive confirmation of state of response readiness from the Canadian Coast Guard, as outlined in Section 5 of the Canadian Coast Guard oil spill response plan, before the experimental release of any substance or mixture of substances intended for release, including but not limited to the oil, igniter, and herder, may occur. This confirmation must be obtained before each

experimental release. If written confirmation is not practical, the Canadian Coast Guard may document their state of readiness and confirm verbally to the proponent that this has been provided.

2.5 In the event of a level II or III spill, as described in Canadian Coast Guard operational plan and oil spill response plan, or any other emergency situation as determined by the Canadian Coast Guard, the proponent must immediately cease all experimental activities, until notified by the Canadian Coast Guard that the situation is resolved and that experimental activities may resume.

2.6 A communications representative will be appointed by the proponent, and must be on active duty during all on-water operations, and available on an on-call basis at all other times, for the full period of the in-field trials. The communications representative must follow all procedures for their role outlined within the operational communications plan (Schedule 1), as well as any additional direction provided by the Canadian Coast Guard or Environment and Climate Change Canada.

2.7 The proponent must conduct observation for seabirds, as specified under the wildlife response plan, at all times that proponent-owned or proponent-contracted vessels are at sea. Observations must be carried out by personnel who have received seabird observer training that meets Canadian Wildlife Service standards (as described in Section 2 of Appendix C / Addendum A of the wildlife response plan). Observation results shall be documented in writing and made available for immediate inspection upon request.

2.8 The proponent must conduct observation for marine mammals and sea turtles, as specified under the wildlife response plan, at all times that proponent-owned or proponent-contracted vessels are at sea. Observation must be carried out by personnel who are qualified marine mammal observers, according to Department of Fisheries and Oceans standards (as described in Section 7.3.1 of the wildlife response plan). Observation results shall be documented in writing and made available for immediate inspection upon request.

2.9 All vessels involved in or supporting project operations must implement measures to reduce the risk of collision with marine mammals and sea turtles, including:

- Using established shipping lanes, if they exist, for transit to the experiment site.
- Reducing their speed to a maximum of seven knots when a marine mammal or sea turtle is observed or reported within 400 m of the vessel.

2.10 The proponent must undertake oil spill modelling and smoke plume trajectory modelling daily before experimental activities take place. If the modelling indicates that deposited substances, smoke, and / or burn residues will move towards special areas of importance, experimental activities must be suspended until further modelling indicates that these areas will not be impacted.

2.11 If environmental conditions during the in-field trial period permit only Burns #1 and #2 to proceed, and preclude Burns # 3, 4, 5, and 6, the proponent must not proceed with any of the in-field activities. Burn #5 (unrestricted burning tongue) must be completed last.

3. Post-Experiment Reporting

3.1 The proponent is required to submit reports containing the information, and according to the timelines, outlined in Schedule 2.

4. Conditions Imposed by the Province of Newfoundland and Labrador

4.1 The proponent must comply with the conditions of approval imposed by the Province of Newfoundland and Labrador, outlined in Schedule 3.

SCHEDULE 1 – Plans and Information

The proponent must submit all plans, information, and updates in this schedule to Environment and Climate Change Canada for review a minimum of six (6) months before in-field trials take place. All plans, information, and updates must be approved by officials at Environment and Climate Change Canada.

S1.1 Table of Concordance

- S1.1.1 The proponent must outline how each of the conditions specified in Schedule 1 has been satisfied, including the location of any new or updated information that has been requested.

S1.2 Operations Plan

- S1.2.1 This plan must outline how all experimental / scientific and logistical operations will proceed during the in-field trials. As a critical guidance document, it is expected that this plan will reference each of the other plans created by the proponent or the Canadian Coast Guard, as appropriate.
- S1.2.2 The proponent has indicated in their proposal that laboratory testing on the experimental oil is planned to validate that the resulting burn residue does not sink in bulk. The proponent must conduct this laboratory testing in advance of the in-field trials, and also verify that the oil will sustain combustion as a layer on the surface of the water. The planned laboratory testing strategy must be included in the operations plan. Results of testing must be reported when available, prior to beginning the trials at sea.
- S1.2.3 The proponent must develop criteria (e.g., slick area, thickness, number of ignition attempts) to govern when the experiments should be aborted and clean-up operations initiated. This is to ensure that, in the event of ignition failure, the experiments are aborted and clean-up operations may be handed off to Canadian Coast Guard while the clean-up operations are still viable. The proponent must detail these criteria in their operations plan.
- S1.2.4 The proponent must update the oil trajectory and smoke plume modelling when significant changes are made to the inputs that may affect the models, for example the type of oil to be used in the experiments, or the weather conditions at the selected time period for the trials (currently indicated as summer 2023). If new modelling is required, a separate section, containing the detailed results of this updated modelling, must be included in the operations plan.
- S1.2.5 Mitigation measures for floating burn residues must be developed and verified for effectiveness prior to in-field experimental operations taking place. These mitigation measures should be detailed in the operations plan.
- S1.2.6 The proponent must specify in the operations plan, the criteria that will trigger the handoff from proponent-led operations (experimental activities) to Canadian Coast Guard-led operations (clean-up operations), as well as the process that will be followed to accomplish this handoff, during normal experimental operations (level I spill).

- S1.2.7 The proponent is permitted one continuous 14-day period in which to conduct the in-field trials. The planned dates for the in-field trials must be included in the operations plan.
- S1.2.8 Following release of the oil for Burn #6 (herders), the size of the slick area must be determined and monitored with the subsequent application of herder to assess herder effectiveness throughout the full observation period of the burn trial. The monitoring plan for the herder trial must be included in the operations plan.

S1.3 Operational Communications Plan

- S1.3.1 This plan must outline the strategies and methods for communication among all members of the project team, as well as communication strategies and methods between the project team and the Canadian Coast Guard.
- S1.3.2 The proponent must identify in their operational communications plan, members of the public as well as potentially impacted groups, including local communities, fishers, shipping personnel, and Indigenous communities.
- S1.3.3 The plan must detail the procedures to be followed by the communications representative. The communications representative is required to provide up-to-date relevant information including status and schedule of on-water activities, location and size of emergency zone, and notification of emergency situations to the public and potentially-impacted groups. The plan must also specify the method(s) that the communications representative will use to communicate the information, as well as the frequency of proactive updates that will be provided.

S1.4 Decontamination Plan

- S1.4.1 This plan must outline the proponent's strategy to decontaminate proponent-owned or proponent-contracted vessels, equipment, and personnel throughout and following the trials.

S1.5 Demobilization Plan

- S1.5.1 This plan must outline the procedures and operations that the proponent will perform to wind down experimental activities and conclude the in-field trials.

S1.6 Medical Plan

- S1.6.1 This plan must outline the proponent's plans for provision of medical services in the event that a member of the project team becomes injured. The plan should detail all contingency measures that will be put in place to ensure that acceptable medical care is provided in a timely manner.

S1.7 Safety Plan

- S1.7.1 This plan must outline all procedures to be implemented to ensure safety of proponent's personnel during all in-field operations.
- S1.7.2 All personnel who could come in contact with oil, igniter, or herder, or who could be exposed to vapours from these substances or smoke from the experimental activities, must wear suitable personal protective equipment. This must be detailed in the safety plan.

- S1.7.3 The Safety Data Sheets (SDS) for the oil, igniter, and herder must be included in the safety plan.

S1.8 Wildlife Response Plan

- S1.8.1 This plan, co-developed by the proponent and the Canadian Coast Guard, must outline the procedures to observe, deter, and address oiled and injured wildlife during all in-field operations.
- S1.8.2 The proponent must include within the wildlife response plan, a specific plan to minimize the use and impact of lighting on all vessels remaining at the experimental site or transiting during twilight or nighttime hours.
- S1.8.3 The proponent must include specific plans within the wildlife response plan for the stranded bird searches, including search plans for all vessels remaining at the experimental site or transiting during twilight or nighttime hours.
- S1.8.4 The proponent must integrate passive acoustic monitoring (or equivalent technology) into their monitoring array for marine mammals and sea turtles (in addition to the use of qualified marine mammal observers). This must be detailed in the wildlife response plan.
- S1.8.5 The proponent must ensure the deterrence device array is complete for all potentially impacted wildlife – if devices are available that effectively deter sea turtles, these must be included in the array and described in the wildlife response plan.
- S1.8.6 The proponent must develop a section in the wildlife response plan outlining procedures to address injured, oiled, or dead marine mammals and sea turtles.
- S1.8.7 Proponent-owned or proponent-contracted vessels must not transit within 300 m of nesting bird colonies (including, but not limited to Baccalieu Island and Witless Bay Islands). This must be included in the wildlife response plan.

S1.9 Post-Experiment Engagement and Communications Plan

- S1.9.1 This plan must outline, in thorough detail, the proponent's plan (including timelines and methods) to communicate the results of the research to the scientific community, as well as to stakeholders and Indigenous communities, at an audience-appropriate level.
- S1.9.2 The proponent must include a section outlining the outputs to be derived from the research consistent with the topics identified within the proposal, and assign publication leads for producing the scientific and technical reports.
- S1.9.3 The proponent must include a section outlining their strategy to address post-experiment reporting requirements, outlined in Schedule 2.

S1.10 Science Plan

- S1.10.1 This plan must outline in detail the samples to be collected during on water activities and the subsequent supporting analyses to be performed, including methods.

SCHEDULE 2 - Reporting

S2.1 The proponent must submit a post-experiment operations report no later than six (6) months following the conclusion of the in-field trial period. The components of the report that involve

assessment of impacts may use a combination of sampling, observation, modelling, and hindcasting techniques. The report must include the following information:

- Detailed information on all types and quantities of substances released (intentional and unintentional) during experimental operations, as well as amount recovered or burned (measured, if possible, or estimated, if measurement not possible).
- Detailed information on all decontamination activities carried out during the trials.
- Detailed information on safety issues or injuries that occurred during experimental operations, and their resolution / outcome.
- Assessment of impacts to fish and fish habitat from contamination:
  - Death of fish by means other than fishing, or harmful destruction of fish or fish habitat during in-field trials, unplanned releases, and clean-up operations.
  - Measured or estimated quantities of sinking burn residue deposited into the benthic habitat.
- Assessment of impacts to marine and migratory birds:
  - Interactions and encounters during in-field trials (e.g., including, but not limited to sightings, strandings, and deaths).
  - Documentation of all stranded bird searches performed, and all results of these searches (including searches where no birds were found).
  - Oiling and / or contamination during in-field trials, unplanned releases, and clean-up operations.
- Assessment of impacts to marine mammals and sea turtles:
  - Interactions and encounters during experimental activities (e.g., including, but not limited to sightings, collisions, and deaths).
  - Contamination during in-field trials, unplanned releases, and clean-up operations.

S2.2 A compendium of the experimental setup, observations, and full analytical dataset for each burn trial is to be made available to the public within five (5) years following the conclusion of the in-field trial period. All data must be shared, without restrictions due to proprietary or commercial interests.

SCHEDULE 3 – Conditions Imposed by the Province of Newfoundland and Labrador

S3.1 Fish harvester engagement must consistently remain a top priority before, during, and after the trials.

S3.2 In-field trials must be stopped if an endangered North Atlantic Right Whale is sighted in the test area.

S3.3 The research focus must specifically include understanding the impacts of in-situ burning experiments on the offshore test site's marine ecosystem.

S3.4 Any oily waste generated during these trials must be properly disposed of at an approved site.

S3.5 The Province of Newfoundland and Labrador must be informed in advance of the exact dates of the in-field trials once known.

S3.6 The Province of Newfoundland and Labrador must be informed in advance of any related public announcements.

S3.7 The Province of Newfoundland and Labrador must be provided with final copies of all data, reports, and publications generated from the research.

Suggestions to the Proponent

The following recommendations may assist the proponent with planning and conducting their in-field trials, and further enhance the science merit of the project as a whole.

- The authorization stands down prohibitions listed in Section 161.2 and schedules 1 and 2 of the *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act*. This does not stand down other provisions and obligations set out in these or other pieces of legislation – consider, but not limited to: notification and / or permitting requirements under the *Fisheries Act*, *Migratory Birds Convention Act, 1994*, *Species at Risk Act*, and associated regulations.
- The proponent is encouraged to consider using a drone to monitor down-wind air quality, rather than a monitoring team, to reduce exposure to smoke.
- The proponent is encouraged to consider timing the project to coincide with brighter moon cycles to reduce bird strandings.
- The proponent is encouraged to consider timing the project to coincide with periods of lower marine mammal activity.
- The proponent should consider carrying only the volume of oil required for the day's planned experimental activities, rather than the full 18 m^3.
- The proponent is encouraged to make observation and / or training opportunities available to members of Indigenous communities.
- The study of avian behaviour in the vicinity of on water response operations can be complementary to existing wildlife monitoring with the appropriate coordination. This would provide valuable insight to the avian interaction with ISB activities that is typically not documented during spill incidents.
- The opportunity may be leveraged to train Wildlife Monitors and provide certificates of training to expand the roster of qualified personnel.
- Residual material from an operational burn has inherent research value across many areas of investigation that can be leveraged by collecting additional quantities from each experiment beyond what is needed for the planned purposes of the project. A reasonable amount of material should be collected and preserved for future distribution to research groups for further analysis and study.
- Modelling the dispersion of air emissions in collaboration with ECCC and NOAA is indicated in the proposal, however these two entities are omitted from the project team. This collaboration is strongly encouraged as it is a prominent need identified within the proposal.
- In-situ monitoring of the herder and post-burn sampling and analysis targeting the fate of the herder in burn #6 is recommended.
- Additional opportunities may arise to enhance the scientific value of the project, expand the understanding of response capabilities, and provide valuable experience to the response community. Work should continue in refining the project plan to leverage the opportunity afforded by an experimental release of oil, where feasible.
- It is recommended to have similar monitoring sensors deployed by unmanned aircraft system (UAS) and onboard vessels, with additional higher resolution instruments included in the vessel array in parallel for comparison. High-volume filter-based samplers are recommended for air emissions of particulate matter of less than 2.5 µm in size ($PM_{2.5}$) and particulate matter of less than 10 µm in size (PM_{10}) on board the vessel to enable speciation of the PAHs on particulate.
- It is encouraged that additional quantities of the test oils be retained for future research and study.

- Aside from tracking and reporting oiled animals (e.g. birds, marine mammals, and sea turtles), there do not appear to be plans to collect environmental samples that could be used to address ecotoxicological concerns associated with sub-acute exposure to wildlife as a result of the field trials. It is suggested that water samples be collected, such that extracts from these samples could be used to characterize and evaluate the potential toxicity of chemical mixtures present in water that are representative of different treatments/spill scenarios using established in-vitro techniques.