Environmental Assessment Update of the MKI Labrador Sea Seismic Program, 2014–2018

Prepared by

LGL LIMITED
environmental research associates

Prepared for

for

Multi Klient Invest AS

&

TGS-NOPEC Geophysical Company ASA

March 2016
LGL Project No. FA0077

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March 2016
LGL Project No. FA0077

Suggested format for citation:

LGL Limited. 2016. Environmental Assessment Update of the MKI Labrador Sea Seismic Program, 2014–2018. LGL Rep. FA0077. Rep. by LGL Limited, St. John's, NL for Multi Klient Invest AS, Oslo, Norway, and TGS-NOPEC Geophysical Company ASA, Houston, TX. 27 p. + appendices.

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1.0 Introduction

This document is an Update of the Environmental Assessment (EA; LGL 2014a[1]) of Multi Klient Invest AS (MKI) and TGS-NOPEC Geophysical Company ASA (TGS)'s proposed 2014–2018 2-Dimensional (2D) and/or 3-Dimensional (3D) marine seismic program in the Labrador Sea area, Newfoundland and Labrador and its associated Addendum (LGL 2014b[2]). In 2016, MKI is proposing to conduct 2D seismic surveys in the Labrador Sea Project Area (see Figure 1.1 below). This EA Update document addresses the validity of the EA (Table 1.1) as it pertains to MKI's proposed seismic survey activities in 2016. The EA Update is intended to assist the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) in its regulatory review process by demonstrating that both the scope of the assessment and the mitigation measures to which MKI previously committed and implemented remain technically valid for proposed seismic survey operations in 2016. A previous Update associated with this program was prepared in 2015 (LGL 2015[3]).

Table 1.1 Environmental Assessment Documents for the MKI Labrador Sea Geophysical Program, 2014–2018.

Screening Determination Reference	Temporal Scope	EA Document Title
C-NLOPB File No. 45006-020-003	May 1 to November 30, 2014–2018	Environmental Assessment MKI Labrador Sea Seismic Program, 2014–2018 (LGL 2014a,b)[a] and EA Addendum
	May 1 to November 30, 2015	Environmental Assessment Update of the MKI Labrador Sea Seismic Program, 2014–2018 (LGL 2015)[b]

Notes:
[a] On 18 August, 2014, the C-NLOPB made a positive determination on the EA and EA Addendum.
[b] Originally submitted to the C-NLOPB in May 2015.

The following sections provide the information necessary to confirm the validity of the EA and its associated Addendum (see Table 1.1), including assessment of the potential effects of 2D, 3D and 4D seismic survey activities within the defined Project Area (see Figure 1.1 below) on the following Valued Environmental Components (VECs): Fish and Fish Habitat; Fisheries; Seabirds; Marine Mammals and Sea Turtles; Species at Risk; and Sensitive Areas. This Update also includes new relevant information not included in the EA and its associated documents.

[1] http://www.cnlopb.ca/pdfs/mkilabss/eareport.pdf
[2] http://www.cnlopb.ca/pdfs/mkilabss/reveaadd.pdf
[3] http://www.cnlopb.ca/pdfs/mkilabss/mkieaupdate.pdf

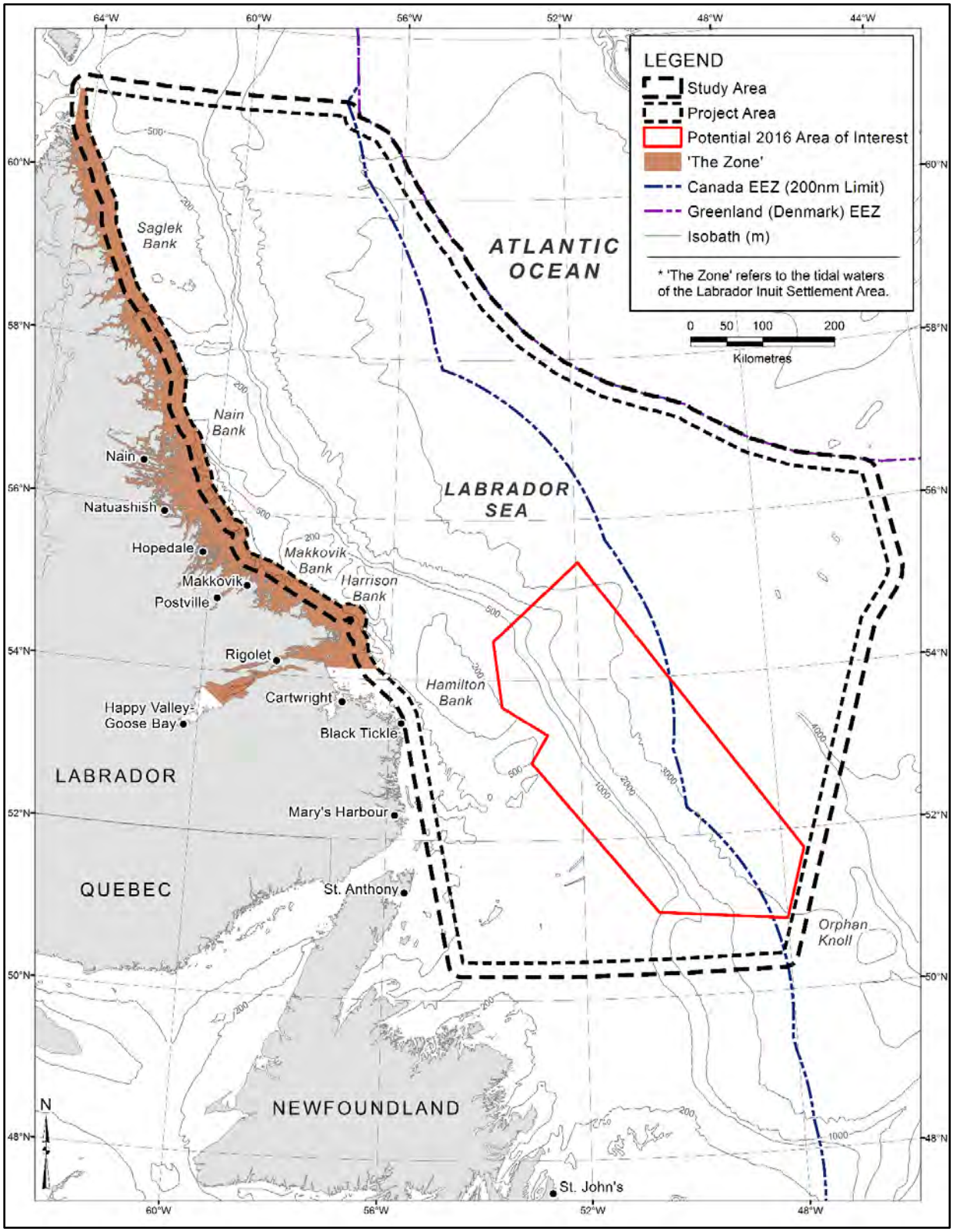


Figure 1.1 Locations of the Project Area, Study Area and 2016 Area of Interest for Labrador Sea Seismic Program, 2014–2018.

2.0 Project Description

2.1 Vessels and Equipment

In addition to the seismic vessel, 2D and/or 3D seismic surveys require the use of one or more support vessels depending on the type of operation: (1) a picket vessel tasked with communicating with other vessels (primarily fishing vessels) that may be operating in the area, and scouting ahead for any other hazards such as floating debris; and (2) if necessary, a supply vessel tasked with resupply, refuelling and personnel transfer.

The 2D and 3D survey sound sources will consist of one or more airgun arrays with a total discharge volume of 3,000–6,000 in^3, operating at a tow depth of 6–15 m. The airgun arrays are comprised of individual airguns ranging in size from 22–250 in^3 each. The airguns will be operated with compressed air at pressures of 2,000–2,500 psi and produce approximate peak-to-peak pressures of 100–200 bar-m. A typical airgun array used by MKI for 2D surveys consists of four sub-arrays with a total volume of 4,808 in^3, operated at a pressure of 2,000 psi. This array is generally towed at a depth of 9 m and produces peak-to-peak pressures of 179 bar-m. The airguns in the array are strategically arranged to direct most of the energy vertically downward rather than sideways. The shotpoint interval will be one array pulse every 19–25 s, and the survey speed will be around 4.5 knots (8.3 km/h).

For 2D surveys, the seismic ship will also tow a single seismic hydrophone cable (streamer) up to 10 km long, deployed near the ocean surface, at a depth of ~15–25 m. This is a passive listening device, which will receive the sound waves reflected from structures underneath the ocean floor and transfer the data to an on-board recording and processing system. The cable is a solid streamer, PGS GeoStreamer®. For 3D seismic surveys, the seismic ship will tow multiple streamers. Streamers will be solid with an expected length of 8,000–10,000 m, depending on survey design, and deployed at depths ranging from ~15–25 m. As many as 16 streamers may be towed during a 3D seismic survey.

The seismic vessel is also equipped with a Furuno FE-700 echosounder. The downward-facing echosounder operates at a frequency of 50 kHz or 200 kHz and will be used to collect water depth information. For this Project, sound velocity profiles will also be acquired in the water column at various locations in the survey area. This is a routine practice during seismic programs. Sound velocity profiles allow for more accurate interpretation of the acoustic data (i.e., seismic pulses) recorded by the seismic streamer. These data are acquired with a small, passive device that will be deployed by the support vessel. The device measures pressure, temperature, and salinity, from which the speed of sound can be calculated.

2.2 Spatial Scope

The Project and Study areas defined in the EA remain unchanged and are presented in Figure 1.1. The Project Area, in which all survey activities will occur, is encompassed by the Study Area. The boundary of the Study Area is 25 km outside of that for the Project Area. The 25 km wide area is intended to

account for the propagation of sound being generated in the Project Area that could potentially affect marine biota.

2.3 Temporal Scope

The temporal scope defined in the EA (LGL 2014a) as May 1–November 30 period during each year of the 2014–2018 period remains unchanged.

2.4 Seismic Survey Activities Planned for 2016

In 2016, MKI plans to conduct about 9,000 km of 2D seismic surveying in the Project Area, specifically off southeastern Labrador (see Figure 1.1). The MV *Sanco Spirit* will most likely be the seismic vessel conducting the 2D seismic surveying in 2016. Details of this vessel are provided in the EA (LGL 2014a). All other project details presented in § 2.0 of the EA apply to MKI's seismic survey activities in 2016.

2.5 Mitigation Measures

Mitigation measures implemented during seismic surveys carried out under this Project will follow those described in prior documents (LGL 2014a,b, 2015) and defined in Appendix 2 of *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (C-NLOPB 2012). These include ramp-up (i.e., soft start) of the airgun arrays, the use of qualified and experienced, dedicated Marine Mammal Observer(s) (MMOs) to monitor marine mammals and sea turtles and implement shut downs/ramp-up delays of the airgun array when appropriate, and the use of a Fisheries Liaison Officer (FLO) and communication procedures to avoid conflicts with fisheries. Seabird observations and monitoring/mitigation for stranded birds will also be carried out by qualified experienced personnel according to established Canadian Wildlife Service (CWS) protocols.

3.0 Physical Environment

MKI provided a summary description of the existing physical environment in the Project Area in its EA (LGL 2014a). Section 3.0 of the EA, Physical Environment, was based primarily on information provided in the Labrador Shelf Strategic Environmental Assessment (SEA) (C-NLOPB 2008). There have not been any notable changes in the various aspects of the physical environment of the Study Area described in the EA.

4.0 Biological Environment

Background biological environment information not previously included in documents associated with this Project (see Table 1.1) is included in this section.

4.1 Fish and Fish Habitat

New information is included for key points concerning the relationship between planktonic communities and oceanic conditions of the Labrador Sea area, as well as for snow crab (*Chionoecetes opilio*), Atlantic salmon (*Salmo salar*), northern shrimp (*Pandalus borealis*), striped ship (*Pandalus montagui*), and Greenland halibut (*Reinhardtius hippoglossoides*). The new information presented in this subsection does not change the effects predictions made in the EA (LGL 2014a).

4.1.1 Plankton

The Atlantic Zone Monitoring Program (AZMP) was implemented by the Department of Fisheries and Oceans (DFO) in 1998 in an attempt to better understand, describe and forecast the state of the marine ecosystem. A critical element of the AZMP is an observation program designed to assess the variability in nutrients, phytoplankton and zooplankton (DFO 2015a). The AZMP findings in relation to oceanographic conditions in the Study Area for 2014 are summarized below.

- In 2014, copepod abundance throughout most of the Atlantic Zone increased relative to levels observed in 2013 but declined to below normal levels in the Labrador Sea and off northern Newfoundland.
- The abundance of *Calanus finmarchicus* was below normal through much of the Atlantic Zone and the Labrador Sea during 2014.
- In the Labrador Sea, losses of heat in winter are a key process in the formation of dense waters, which drive the global ocean overturning circulation. In the winter of 2013–14, the mid to high latitude North Atlantic experienced the most extreme heat loss in the region since 1979, primarily forced by strong northerly winds.
- The annual spring bloom of phytoplankton starts and ends earlier on the Labrador Shelf (mid-April to early-June) compared to the central Labrador Basin (early-May to late-June).

4.1.2 Snow Crab

While snow crab landings in NAFO Div. 2HJ were at their lowest level in two decades in 2013, they increased by ~25% in 2014. Offshore landings in NAFO Div. 3K declined by ~50% from 2008–2011 and have remained near the historic low level since then (DFO 2015b).

4.1.3 Atlantic Salmon

According to DFO, there has been a trend of increasing abundance of large salmon since 2010. A notable increase of large salmon returned to Labrador rivers monitored in 2013 (~107 % increase above the previous six-year mean). Labrador Aboriginal and subsistence fisheries harvested approximately 14,204 salmon (36 t) in 2012, about 7 % more than the previous six-year mean (2006–11) of 13,264 salmon (35 t). Low marine survival of Atlantic salmon continues to be an area of concern and the limiting factor affecting abundance of Newfoundland and Labrador salmon (DFO 2015c).

4.1.4 Northern Shrimp

The northern shrimp fishable biomass index declined in Shrimp Fishing Area (SFA) 6 (NAFO Div. 2J3K) from 421,000 t in 2011 to 216,000 t in 2013, and then increased slightly to 233,000 t in 2014. The fishable biomass index in SFA 5 (NAFO Div. 2HJ) has been relatively stable since 2010 (~116,000 t in 2014). Similarly, the fishable biomass index for northern shrimp in SFA 4 (NAFO Div. 2G) has been relatively stable since 2010 (~134,000 t in 2014) (DFO 2015d).

4.1.5 Striped Shrimp

Commercial catches of striped shrimp in SFA 4 (NAFO Div. 2G), taken as by-catch in the northern shrimp fishery, increased from 280 t in 2008 to 4,700 t in 2012, and then declined to 1,200 t in 2014. The by-catch limit of 4,033 t has not been harvested in the past two years. The fishable biomass index for striped shrimp has doubled since 2010 (~34,100 t in 2014) (DFO 2015d).

4.1.6 Greenland Halibut

Results of the annual Canadian research vessel fall survey of Div. 2J3K showed an increased biomass index between 2010 and 2014, representing the highest levels of the time series (1978–2014). The abundance index from the fall survey increased from 2012–2014 but remains below the series average. In the Div. 2J fall survey, most of the Greenland halibut biomass was observed in the 200–750 m depth range, while most of the biomass in Div. 3K was observed in the 300–500 m depth range (Morgan 2015).

4.2 Fisheries

The new information presented in this subsection does not change the effects predictions made in the EA (LGL 2014a).

4.2.1 Commercial Fisheries

Results of analyses of the 2014 commercial fisheries landings data did not indicate any major differences in distribution of harvest locations between May–November 2014, and May–November 2005–2012, and 2013 (see Figures 4.3–4.5 *in* LGL 2014a, and Figure 4.1 *in* LGL 2015, respectively). Figures 4.1 and 4.2 show the distribution of May–November 2014 harvest locations for all species, northern shrimp, snow crab and Greenland halibut. Most of the 2014 harvesting was conducted in the western portion of the Study Area in areas where water depths are <1,000 m, including the western portion of the 2016 AOI where water depths range between 500 and 1,000 m. As in previous years (see Table 4.2 *in* LGL 2014a and Table 4.1 *in* LGL 2015), northern shrimp (57% of total catch in the Study Area in terms of total catch weight quartile code counts), snow crab (29%) and Greenland halibut (9%) dominated commercial catches in the Study Area during May–November 2014. Other notable species caught in 2014 include striped shrimp (4%) and witch flounder (*Glyptocephalus cynoglossus*) (1%). Catch weight and value quartile counts, months of effort and gear types for species harvested in the Study Area and the 2016 AOI in 2014 are presented in Tables 4.1 and 4.2, respectively.

Unlike previous years, there were no reported catches of Atlantic mackerel (*Scomber scombrus*) or Atlantic cod (*Gadus morhua*) in the Study Area in 2014 (see Table 4.2 *in* LGL 2014a and Table 4.1 *in* LGL 2015).

4.2.1.1 Northern Shrimp

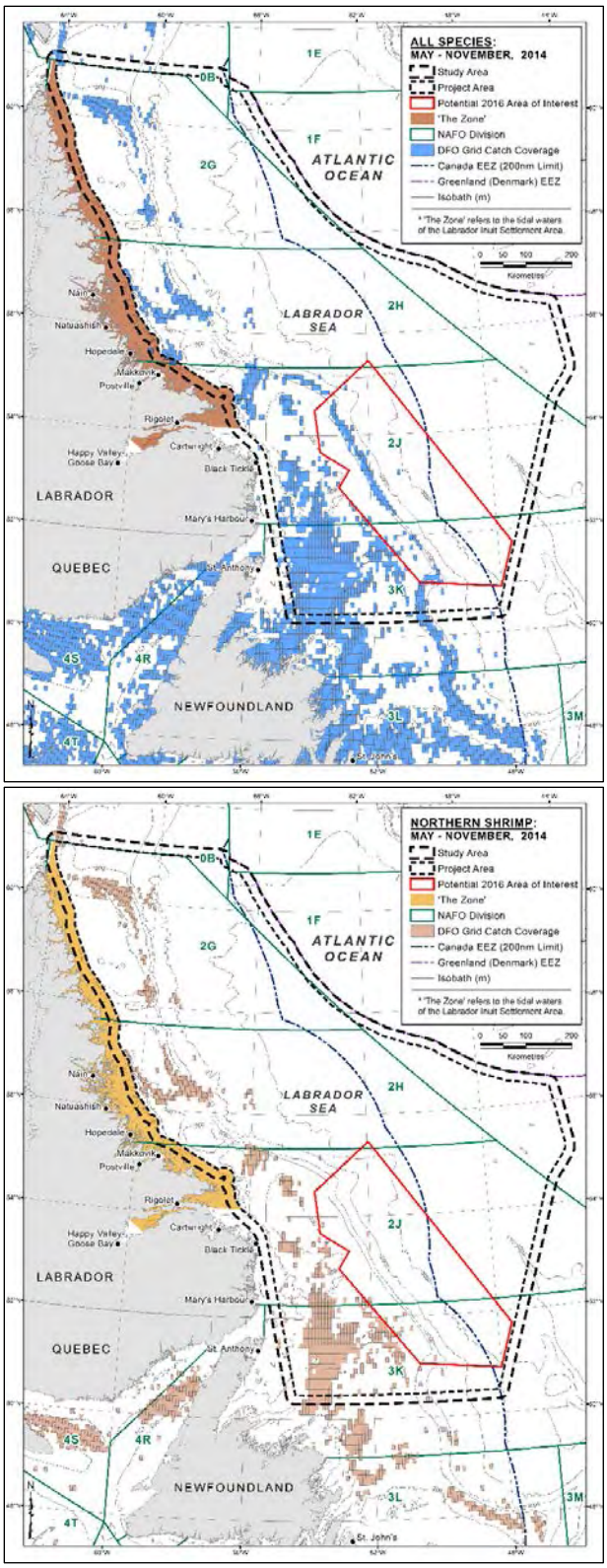
Although northern shrimp harvesting declined in the Study Area between 2013 and 2014 during the May–November period (see Table 4.1 below, and Table 4.1 *in* LGL 2015), this invertebrate remained the dominant commercial species in the Study Area in terms of catches. While the total allowable catch (TAC) for northern shrimp in SFA 4 (includes NAFO Divisions [Div.] 2G and a portion of 2H) and SFA 5 (includes portions of Div. 2H and 2J) have remained relatively constant during recent years (14,971 and 23,300 mt, respectively), the TAC in SFA 6 (includes Div. 3K and a portion of 2J) has decreased from 60,245 mt in 2013 to 48,196 mt in 2015 (DFO 2015e). Northern shrimp harvested during May–November 2014 were harvested primarily in the western portions of the Study Area and 2016 AOI in areas where water depths range between 200 and 500 m (Figure 4.1). This harvest location pattern observed in May–November 2014 is consistent with those observed during May–November in previous years (see Figures 4.11–4.13 *in* LGL 2014a, and Figure 4.2 *in* LGL 2015).

4.2.1.2 Snow Crab

The distribution of harvest locations for snow crab in the Study Area during May–November 2014 (Figure 4.2) was consistent with that observed during May–November 2005–2012, and 2013 (see Figures 4.16–4.18 *in* LGL 2014a, and Figure 4.3 *in* LGL 2015, respectively). The catches occurred primarily in the southwestern portions of the Study Area and 2016 AOI in areas where water depths are <500 m. There were very few 2014 catch locations reported in the 2016 AOI (Figure 4.2). Although the TAC for snow crab in Div. 2J (1,765 mt) has been consistent since 2013, the TAC in Div. 3K has decreased from 8,449 mt in 2013 to 7,294 mt in 2015 (DFO 2015e).

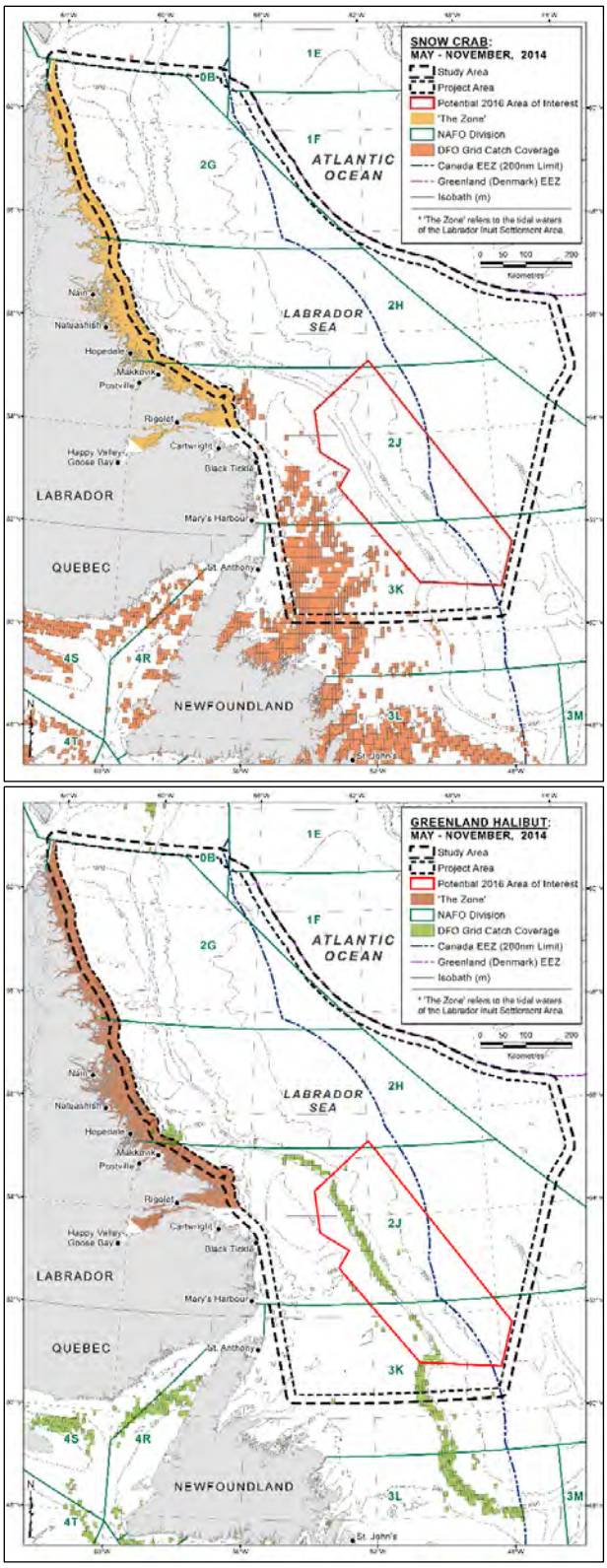
4.2.1.3 Greenland Halibut

The distribution of harvest locations for Greenland halibut in the Study Area during May–November 2014 (Figure 4.2) was consistent with that observed during May–November 2005–2012, and 2013 (see Figures 4.21 to 4.23 *in* LGL 2014a, and Figure 4.4 *in* LGL 2015, respectively). Harvesting occurred primarily in the central and central-western portions of the Study Area and 2016 AOI in areas where water depths range between 500 and 1,000 m. As noted in the EA Update (LGL 2015), there are no TAC quotas set for this species in the Study Area (DFO 2015e; NAFO 2016).



Source: DFO commercial landings database, 2014.

Figure 4.1 Distribution of Commercial Fishery Harvest Locations, All Species (top) and Northern Shrimp (bottom), May–November 2014.



Source: DFO commercial landings database, 2014.

Figure 4.2 Distribution of Commercial Fishery Harvest Locations, Snow Crab (top) and Greenland Halibut (bottom), May–November 2014.

Table 4.1 Commercial Catch Weights and Values in the Study Area, May–November 2014 (Values indicate the frequency of catch weight quartile codes [i.e., 1–4] attributed to each species. Gear types and months of effort are also indicated).

Species	Catch Weight Quartile Code Counts [a]				Catch Value Quartile Code Counts [b]				Total Counts [c]	Month Caught	Gear Type	
	1	2	3	4	1	2	3	4			Fixed	Mobile
Northern Shrimp	266	445	499	666	375	411	495	595	1,876	May–Nov	-	Trawl
Snow Crab	223	373	271	76	167	352	308	116	943	May–Aug	Pot	-
Greenland Halibut	21	141	118	17	30	147	95	25	297	May–Sep	Gillnet; Pot	Trawl
Striped Shrimp (*Pandalus montagui*)	7	20	42	60	10	19	35	65	129	May–Nov	-	Trawl
Witch Flounder (*Glyptocephalus cynoglossus*)	0	5	7	8	0	1	9	10	20	May–Jun	-	Trawl
Redfish	0	4	7	2	0	3	8	2	13	May–Jun; Aug	Gillnet	Trawl
Roughhead Grenadier (*Macrourus berglax*)	0	3	5	1	0	3	5	1	9	May–Aug	Gillnet	Trawl
American Plaice	0	1	2	4	0	0	2	5	7	Jun	-	Trawl
Iceland Scallop (*Chlumys islizndicu*)	3	0	0	0	3	0	0	0	3	Jul–Aug; Oct	-	Dredge
Capelin (*Mallotus villosus*)	0	0	2	0	2	0	0	0	2	Jul	-	Seine
Atlantic Halibut	0	0	1	0	0	0	1	0	1	Jun	Gillnet	-
Total	**520**	**992**	**954**	**834**	**587**	**936**	**958**	**819**	**3,300**	**-**	**-**	**-**

Source: DFO commercial landings database, 2014.

Notes:

[a] Quartile ranges provided by DFO (quartile ranges calculated annually by DFO based on total catch weights in a given year, all species combined). 2014 quartile ranges: 1 = 0 – 2,421 kg, 2 = 2,422 – 10,786 kg, 3 = 10,787 – 42,872 kg, 4 = ≥ 42,873 kg.

[b] Quartile ranges provided by DFO (quartile ranges calculated annually by DFO based on total catch values in a given year, all species combined). 2014 quartile ranges: 1 = $0 – $8,851, 2 = $8,852 – $38,076, 3 = $38,077 – $140,695, 4 = ≥ $140,696.

[c] Total counts of the number of catch records per species; the total quartile code counts for catch weight and catch value are equal.

Table 4.2 Commercial Catch Weights and Values in the 2016 Area of Interest, May–November 2014 (Values indicate the frequency of catch weight quartile codes [i.e., 1–4] attributed to each species. Gear types and months of effort are also indicated).

Species	Catch Weight Quartile Code Counts [a]				Catch Value Quartile Code Counts [b]				Total Counts [c]	Month Caught	Gear Type	
	1	2	3	4	1	2	3	4			Fixed	Mobile
Greenland Halibut	4	70	78	17	5	74	65	25	169	May–Sep	Gillnet	Trawl
Witch Flounder	0	5	6	8	0	1	8	10	19	May–Jun	-	Trawl
Northern Shrimp	9	4	2	0	9	3	2	1	15	May–Sep	-	Trawl
American Plaice	0	1	2	4	0	0	2	5	7	Jun	-	Trawl
Redfish	0	2	1	2	0	1	2	2	5	May–Jun	-	Trawl
Roughhead Grenadier	0	0	1	1	0	0	1	1	2	May	-	Trawl
Snow Crab	0	1	0	0	0	1	0	0	1	May	Pot	-
Total	**13**	**83**	**90**	**32**	**14**	**80**	**80**	**44**	**218**	**-**	**-**	**-**

Source: DFO commercial landings database, 2014.

Notes:

[a] Quartile ranges provided by DFO (quartile ranges calculated annually by DFO based on total catch weights in a given year, all species combined). 2014 quartile ranges: 1 = 0 – 2,421 kg, 2 = 2,422 – 10,786 kg, 3 = 10,787 – 42,872 kg, 4 = ≥ 42,873 kg.

[b] Quartile ranges provided by DFO (quartile ranges calculated annually by DFO based on total catch values in a given year, all species combined). 2014 quartile ranges: 1 = $0 – $8,851, 2 = $8,852 – $38,076, 3 = $38,077 – $140,695, 4 = ≥ $140,696.

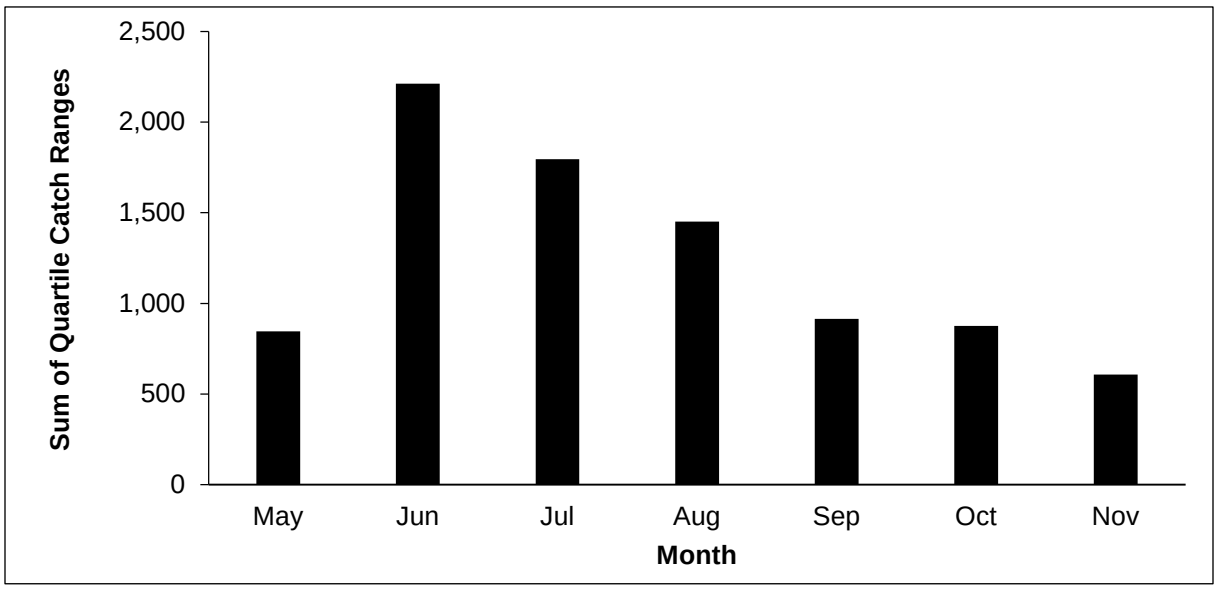
[c] Total counts of the number of catch records per species; the total quartile code counts for catch weight and catch value are equal.

4.2.1.4 Other Notable Commercial Species

As noted in the EA Update (see § 4.2.1 *in* LGL 2015), redfish (*Sebastes* sp.), American plaice (*Hippoglossoides platessoides*), Atlantic halibut (*Hippoglossus hippoglossus*), yellowtail flounder (*Pleuronectes ferruginea*) and Atlantic cod have also been identified as important commercial species in the Study Area (see Table 4.2 *in* LGL 2014a, and Table 4.1 *in* LGL 2015). These species are harvested primarily in areas where water depths are <500 m (i.e., western portions of the Study Area and 2016 AOI). The Atlantic halibut are managed by DFO while NAFO sets annual TAC values for the remaining four species. A fishing ban has been in place for redfish in Sub-area 2 and Div. 1F + 3K since 2012. There are no TAC quotas set for redfish, American plaice, Atlantic halibut or yellowtail flounder in the Study Area (DFO 2015e; NAFO 2016). During the 2013–2015 fishing seasons, individual quotas were set at 2,268 kg (~2.3 mt) round weight per <65 foot fixed gear groundfish licence holder with a homeport in Div. 2J3KL, inclusive of all directed and by-catch of cod (DFO 2015e).

4.2.1.5 Timing and Gear Types

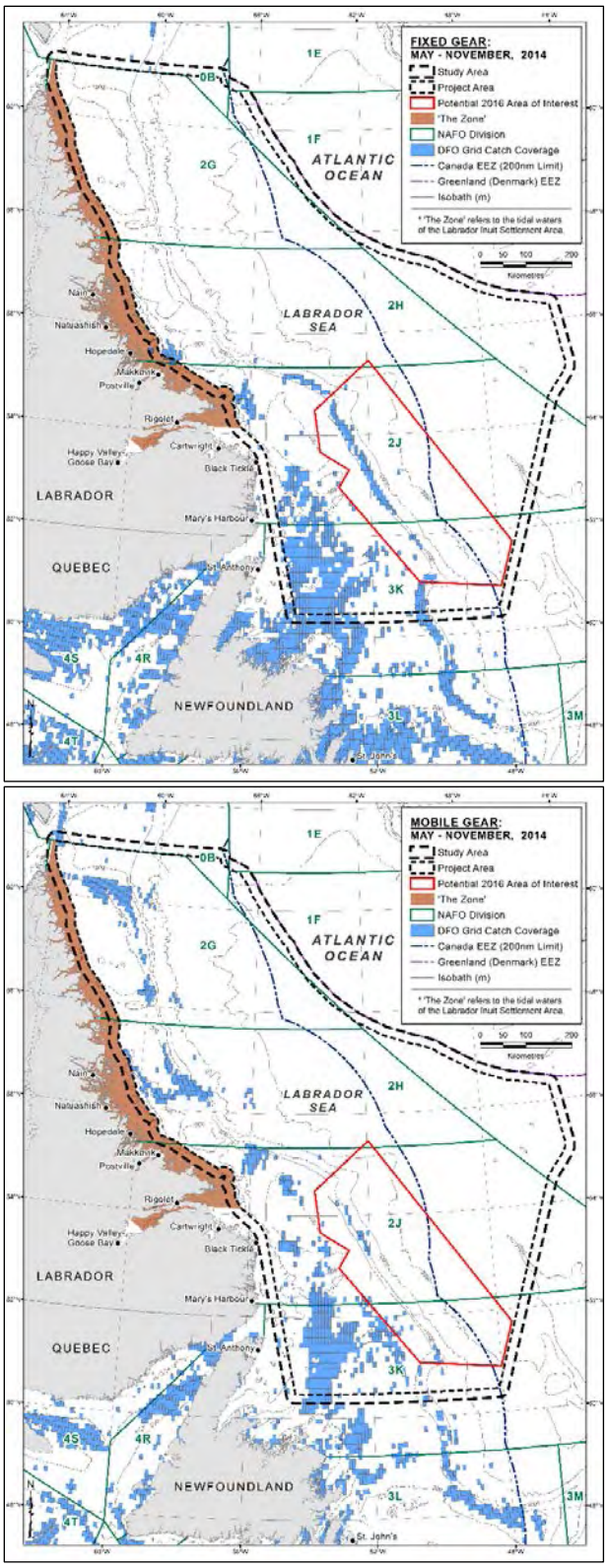
As in previous years, most of the harvesting in the Study Area in 2014 occurred during the June–August period (see Figure 4.3 below, Figure 4.8 *in* LGL 2014a, and Figure 4.5 *in* LGL 2015). The proportion of the harvest that occurred in May 2014 was less than that in previous years. Gear types used in the 2014 harvest were typical of those used during previous years (see Table 4.1 above and § 4.10.2.3 *in* the Labrador Shelf SEA [C-NLOPB 2008]). The 2014 harvest locations for both fixed and mobile gears are shown in Figure 4.4.



Source: DFO commercial landings database, 2014.

Notes: Sum of catch weight quartile codes is the summation of quartile codes (i.e., 1–4) for all catch records for all species; the greater the sum of quartile code counts, the greater the catch weight for a given month.

Figure 4.3 Monthly Sums of Catch Weight Quartile Codes in the Study Area, All Species, May–November 2014.



Source: DFO commercial landings database, 2014.

Figure 4.4 Harvest Locations using Fixed (top) and Mobile (bottom) Gears in the Study Area and Project Area, All Species, May–November 2014.

4.2.2 Traditional and Aboriginal Fisheries

Traditional and aboriginal fisheries are described in § 4.3.4 of the EA (LGL 2014a), and § 5.8.3 of the Labrador Shelf SEA (C-NLOPB 2008). Several communal commercial fisheries licences (CCFL) are held by Aboriginal groups in the Study Area. The Innu Nation of Labrador holds a CCFL for fixed gear groundfish fishing activity in Div. 2GHJ. This licence also permits access to shrimp in SFAs 4, 6 and 7 (includes Div. 3L, south of the Study Area) (D. Ball and D. Tobin, DFO, Resource Management and Aboriginal Affairs, pers. comm. 3 December 2015. The Innu Nation have a primary interest in harvesting Greenland halibut in Div. 0B (D. Ball and D. Tobin, DFO, Resource Management and Aboriginal Affairs, pers. comm. 3 December 2015), which could occur in the northernmost portion of the Study Area. The Qalipu First Nation Band holds CCFLs for snow crab and groundfish with allocations in Div. 3K, and for shrimp in SFA 6 (D. Ball and D. Tobin, DFO, Resource Management and Aboriginal Affairs, pers. comm. 3 December 2015). The Nunatsiavut Government holds a Communal Snow Crab licence and allocation in Div. 2GHJ, north of 54º40' N (DFO 2010). The Mi'kmaq Alsumk Mowimsikik Koqoey Association (MAMKA) could potentially expand from the inshore into Div. 3KL, depending on future management measures for northern cod (D. Ball and D. Tobin, DFO, Resource Management and Aboriginal Affairs, pers. comm. 3 December 2015).

The Innu Nation of Labrador communal fixed gear groundfish licence also permits fishing in Div. 3LMNO and 3Ps, south of the Study Area (D. Ball and D. Tobin, DFO, Resource Management and Aboriginal Affairs, pers. comm. 3 December 2015).

According to the Labrador Shelf and Southern and Eastern Newfoundland SEAs (C-NLOPB 2008, 2010, 2014), there are no other Aboriginal fisheries that occur in the Study Area.

4.2.3 Recreational Fisheries

Recreational fisheries in Newfoundland and Labrador are described in § 3.10.3 of the Labrador Shelf SEA (C-NLOPB 2008), § 4.3.4.4 of the Eastern Newfoundland SEA (C-NLOPB 2010), § 4.3.5 of the EA (LGL 2014a), and § 4.2.3 of the 2015 EA Update (LGL 2015). In 2015, the recreational groundfish fishery occurred in all NAFO areas around Newfoundland and Labrador (Div. 2GH, 2J3KL, 3Ps, 3Pn and 4R) with the exception of the Eastport (northeast Newfoundland) and Gilbert Bay (southeast Labrador) Marine Protected Areas (MPAs) (DFO 2015e). Portions of Div. 2GH, 2J and 3K overlap the Study Area. The 2015 fishery, which was conducted in coastal and inshore waters (C-NLOPB 2014), was open for three weeks in July and August, and for nine days in September (DFO 2015e). Although timing information related to the 2016 recreational fishery season is not yet available on the DFO website, the dates for the summer and fall recreational fisheries are relatively consistent from year-to-year.

Species typically harvested during recreational fisheries include brown trout (*Salmo trutta*), Atlantic mackerel, squid (*Illex* sp.), capelin (*Mallotus villosus*) and Atlantic cod (C. Boland, DFO, pers. comm. 2009 *in* C-NLOPB 2010). Current management measures indicate that there is no requirement for

licences or tags, and that the retention of Atlantic halibut, spotted wolffish (*Anarhichas minor*), northern wolfish (*A. denticulatus*) and any species of shark is prohibited (DFO 2015e).

Recreational fisheries may be conducted in the shallower Labrador Shelf waters in the western portion of the Study Area. Given the 2016 AOI's distance from shore, it is highly unlikely that any recreational fisheries will be conducted in it.

4.2.4 Aquaculture

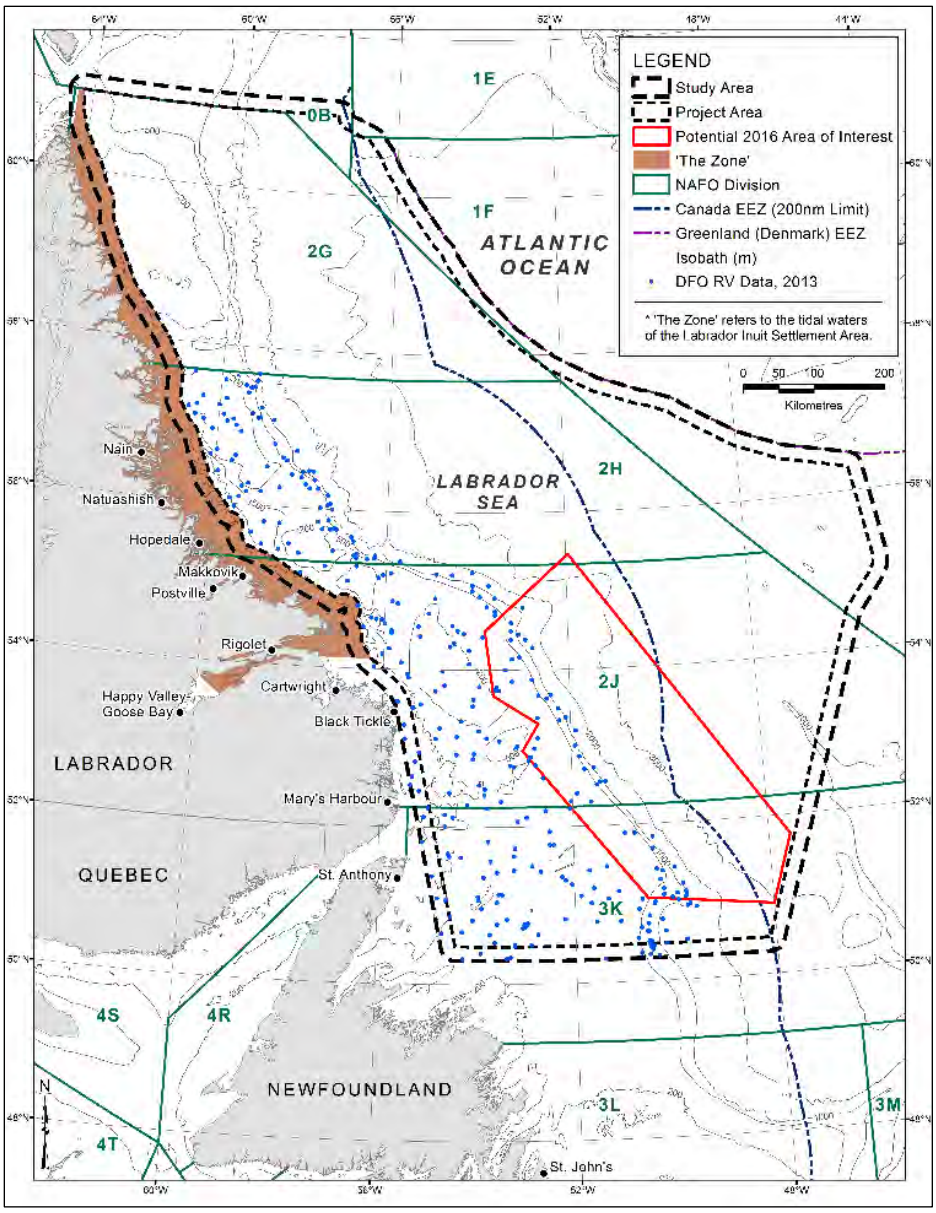
As indicated in the Labrador Shelf SEA (see § 4.10.4 *in* C-NLOPB 2008) and the Eastern Newfoundland SEA (see § 4.3.4.3 *in* C-NLOPB 2014), there are no approved aquaculture sites in the Study Area. Currently, all aquaculture sites in Newfoundland and Labrador are located on the coast, west of the Study Area (see Figure 4.150 *in* C-NLOPB 2014; DFA 2015).

4.2.5 DFO and Industry Science Surveys

DFO Research Vessel (RV) data collected during annual multi-species trawl surveys between 2007–2011 were presented in the EA (see § 4.3.7 *in* LGL 2014a), while RV data collected in 2012 were analyzed in the 2015 EA Update (see § 4.2.4 *in* LGL 2015). Results of the analysis of the 2013 dataset for spring (May) and fall (October–December) RV surveys in the Study Area did not indicate any major differences in either dominant species caught or the harvest locations compared to previous survey years (see Table 4.4 and Figure 4.30 *in* LGL 2014a). Unlike 2012, there were RV survey data collected in the Study Area during spring (May) in 2013 (LGL 2015). The 2016 AOI overlaps several dozen RV harvest locations in 2013 in areas where water depths are <2,000 m (Figure 4.5).

The tentative schedule of the 2016 DFO multispecies science surveys (RV surveys) is presented below (Table 4.3) (G. Sheppard, DFO, Technician, pers. comm. 27 January 2016). Spring RV surveys are currently set to begin at the end of March and continue into early-June. It is not anticipated that spring RV surveys will occur in the Study Area during 2016. DFO fall RV surveys will begin in mid-September and end in early-December, possibly occurring in the Study Area from early-October to early-December.

The Industry-DFO Collaborative Post-season Trap Survey for Snow Crab was described in § 4.3.8 of the EA (LGL 2014a). As indicated in Figure 4.6, numerous stations associated with this survey are located in the southwestern portions of the Study Area in Div. 2J and 3K. Approximately 20 survey stations are located in the central-western portion the 2016 AOI in areas where water depths are <500 m. Several survey stations are located immediately adjacent to the western portion of the 2016 AOI. Sampling at these stations will occur during September–November in 2016.



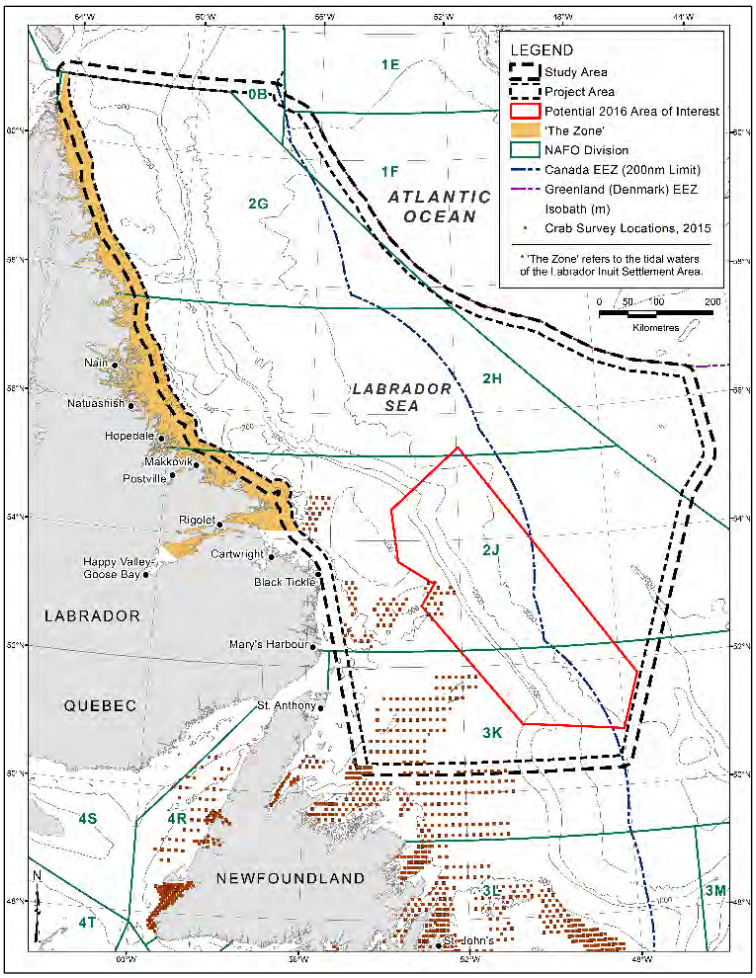
Source: DFO Research Vessel survey database, 2013.

Figure 4.5 Distribution of DFO RV Survey Catch Locations in the Study Area, May and October–December 2013.

Table 4.3 Tentative Schedule of DFO RV Surveys in 2016.

NAFO Division	Start Date	End Date	Vessel
3P	29 Mar	12 Apr	*Needler*
3L	5 Apr	26 Apr	*Teleost*
3P	12 Apr	26 Apr	*Needler*
3L	26 Apr	2 May	*Vladykov* [a]
3P + 3KLMNO	27 Apr	2 May	*Teleost*
3P + 3O	27 Apr	10 May	*Needler*
3KL	3 May	21 May	*Teleost*
3O + 3N	10 May	21 May	*Needler*
3L + 3N	24 May	10 Jun	*Needler*
3K	6 Jul	18 Jul	*Vladykov*
3K	20 Jul	24 Jul	*Vladykov*
3L	15 Aug	21 Aug	*Vladykov*
3K	23 Aug	25 Aug	*Vladykov*
3O	14 Sep	27 Sep	*Needler*
3L	17 Sep	24 Sep	*Vladykov*
3O + 3N	27 Sep	8 Oct	*Needler*
2H	4 Oct	8 Oct	*Teleost*
3N + 3L	11 Oct	25 Oct	*Needler*
2H + 2J	11 Oct	25 Oct	*Teleost*
3L	17 Oct	26 Oct	*Vladykov*
3L	25 Oct	8 Nov	*Needler*
2J + 3K	25 Oct	8 Nov	*Teleost*
3K + 3L	9 Nov	19 Nov	*Needler*
3K	9 Nov	22 Nov	*Teleost*
3K + 3L Deep	22 Nov	6 Dec	*Teleost*

Notes:
[a] The *Vladykov* will be partaking in science surveys (e.g., cod tagging, Trinity Bay Ecosystem), but not in the spring or fall NL RV surveys. Start/end dates subject to change as trip plans are finalized (G. Sheppard, DFO, Technician, pers. comm. 27 January 2016).



Source: DFO 2015.

Figure 4.6 Locations of Sampling Stations Associated with the Industry-DFO Collaborative Post-season Trap Survey for Snow Crab.

4.3 Seabirds

No additional information was available from EC-CWS. No updated seabird colony censuses or offshore surveys were available from EC-CWS or any other sources for the Labrador coast.

4.4 Marine Mammals and Sea Turtles

The new information presented in this subsection does not change the effects predictions made in the EA (LGL 2014a).

4.4.1 Updated COSEWIC Designations

The following are updated COSEWIC status (COSEWIC 2016) for marine mammals and sea turtles included in Table 4.10 of the MKI EA (LGL 2014a) and described in the 2015 EA Update (LGL 2015). These changes in status do not affect the effects assessment or requirement for mitigation measures.

- Harp seal (*Pagophilus groenlandicus*) (Atlantic) – changed from *mid-priority candidate* species in the EA (LGL 2014a) to *high-priority candidate* species in the 2015 EA Update (LGL 2015), and is currently considered *low-priority candidate* species.
- Hooded seal (*Cystophora cristata*) (Atlantic) – changed from *mid-priority candidate* species in the EA (LGL 2014a) to *high-priority candidate* species in the 2015 EA Update (LGL 2015), and is currently considered *mid-priority candidate* species again.
- Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) (Atlantic) – changed from *non-candidate* species to *low-priority candidate* species.

4.4.2 Updated Population/Abundance Estimates

Updates to the marine mammal and sea turtle population/abundance estimates included in the EA (LGL 2014a) and 2015 EA Update (LGL 2015) are updated below.

- Fin whale (*Balaenoptera physalus*) – the current estimate for the western North Atlantic stock is 1,618 individuals (CV = 0.33; Waring et al. 2015).
- Harbour seal (*Phoca vitulina*) – the updated 2012 abundance estimate for the western North Atlantic stock of harbour seals is 75,834 (Waring et al. 2015).

4.5 Species at Risk

The new information presented in this subsection does not change the effects predictions made in the EA (LGL 2014a).

Table 4.4 includes the species/populations at risk that could potentially occur in the Study Area, based on available information at the websites for *SARA* and COSEWIC as of March 2016. Changes in species status since preparation of the 2015 EA Update are described below and noted in red font and light grey shading in Table 4.4.

- Leatherback sea turtle (*Dermochelys coriacea*) has been given two separate listings under *SARA*. The leatherback sea turtle, in general, has an *endangered* status under Schedule 1 of *SARA* but no status under COSEWIC. The Atlantic population of this sea turtle has an *endangered* status under COSEWIC but no status under *SARA*;
- Hooded seal (*Cystophora cristata)* – COSEWIC assessment changed from a high priority to a mid-priority candidate species; and
- Harp seal (*Phoca groenlandica)* – COSEWIC assessment changed from a high priority to a low priority candidate species.

As of March 2016, no other species/populations that could potentially occur in the Study Area have been added to Schedule 1 of *SARA*.

Table 4.4 *SARA*-Listed and COSEWIC-Assessed Marine Species that Potentially Occur in the Study Area.

SPECIES		*SARA*[a]			COSEWIC[b]			
Common Name	**Scientific Name**	**Endangered**	**Threatened**	**Special Concern**	**Endangered**	**Threatened**	**Special Concern**	***Candidate Species***
Marine Mammals								
Blue Whale (Atlantic population)	*Balaenoptera musculus*	Schedule 1			X			
North Atlantic Right Whale	*Eubalaena glacialis*	Schedule 1			X			
Northern Bottlenose Whale (Scotian Shelf population)	*Hyperoodon ampullatus*	Schedule 1			X			
Beluga Whale (Eastern Hudson Bay population)	*Delphinapterus leucas*				X			
Beluga Whale (Ungava Bay population)	*Delphinapterus leucas*				X			
Polar Bear	*Ursus maritmus*			Schedule 1			X	
Fin Whale (Atlantic population)	*Balaenoptera physalus*			Schedule 1			X	
Sowerby's Beaked Whale	*Mesoplodon bidens*			Schedule 1			X	
Harbour Porpoise (Northwest Atlantic population)	*Phocoena phocoena*		Schedule 2				X	
Northern Bottlenose Whale (Davis Strait-Baffin Bay-Labrador Sea population)	*Hyperoodon ampullatus*						X	
Killer Whale (Northwest Atlantic/ Eastern Arctic population)	*Orcinus orca*						X	
Sei Whale (Atlantic population)	*Balaenoptera borealis*							High priority
Ringed Seal	*Phoca hispida*							High priority
Hooded Seal	*Cystophora cristata*							Mid priority
Harp Seal	*Phoca groenlandica*							Low priority
Bearded Seal	*Erignathus barbatus*							Mid priority
Sperm Whale	*Physeter microcephalus*							Mid priority
Sea Turtles								
Leatherback Sea Turtle	*Dermochelys coriacea*	Schedule 1						
Leatherback Sea Turtle (Atlantic population)	*Dermochelys coriacea*				X			
Loggerhead Sea Turtle	*Caretta caretta*				X			
Kemp's Ridley Sea Turtle	*Lepidochelys kempii*							Low priority
Fishes								
White Shark (Atlantic population)	*Carcharodon carcharias*	Schedule 1			X			
Northern Wolffish	*Anarhichas denticulatus*		Schedule 1			X		
Spotted Wolffish	*Anarhichas minor*		Schedule 1			X		
Atlantic Wolffish	*Anarhichas lupus*			Schedule 1			X	
Atlantic Cod	*Gadus morhua*			Schedule 3				

SPECIES		*SARA*[a]			COSEWIC[b]			
Common Name	**Scientific Name**	**Endangered**	**Threatened**	**Special Concern**	**Endangered**	**Threatened**	**Special Concern**	***Candidate Species***
Atlantic Cod (Newfoundland and Labrador population)	*Gadus morhua*				X			
Atlantic Bluefin Tuna	*Thunnus thynnus*				X			
Porbeagle Shark	*Lamna nasus*				X			
Roundnose Grenadier	*Coryphaenoides rupestris*				X			
Cusk	*Brosme brosme*				X			
Smooth Skate (Funk Island Deep population)	*Malacoraja senta*				X			
Atlantic Salmon (various populations)	*Salmo salar*				X	X	X	
American Eel	*Anguilla rostrata*					X		
American Plaice (Newfoundland and Labrador population)	*Hippoglossoides platessoides*					X		
Acadian Redfish (Atlantic population)	*Sebastes fasciatus*					X		
Deepwater Redfish (Northern population)	*Sebastes mentella*					X		
White Hake (Atlantic and Northern Gulf of St. Lawrence population)	*Urophycis tenuis*					X		
Blue Shark (Atlantic population)	*Prionace glauca*						X	
Basking Shark (Atlantic population)	*Cetorhinus maximus*						X	
Spiny Dogfish (Atlantic population)	*Squalus acanthias*						X	
Roughhead Grenadier	*Macrourus berglax*						X	
Thorny Skate	*Amblyraja radiata*						X	
Northwest Atlantic Lumpfish	*Cyclopterus lumpus*							High priority
Spinytail Skate	*Bathyraja spinicauda*							Mid priority
Pollock	*Pollachius virens*							Mid priority
Greenland Shark	*Somniosus microcephalus*							Mid priority
Atlantic Mackerel	*Scomber scombrus*							Mid priority
Birds								
Ivory Gull	*Pagophila eburnea*	Schedule 1			X			
Harlequin Duck	*Histrionicus histrionicus*			Schedule 1			X	
Barrow's Goldeneye	*Bucephala islandica*			Schedule 1			X	
King Eider	*Somateria spectabilis*							Low priority

Sources: [a] *SARA* website (http://www.sararegistry.gc.ca/species/default_e.cfm), accessed March 2016; [b] COSEWIC website (http://www.cosewic.gc.ca/index.htm); accessed March 2016.

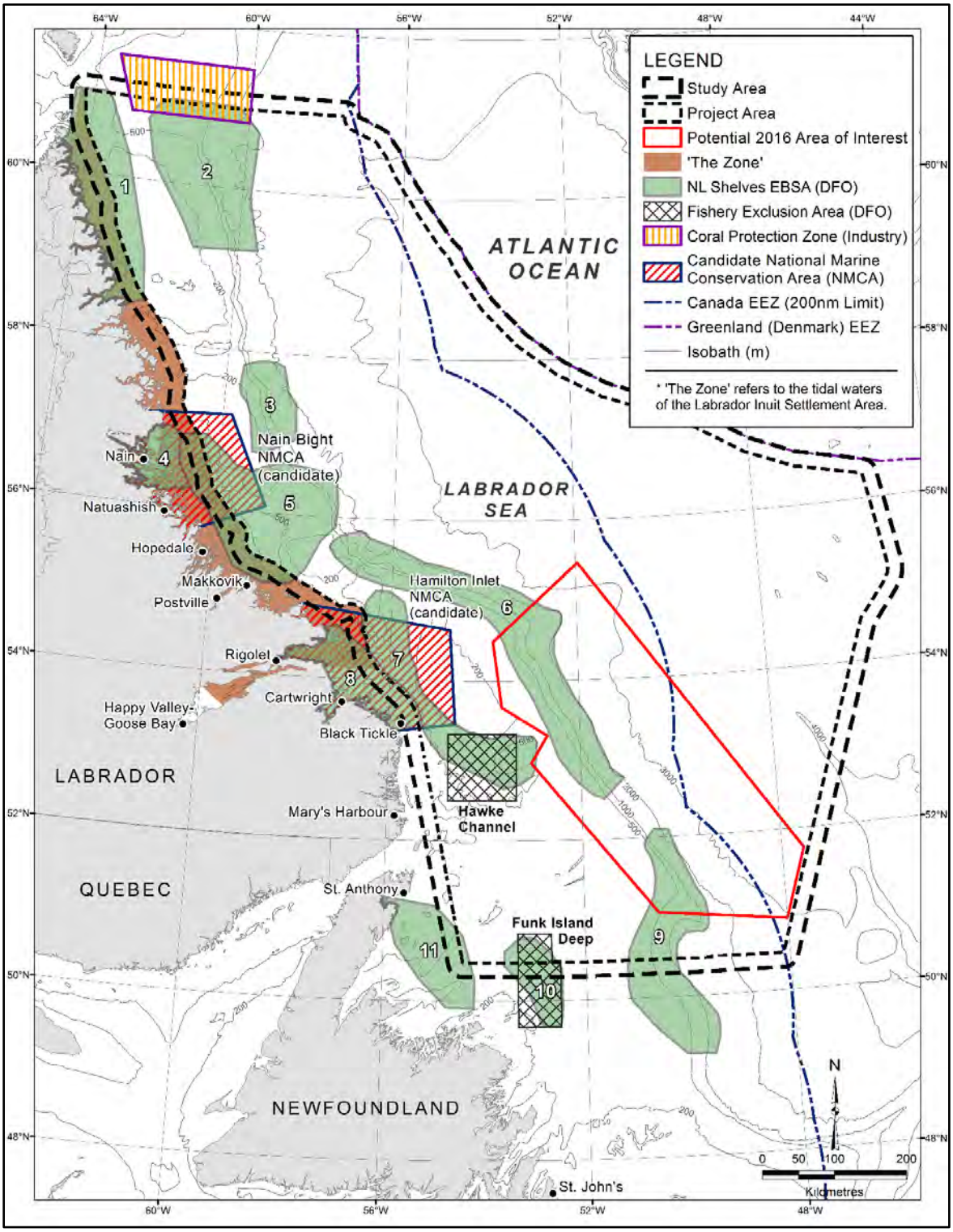
MKI will monitor *SARA* issues through the law gazettes, the Internet, and communication with DFO and Environment Canada, and will adaptively manage any issues that may arise in the future. MKI will comply with relevant regulations pertaining to *SARA* Recovery Strategies and Action Plans, and continue to exercise due caution to minimize impacts on species at risk during all of its operations. MKI also understands that other species/populations may be given either *endangered* or *threatened* status under Schedule 1 of *SARA* during the course of the Project, and will continue to monitor for any status changes.

4.6 Sensitive Areas

The new information presented in this subsection does not change the effects predictions made in the EA (LGL 2014a).

No additional Ecologically and Biologically Significant Areas (EBSAs) have been designated in the Newfoundland and Labrador (NL) Shelves Bioregion since the 2015 EA Update was prepared (see § 4.6 of LGL 2015). The 11 EBSAs of the Newfoundland and Labrador (NL) Shelves Bioregion (DFO 2013) that overlap the Study Area are: (1) Northern Labrador; (2) Outer Shelf Saglek Bank; (3) Outer Shelf Nain Bank; (4) Nain Area; (5) Hopedale Saddle; (6) Labrador Slope; (7) Labrador Marginal Trough; (8) Hamilton Inlet; (9) Orphan Spur (10) Notre Dame Channel; and (11) Grey Islands (Figure 4.7). The key attributes of the 11 NL Shelves EBSAs are presented in Table 2 of the EA Addendum (LGL 2014b). A Terms of Reference related to Canada's agreement to the Convention on Biological Diversity Aichi Target 11 was recently released by DFO. It includes the goal of conserving 10% of coastal and marine areas by 2020 (DFO 2016). The Oceans Program aims to identify and/or clarify particular sub-areas for each EBSA in the NL Shelves Bioregion. DFO Oceans has requested that DFO Science provide detailed descriptions of sub-areas and geospatially-referenced data layers for sub-areas of the NL Shelves Bioregion EBSAs (DFO 2016).

Table 4.14 of the EA (LGL 2014a) provided information on Sensitive Areas, including DFO Fishery Closure Areas, Coral Protection Zones, Marine Protected Areas, Candidate National Marine Conservation Areas, and Important Bird Areas. These areas are shown in Figure 4.7. No additional sensitive areas have been designated in the Study Area since the 2015 EA Update was prepared (LGL 2015).



Notes: NL Shelves EBSAs: (1) Northern Labrador, (2) Outer Shelf Saglek Bank, (3) Outer Shelf Nain Bank, (4) Nain Area, (5) Hopedale Saddle, (6) Labrador Slope, (7) Labrador Marginal Trough, (8) Hamilton Inlet, (9) Orphan Spur, (10) Notre Dame Channel, (11) Grey Islands

Figure 4.7 Sensitive Areas that either Overlap or are Proximate to the Study Area.

5.0 Consultations

The document One Ocean Protocol for Consultation Meetings: Recommendations for the Fishing and Petroleum Industries in Newfoundland and Labrador (One Ocean 2013a) outlines recommendations for preparing, convening and following up on consultation meetings.

Newsletters describing the seismic activities proposed for 2016 were distributed during the week of 14 March 2016 to the same stakeholders/groups consulted in previous years. The newsletter and details of those consulted by MKI are presented in Appendices 1 and 2, respectively.

Face-to-face meetings (see Appendix 2) were held with DFO, the Fish, Food and Allied Workers Union/Unifor (FFAW/Unifor), and Ocean Choice International (OCI) on 27 January 2016.

The discussion with DFO focused on MKI's acquisition plans with respect to the Industry-DFO Collaborative Post-season Trap Survey for Snow Crab.

During MKI's meeting with the FFAW/Unifor, the focus of conversation was related to routine communication and coordination between MKI and the fishing industry.

The meeting with OCI involved discussion of scheduling of MKI's activities around OCI's anticipated activities during the early part of the season.

6.0 Environmental Assessment

6.1 Mitigation Measures

The mitigation measures described in the EA (LGL 2014a) and the associated Addendum (LGL 2014b) remain applicable to MKI's seismic survey activities proposed for 2016.

In 2011, One Ocean reviewed fishing and petroleum industry processes and practices for offshore seismic survey operations in Newfoundland and Labrador with the intention of identifying opportunities to better understand and improve operational processes that would mutually benefit both industries. Results of the review are outlined in the document One Ocean Protocol for Seismic Survey Programs in Newfoundland and Labrador (One Ocean 2013b).

6.2 Validity of Significance Determination

Based on careful consideration of newly available biological environment information presented in § 4.0 and results of consultations with stakeholders, the determinations of significance of the residual effects of seismic survey activities on VECs presented in the EA (LGL 2014a) and the associated Addendum (LGL 2014b) remain valid for the seismic survey activities proposed by MKI in 2016.

7.0 Concluding Statement

The seismic survey activities that MKI plans to conduct in 2016 have been reviewed and determined to be within the scope of the EA (LGL 2014a) and its Addendum (LGL 2014b). The environmental effects predicted in the EA and its Addendum remain valid. MKI reaffirms its commitment to implement the mitigation measures proposed in these assessment documents and in the Screening Decisions made by the C-NLOPB.

8.0 References

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LGL (LGL Limited). 2014a. Environmental assessment MKI Labrador Sea seismic program, 2014-2018. LGL Rep. SA1245. Rep. by LGL Limited, St. John's, NL, for Multi Klient Invest AS, Oslo, Norway, and TGS-NOPEC Geophysical Company ASA, Houston, TX. 241 p. + appendices.

LGL. 2014b. Environmental assessment MKI Labrador Sea seismic program, 2014-2018 addendum. LGL Rep. SA1245-1. Rep. by LGL Limited, St. John's, NL, for Multi Klient Invest, AS, Oslo, Norway, and TGS-NOPEC Geophysical Company ASA, Houston, TX. 23 p.

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Personal Communications

D. Ball. Resource Management and Aboriginal Affairs, DFO. 3 December 2015.

D. Tobin. Resource Management and Aboriginal Affairs, DFO. 3 December 2015.

G. Sheppard. Program Services and Planning, DFO. 27 January 2016.

List of Appendices

Appendix 1 – MKI Newsletter Distributed to Consultees

Appendix 2 – List of Consultees Contacted by MKI

Appendix 1

MKI Newsletter Distributed to Consultees

Multi Klient Invest AS

Labrador Seismic Program 2016 Update

Resumption of the Program in 2016

This news update is to inform stakeholders and other interested parties of the continuation of MKI's current seismic program, started in 2014 and continued in 2015, in Labrador offshore waters. The Project Area is within the regulatory jurisdiction of the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) and it is expected that the Sanco Spirit will be acquiring the survey between July and September 2016

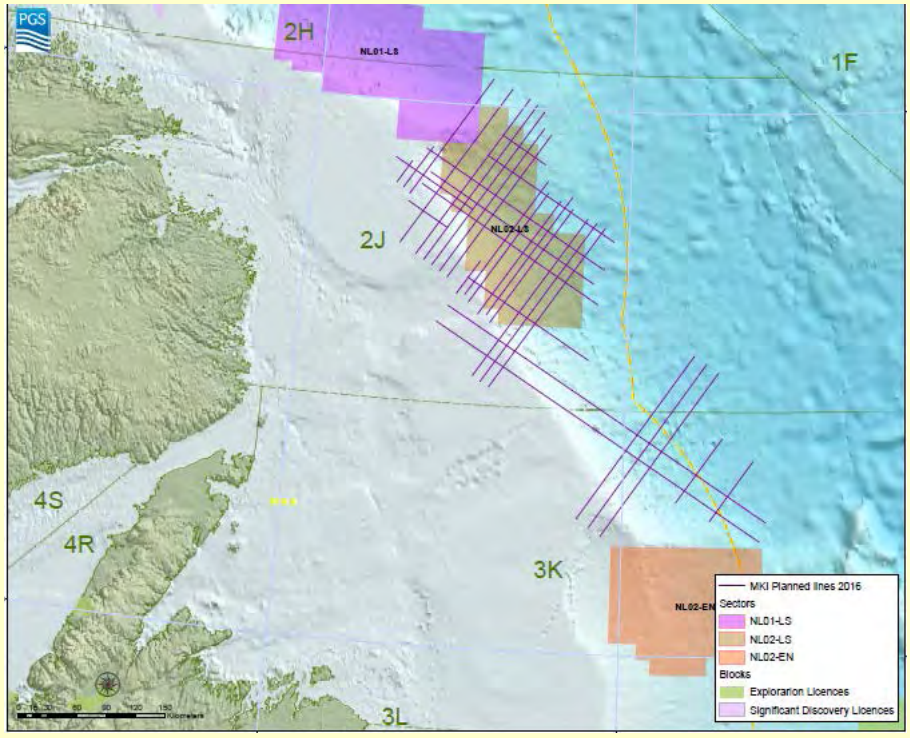

Figure 2: Provisionally planned lines for 2016 focusing primarily on the NL02-LS sector due to be part of a Call for Bids scheduled to take place in 2019

Ongoing Communication

As a component of the ongoing communications between MKI and local fisheries organizations, MKI will be providing weekly briefing materials including information such as updated schedules, maps, and/or revised timelines.

Employment Opportunities

Employment opportunities associated with this year's operating season have been considered and it has been determined that there will be possible hiring opportunities as part of the maritime crew. The recruitment process through a local agency will commence in the coming weeks and interested parties should look out for notices posted in community employment offices and other advertisements

Figure 1: Sanco Spirit

How to Access Environmental Information about the Project

The Environmental Assessment (EA) for the Labrador Sea Seismic Program 2014-2018 along with additional documentation including the Annual EA Update can be accessed on the C-NLOPB website (www.cnlopb.ca).

From the C-NLOPB homepage, click on the "*Environment*" link near the bottom of the page. Then click on the "Project-Based Environmental Assessment" link. Click on the "*Completed*" link. Once this page has opened, scroll down to the project titled "*Multi Klient Invest AS Labrador Sea Seismic Program 2014-2018*"and click on the link. Here you can find all environmental documents related to this project.

The EA provides a comprehensive and detailed overview of the project. The overview includes: information on the Physical and Biological Environment, including Fisheries, Fish and Fish Habitat, Marine Mammals and Species at Risk, and a Cumulative Effects Assessment.

Upon the completion of every acquisition season an Environmental Report is supplied to the C-NLOPB and other government agencies. This report summarizes the marine mammal observations, bird observations and interactions

Contact Information

If you have any inquiries regarding the Labrador Seismic Program (2014-2018) please feel free to contact:

Petroleum Geo-Services
15375 Memorial Drive, Suite 100
Houston, Texas, 77079
(P) 1-281-509-8000
(F) 1-281-509-8500
canada@pgs.com

Appendix 2

List of Consultees Contacted by MKI

Organization or Group Name	Email Address	Contact Name	Engagement Type
Section 1: Cartwright			
Municipality of Cartwright	twcouncil@bellaliant.com	Shirley Hopkins	Table Meeting
Labrador Fishermen's Union Shrimp Company Limited	Generalmanager@lfuscl.com	Gilbert Linstead	Table Meeting
Pratt Falls Salmon Lodge	Dwight@prattfallslodge.com	Dwight Lethbridge	Information Pack
Cloud 9 Salmon Lodge	Cloud9salmonlodge@hotmail.com	Norman Lethbridge	Information Pack
Southeastern Aurora Development Corporation	bgillis@nf.sympatico.ca	Blair Gillis	Information Pack
Section 2: Charlottetown			
Town of Charlottetown	ctown@nf.aibn.com	Charmaine Powell	Information Pack
Labrador Choice Seafoods Ltd.	pwalsh@labchoice.net	Pius Walsh	Information Pack
Fishers' Committee	ddkippenhuck@nf.sympatico.ca	Don Kippenhuck	Information Pack
Section 3: Forteau			
Forteau Community Council	forteautowncouncil@hotmail.com	Lauralee James	Information Pack
Section 4: Happy Valley-Goose Bay			
Town of Happy Valley-Goose Bay	development@happyvalley-goosebay.com	Karen Wheeler	Table Meeting
Newfoundland and Labrador Department of Innovation, Business, and Rural Development	rkean@gov.nl.ca	Reg Kean	Information Pack
Newfoundland and Labrador Department of Labrador and Aboriginal Affairs	Michellewatkins@gov.nl.ca	Michelle Watkins	Information Pack
Nunatukavut Community Council Inc. (Labrador Metis Nation)	grussell@nunatukavut.ca	George Russell	Table Meeting
Nunacor Development Corporation	andy@nunacor.com	Andy Turnbull	Information Pack
Torngat Fish Producers Co-operative Society Ltd.	gm@torngatfishcoop.com	Keith Watts	Table Meeting
Torngat Secretariat	Julie.whalen@torngatsecretariat.com	Julie Whalen	Table Meeting
Nunatsiavut Government Department of Lands and Natural Resources	Carl.mclean@nunatisiavut.com	Carl Mclean	Table Meeting
Nunatsiavut Government Non-Renewable Resources	harry_borlase@nunatsiavut.com	Harry Borlase	Table Meeting
Nunatsiavut Government Department of Education and Economic Development	Gary.mitchell@nunatsiavut.com	Gary Mitchell	Table Meeting
Labrador Friendship Centre	Jhefler-elson@lfchvgb.ca	Jennifer Hefler-Elson	Information Pack
Section 5: Hopedale			
Hopedale Inuit Community Government	Wayne.piercy@nunatsiavut.com	Wayne Piercy	Table Meeting
Section 6: L'Anse au Clair			

Organization or Group Name	Email Address	Contact Name	Engagement Type
L'Anse au Clair Community	townoflanseauclair@hotmail.com		Information Pack
Section 7: L'Anse au Loup			
Town of L'Anse au Loup	lanseauloup@nf.aibn.com	Janice Normore	Table Meeting
Labrador Fishermen's Union Shrimp Company Limited	generalmanager@lfuscl.com	Gilbert Linstead	Information Pack
Section 8: Mary's Harbour			
Town of Mary's Harbour	maryshbr@nf.aibn.com	Glenys Rumbolt	Information Pack
Labrador Fishermen's Union Shrimp Company Limited	Generalmanager@lfuscl.com	Gilbert Linstead	Information Pack
Section 9: Makkovik			
Makkovik Inuit Community Government	Herbert.jacque@nunatsiavut.com	Herbert Jacque	Table Meeting
Section 10: Mud Lake			
Mud Lake Community	Dave.raeburn@xplornet.ca	Dave Rayburn	Information Pack
Section 11: Nain			
Nain Inuit Community Government	tony.andersen@nunatsiavut.com	Tony Andersen	Table Meeting
Fishers' Committee	jangnatok@hotmail.com	Joey Angnatok	Information Pack
Section 12: Natuashish			
Mushuau Innu Band Council	Kanikue@gmail.com	Gregory Rich	Table Meeting
Innu Nation	Ppoker@innu.ca	Prote Poker	Table Meeting
Section 13: North West River			
Town of North West River	manager@townofnwr.ca	Arthur Williams	Table Meeting
Sivunivut Inuit Community Corporation Inc.	Ed.tuttauk@nunatsiavut.com	Ed Tuttauk	Table Meeting
Innu Nation	Preid@innu.ca	Paula Reid	Table Meeting
Section 14: Pinsent's Arm			
Community of Pinsent's Arm	localservicepa@yahoo.ca	Mildred Clark (secretary)	Information Pack
Labrador Fishermen's Union Shrimp Company Limited	generalmanager@lfuscl.com	Gilbert Linstead	Information Pack
Section 15: Port Hope Simpson			
Town of Port Hope Simpson	porthopesimpson@nf.aibn.com	Michelle Clark	Information Pack
Labrador Southeast Coastal Action Program	lscap@nf.aibn.com	Rex Turnbull	Information Pack

Organization or Group Name	Email Address	Contact Name	Engagement Type
Section 16: Postville			
Postville Inuit Community Government	Diane.gear@nunatsiavut.com	Diane Gear	Table Meeting
Nunatsiavut Government Department of Lands and Natural Resources	Glen.sheppard@nunatsiavut.com	Glen Sheppard	Table Meeting
Section 17: Rigolet			
Rigolet Inuit Community Government	townmanager@rigolet.ca	Sherri Wolfrey	Table Meeting
Fishers' Committee	richardrich749@gmail.com	Richard Rich	Information Pack
Section 18: Sheshatshiu			
Sheshatshiu Innu First Nation Band Council	jandrew@innu.ca	Jeremy Andrew	Information Pack
Innu Development Ltd. Partnership	madams@innudev.com	Melissa Adams	Information Pack
Section 19: St. Anthony			
Town of St. Anthony	stanthony@nf.aibn.com	Ernest Simms	Table Meeting
Clearwater Fisheries Limited	lsmith@clearwater.ca		Information Pack
St. Anthony Port Authority	Stanthonyportauthorityinc@bellaliant.com	Malcolm Campbell	Table Meeting
St. Anthony Basin Resources Inc.	s.elliott@nf.aibn.com	Sam Elliott	Table Meeting
Section 20: St. Johns			
Fisheries and Oceans Canada- Coast Guard	Jason.kelly@dfo-mpo.gc.ca	Jason Kelly, Senior Fisheries Protection Biologist	Table Meeting
Environment Canada	Glenn.troke@ec.gc.ca	Glenn Troke. EA Coordinator	Table Meeting
Transport Canada	Clement.murphy@tc.gc.ca	Clement Murphy, Manager, Examinations, and Enforcement	Table Meeting
Parks Canada	Randy.thompson@pc.gc.ca	Randy Thompson, Resource Management Officer	Information Pack
National Defence	information@forces.gc.ca		Information Pack
St. Johns Port Authority	jmcgrath@sjpa.com	Jeff	Table Meeting

Organization or Group Name	Email Address	Contact Name	Engagement Type
		McGrath, Director of Marine Safety and Security	
Newfoundland and Labrador Fisheries and Aquaculture	Davidlewis@gov.nl.ca	David Lewis, Deputy Minister	Table Meeting
City of St. Johns	rellsworth@stjohns.ca	Ron Ellsworth, Deputy Mayor	Table Meeting
Food, Fish, and Allied Workers	jjoensen@ffaw.net	Johan Joensen, Petroleum Industry Liaison	Table Meeting
One Ocean	Maureen.murphy@mi.mun.ca	Director	Table Meeting
Groundfish Enterprise Allocation Council	bchapman@sympatico.ca	Bruce Chapman, Executive Director	Information Pack
Association of Seafood Producers	dbutler@seafoodproducers.org	Derek Butler, Executive Director	Table Meeting
Beothic Fish Processors Ltd.	pgrant@beothic.com	Paul Grant, Executive Vice President	Information Pack
Breakwater Fisheries Limited	rrbarnes@nf.sympatico.ca	Randy Barnes	Information Pack
Conche Seafoods Inc.	dphilpott@quinsea.com	Derrick Philpott, Director	Information Pack
Deep Atlantic International Inc.	Martha@deepatlanticsea.com	Martha Mullowney, Director	Information Pack
Dorset Fisheries Limited	dphilpott@quinsea.com	Derrick Philpott, Director	Information Pack
GC Rieber Carino Ltd.	John.c.kearley@carino.ca	John Kearley, CEO	Information Pack
Gulf Shrimp Limited	Dphilpott@quinsea.com	Derrick Philpott, Director	Table Meeting
HSF Ocean Products Limited	todd@hsfgroup.ca	Todd Hickey, Director	Information Pack
Nataaqnaq Fisheries	keith@natfish.ca	Keith	Information

Organization or Group Name	Email Address	Contact Name	Engagement Type
		Coady, Fleet Manager	Pack
Newfound Resources Limited	jeff@nrl.nf.net	Jeff Simms, Operations Manager	Table Meeting
Notre Dame Seafoods Inc.	jeveleigh@notredameseafoods.com	Jason Eveleigh, President	Information Pack
San-Can Fisheries Limited	sgoff@san-can.com	Sandra Goff, Director	Information Pack
Ocean Choice International	rellis@oceanchoice.com	Rick Ellis, Director of Fleet Operations	Table Meeting
Quinlan Brothers Ltd.	dearle@quinlanbros.ca	David Earle, Chief Financial Officer	Table Meeting
Nature Newfoundland and Labrador	zedel@mun.ca	Len Zedel	Table Meeting

twcouncil@bellaliant.com; Generalmanager@lfuscl.com; Dwight@prattfallslodge.com; Cloud9salmonlodge@hotmail.com; bgillis@nf.sympatico.ca; ctown@nf.aibn.com; pwalsh@labchoice.net; ddkippenhuck@nf.sympatico.ca; forteautowncouncil@hotmail.com; development@happyvalley-goosebay.com; rkean@gov.nl.ca; Michellewatkins@gov.nl.ca; grussell@nunatukavut.ca; andy@nunacor.com; gm@torngatfishcoop.com; Julie.whalen@torngatsecretariat.com; Carl.mclean@nunatisiavut.com; harry_borlase@nunatsiavut.com; Gary.mitchell@nunatsiavut.com; Jhefler-elson@lfchvgb.ca; Wayne.piercy@nunatsiavut.com; townoflanseauclair@hotmail.com; lanseauloup@nf.aibn.com; generalmanager@lfuscl.com; maryshbr@nf.aibn.com; Generalmanager@lfuscl.com; Herbert.jacque@nunatsiavut.com; Dave.raeburn@xplornet.ca; tony.andersen@nunatsiavut.com; jangnatok@hotmail.com; Kanikue@gmail.com; Ppoker@innu.ca; manager@townofnwr.ca; Ed.tuttauk@nunatsiavut.com; Preid@innu.ca; localservicepa@yahoo.ca; generalmanager@lfuscl.com; porthopesimpson@nf.aibn.com; lscap@nf.aibn.com; Diane.gear@nunatsiavut.com; Glen.sheppard@nunatsiavut.com; townmanager@rigolet.ca; richardrich749@gmail.com; jandrew@innu.ca; madams@innudev.com; stanthony@nf.aibn.com; s.elliott@nf.aibn.com; Jason.kelly@dfo-mpo.gc.ca; Glenn.troke@ec.gc.ca; Clement.murphy@tc.gc.ca; Randy.thompson@pc.gc.ca; information@forces.gc.ca; jmcgrath@sjpa.com; Davidlewis@gov.nl.ca; rellsworth@stjohns.ca; jjoensen@ffaw.net; Dwan Street (DStreet@ffaw.net); Maureen.murphy@mi.mun.ca; bchapman@sympatico.ca; dbutler@seafoodproducers.org; pgrant@beothic.com; rrbarnes@nf.sympatico.ca; dphilpott@quinsea.com; Martha@deepatlanticsea.com; dphilpott@quinsea.com; John.c.kearley@carino.ca; Dphilpott@quinsea.com; todd@hsfgroup.ca; keith@natfish.ca; jeff@nrl.nf.net; jeveleigh@notredameseafoods.com; sgoff@san-can.com; rellis@oceanchoice.com; dearle@quinlanbros.ca; zedel@mun.ca