



**NUNATSIAVUT**  
kavamanga Government

Nunaligninikmik amma Nunamiutanik  
Ujaganik Imaniklu  
**Lands and Natural Resources**

Regional Assessment Committee

c/o Virginia Crawford

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March 23, 2020

**Subject:** Nunatsiavut Government comments and suggestions on the GIS decision-support tool for the Regional Assessment of Offshore Oil and Gas Exploratory Drilling East of Newfoundland and Labrador.

Dear Ms. Crawford,

Please accept this letter in response to the request for comments on the Draft Geographic Information System Decision-Support Tool, developed as part of the Regional Assessment of Offshore Oil and Gas Exploratory Drilling East of Newfoundland and Labrador.

The Nunatsiavut Government applauds the efforts made to produce a more accessible, interactive tool for viewing and engaging with data sources that inform the Regional Assessment. It is essential for governments at all levels to support efforts like this, including expanding and revising initiatives as necessary, to create better opportunities for engagement on these important issues.

You will find below comments on both the content and the functionality of the GIS tool and associated modules. Please note for each comment there are suggested measures that address the issue that are also included. Unfortunately, most of our comments here are similar to those we sent during the first phase of consultations or about the draft Regional Assessment report, which were left unaddressed. The Nunatsiavut Government requests that a response be provided as to why those suggestions were not addressed.

A number of important and often basic features and functionalities are missing from the GIS tool and the associated modules. This significantly affects their usefulness, but could be addressed either by modifying the tool itself, or by allowing the export of its content for use in other software. In terms of content, we would like to raise issues about the lack of data coverage in some layers and how it could be fixed, as well as missing available data such as oil spill models.

The Nunatsiavut Government is also concerned about long-term support for the GIS tool, the way it was built as only a complement to the regional assessment report while containing essential information and references that are not in the current Regional Assessment report.

We look forward to working with the current Regional Assessment Committee or a future Regional Assessment Oversight Committee to address these issues, but would like to express, again, deep concerns about how this Regional Assessment was conducted, notably in terms of timelines and considerations for our comments.

Attached to this letter are the Nunatsiavut Governments comments and concerns with the on the GIS decision-support tool for the Regional Assessment of Offshore Oil and Gas Exploratory Drilling East of Newfoundland and Labrador.

Sincerely,

<Original signed by>

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Director of Environment  
Nunatsiavut Government  
Nain, NL  
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<Original signed by>

Claude Sheppard  
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## NG comments on the Draft Geographic Information System Decision-Support Tool

### General

#### Funding and perennity

For this tool to be relevant, its useful life needs to cover the whole duration of exploration/exploitation projects in the study area of the Regional Assessment, at least a decade. Furthermore, as the Regional Assessment might be used as a model or reference in future processes, accompanying material such as the GIS decision-support tool should also be kept accessible in the long term. This should include the necessary data and scripts to reproduce the tool.

#### **Recommendations:**

- The GIS decision-support tool must be fully funded, maintained and updated for the entire duration of exploration and exploitation projects in the study area.
- The GIS decision-support tool must be updated continuously as data becomes available and undergo critical review every 2 years.
- Data acquired during project-specific EAs, board authorization processes, monitoring programs or modelling should be added within 60 days of completion.
- An archived version of the GIS decision-support tool and associated modules should be maintained in the long term.
- Consider publishing the tool's source code under an acceptable license based on common open-source or FLOSS<sup>1</sup> licenses (e.g., MIT, Apache, GNU), to enable extension, refinement, and accessibility by interested parties.
- Assess current and future platform choices in light of the obligation for public organizations to promote transparency and access to information, including for long periods of time after decisions are taken. Such measures could align with initiatives at other levels of government.<sup>2</sup>

#### Typographical Errors and Language

The Nunatsiavut Government would like to draw attention to the presence of typographical errors and inappropriate terminology in the Decision-Support Tool's modules. For example, module 3.2.2 incorrectly reports probabilities from the linked documents ('2.5 x 10<sup>4</sup>' instead of the correct scientific notation) Moreover, in the same section the abbreviated and informal term 'stats' is used in place of the more proper 'statistics'.

#### **Recommendations:**

- Thoroughly review all content for grammar, spelling, and other common typographical errors, including appropriate vocabulary.

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<sup>1</sup> Free/Libre and Open Source Software. Source: <https://www.gnu.org/philosophy/floss-and-foss.html>

<sup>2</sup> See for example: [https://github.com/canada-ca/Open\\_First\\_Whitepaper/blob/master/en/4\\_Open\\_Source\\_Software\\_Contribution.md](https://github.com/canada-ca/Open_First_Whitepaper/blob/master/en/4_Open_Source_Software_Contribution.md)

- Documents and reports from EAs and RAs should undergo a peer-review process to identify and fix common errors.

## **Geographic Information System**

### Analytical capabilities

#### **Ad hoc areas of interest**

As the Nunatsiavut Government stated in the first round of consultations, the application should permit users to aggregate values from layers based on custom geometry (as demonstrated in the prototype).

#### **Areas of interest and rasters**

Use of the aggregation function is limited to a very small number of layers. It would be most useful if it was generalized to be used with most rasters.

#### **Metrics**

Aggregate values should offer more than a single moment (e.g., only arithmetic mean) of these aggregated distributions. For example, to average a rate, the harmonic mean may be more appropriate than the arithmetic mean. In other instances, the minimum or maximum value may be more appropriate in order to examine 'best' and 'worst' case scenarios. We suggest arithmetic mean, harmonic mean, mode, maximum, minimum, and median.

#### **Recommendations:**

- Upgrade analytical capabilities to allow the system to go beyond basic visualization, including custom geometries and metric and general aggregation functions.

### Data availability for download

If all or most of the layers were downloadable for use in GIS software, issues raised above concerning the GIS decision-support tool analytical capabilities would be partially resolved. It would also allow for far more comprehensive use, beyond what can be expected from a web-based tool.

#### **Recommendations:**

- The committee should make a priority of obtaining the rights to distribute datasets contained in the GIS tool, when possible.

### Data Coverage

The data coverage in some layers (e.g., Fish Species Distribution in Biological Environment) is very poor. By a rough estimate, using the tools provided on the Decision Support Tool interface, DFO's Fish Species Distribution datasets cover only 32% of the Assessment area (24,092,881.12 out of 73,478,395.55 hectares). While additional layers (e.g., EU Fish Density and reports of specific species' sightings) can somewhat make up for these deficiencies, reconciling these data sources visually is challenging.

#### **Recommendations:**

- Obtain, to the extent possible, additional datasets for the Biological Environment and other groups. In particular, datasets that cover the eastern portions of the study area would help to improve data coverage.
- Harmonize, to the extent possible, the way data from these different datasets are presented. For example, DFO Fish Species Distributions are presented as a gridded heat map, while sightings are presented as points. One solution may be to offer sightings layers as gridded heat maps as well.
- The Regional Assessment Monitoring Committee must make sure data gaps are filled, including through additional research when necessary.
- Following the authorization process of every new project, the Regional Assessment Monitoring Committee must review the adequacy of data available on the GIS tool to identify and correct data gaps, in collaboration with Indigenous groups, regulators, industry and other stakeholders.

### Spill Model Results

As noted in the Nunatsiavut Government's submission in September 2019, it would be helpful to visualize the potential impacts of spills with the ability to overlay species distributions and other datasets.

It was said during the Webinar that oil spill modeling was not included because the RA committee felt it was too site-specific and should be done at the Board authorization level and not included in the RA<sup>3</sup>. However, even then, oil spill models still exist that have been done for different project specific EAs, and more models will be generated either as part of EAs or board authorizations. Furthermore, inclusion of project-specific oil spill models in a common database could be crucial to cumulative assessment of spill risk to target areas or species, especially if projects are allowed to proceed without project-specific EAs, following the RA.

### **Recommendations:**

- Include layers with the extent of spills (model results) as modelled by the studies cited in the Assessment, as well as from previous project-specific EAs
- Update the system whenever oil spill models are generated as part of future EA or board authorization processes.
- Model results metadata must include details of the model, including parameters, algorithms, assumptions, and data sources. All data used in modelling must be made publicly available, on the GIS Decision Support Tool itself or another freely accessible resource

### **Modules**

#### References

Using and referencing reliable sources is crucial for any type of report, especially science based-documents such as EA reports and accompanying material. It is deeply concerning that some of the information given in the modules is not accompanied by any supporting reference.

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<sup>3</sup> Tucker, C. 2020. Regional Assessment of offshore oil and gas exploratory drilling. Webinar Recording. Accessed on 11/03/2020. [https://www.youtube.com/watch?v=Tj9\\_IYTxlc](https://www.youtube.com/watch?v=Tj9_IYTxlc)

The format of the web-based modules and their long chapters make it arduous to go back and forth between the text and the references list. Common tools such as links between the in-text citations and the references list or popup full references when hovering over text could easily correct this issue.

**Recommendations:**

- Include reliable sources for all information used in the modules
- Facilitate consultation of full references from in-text citations

Layout and links

The table of content function, though practical, is lacking a number of necessary features. It should link to sections and subsections in addition to general modules. It should also contain a list of tables and figures.

**Recommendations:**

- Improve the Table of content to include usual and expected features such as subsections and a list of tables and figures.

Content search

There is no Search in document tool for the modules. It was mentioned during the Webinar that the browser search function should be sufficient. It is not. Information on a similar subject is often scattered in more than one module, and the browser search function cannot search in more than one page at a time.

**Recommendations:**

- Include a function allowing for a word search across all modules, and not one page at a time.

Navigation and comments

Basic functions necessary to use or revise a text document are missing in the modules. There is no tool to bookmark sections, or keep track of readings. There is no tool to highlight or comment. There is no function to print or export the modules.

**Recommendations:**

- Add basic features necessary to use and revise a text document : bookmarks, highlights, comments, print, and/or :
- Provide a PDF document version of the modules, updated as frequently as the web-based tool.

It is worth noting that this last recommendation would also resolve the issue related to content search.

The modules and the Regional Assessment reports

As a web-based system, the GIS decision-support tool and especially the associated modules should only support the Regional Assessment report, which must be a standalone document. However, sources are often missing from the RA report, and only found in the Modules. This practice makes it arduous to link information in the report to its source, and to verify how claims are substantiated.

Furthermore, the Modules contain information that is necessary to understand conclusions from the Regional Assessment, and should thus absolutely be included in the main report. For example, in section 4.2.1.1, about the impact of sounds produced by drill rigs on marine mammals and sea turtles, the RA report states that “it is often considered unlikely that marine mammals or sea turtles would be exposed to sound levels from drilling that are capable of causing injury.” However, the analysis backing that statement (including threshold uses, references, limitations) is only found in the Modules (2 and 9), and totally absent from the report.

A consequence of those practices is that the regional assessment report is, as a standalone document, incomplete. As there is no guarantee of ongoing support for the GIS tool and its modules, this situation could become highly problematic.

### **Recommendations**

- *References contained in the supporting modules must be integrated in the report itself, as well as all critical information and analyses.*

### **Spill Probabilities**

The description of spill probabilities provided in 3.2.2 could be clarified by specifying the source of the spills thought to be highly likely (probability of 0.96 - 180 out of 188 wells drilled from 1997-2018)<sup>4</sup> are from the fuel and other fluids carried on the Mobile Offshore Drilling Units themselves.

### **Recommendations:**

- Clarify in 3.2.2 that spills from the Mobile Offshore Drilling Units themselves are close to certain or extremely likely, while it is spills from blowouts that are comparatively unlikely.

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<sup>4</sup> C-NLOPB. 2019. Spill Probabilities Associated With Offshore Oil and Gas Exploratory Drilling Projects in the Canada-NL Offshore Area. Accessed on 11/03/2020.

<https://nloffshorestudy.iciinnovations.com/MapView/asssets/PDF/Spill%20Probability%20Report.pdf>