



Amendment Report

ENVIRONMENTAL ASSESSMENT NORTHEAST NEWFOUNDLAND SLOPE 2-D SEISMIC SURVEY

Client:

Multi Klient Invest AS

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2012 - 2017

RPS Energy Canada

1310 Hollis Street, Suite 205

Halifax, Nova Scotia, Canada

(902) 425-1622

www.rpsgroup.com/canada

Prepared By:

Keel HSE Management Inc.

in association with

Spatial Metrics Atlantic

Limited

for RPS Group

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Executive Summary

Multi Klient Invest (MKI) AS and TGS NOPEC Geophysical Company ASA have been conducting a multiyear two dimensional (2D) seismic survey program within a large regional area described as the Northeast Newfoundland Slope and in the last 3 years have acquired more than 44,000 line kilometres of 2D seismic data. The 2D seismic surveys occur between May 1 and November 30. MKI has applied to the Canada-Newfoundland and Labrador Offshore Petroleum Board for an amendment to the environmental assessment for the Project to include the option to acquire 3D seismic surveys within the same annual timeframe and Project Area between the months of May and November, inclusive.

Under paragraph 138(1) (b) *Canada-Newfoundland Atlantic Accord Implementation Act (Accord Act* , the C-NLOPB determined that the 2D Project, with applied mitigation measures as described, is not likely to cause significant adverse environmental effects in their letter of Determination of Significance dated September 4, 2012.

The analysis in this amendment report is based on proposed survey equipment, stakeholder engagement, scientific evidence and the previously assessed environmental assessment for this project. As detailed in the report, various potential adverse environmental effects of the Project were assessed including effects on marine and migratory birds, marine mammals, sea turtles, marine fish, commercial fishing, marine traffic, and scientific research surveys. Taking into account MKI's implementation of its commitments, environmental protection best practices and mitigation measures and through its compliance with the C-NLOPB's regulatory requirements and the conditions included in the original EA Report, the Project would not be likely to cause significant adverse environmental effects.

1 Introduction

This is an amendment to the environmental assessment (EA) report originally submitted to the Canada-Newfoundland Labrador Offshore Petroleum Board (C-NLOPB) by Multi Klient Invest AS (MKI) (YOLO Environmental Inc. 2012) to conduct marine 2D seismic reflection surveys offshore in the region of the Northeast Newfoundland Slope. MKI now wish to also include the acquisition of 3D surveys in this EA. MKI obtained a letter of Determination of Significance dated September 4, 2012. The amendment requires approval through the C-NLOPB.

This amendment addresses the technical differences of 3D surveying and evaluates potential effects on the valued ecosystem components (VECs) from the 3D surveys.

The Project temporal and spatial scopes for the 3D survey will remain the same as for the 2D survey. The surveys involve an offshore region that encompasses portions of the southern Labrador Shelf, Orphan Basin (east and west), Flemish Pass Basin and Jeanne d'Arc Basin of the northeast Newfoundland Slope in the Atlantic Ocean (Figure 1.1).

1.1 Purpose and Need for the Amendment

The 2D seismic data previously acquired has allowed MKI and oil companies who have licensed the data to evaluate and high grade sub areas that will potentially be the subject of upcoming Call for Bids. It is these high graded areas where MKI may look to acquire 3D. The 3D data which has much better spatial resolution than 2D data would be made available ahead of the Call for Bids which will allow companies to fully assess the prospectivity and value of available Parcels.

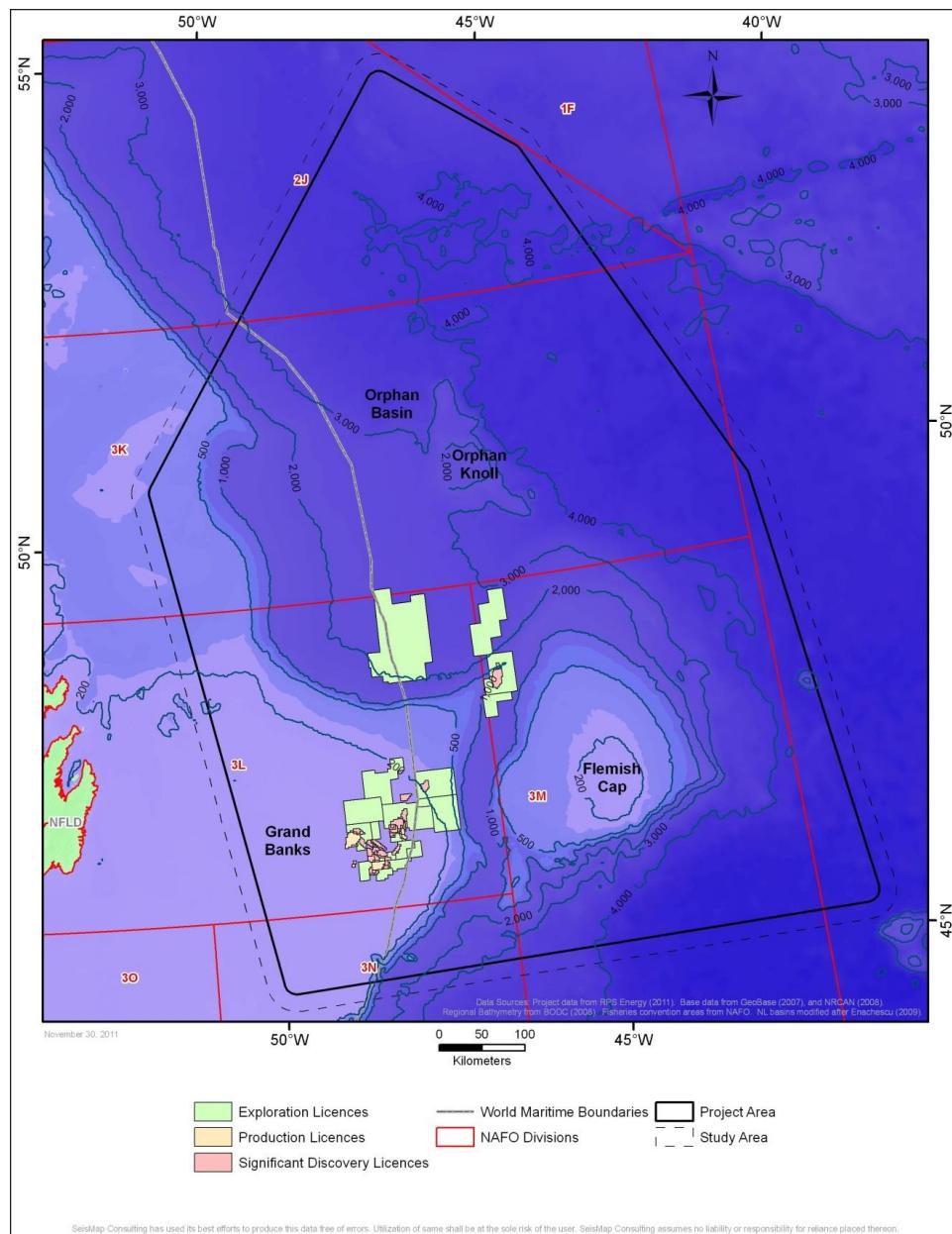


Figure 1.1: 2D and 3D Regional Seismic Survey Study Area

1.2 Proponent Contact Information

Multi Klient Invest AS
15150 Memorial Drive
Houston, Texas, USA
77079

Mr. Jerry Witney,
Petroleum Geo-Services
Vice President North America MultiClient
Tel: (281) 509-8000
Email: jerry.witney@pgs.com

Mr. Neil Paddy
Petroleum Geo-Services
Contract Manager
Tel: (281) 509-8000
Email: neil.paddy@pgs.com

1.3 Stakeholder Engagement

Annually, MKI conducts information exchanges to keep stakeholders informed about its ongoing surveys and to obtain valuable input that has proven to contribute to the Project's overall success. Meetings were held on December 16, 2014 with the following stakeholders who expressed an interest to discuss the program:

- Fish, Food and Allied Workers
- Ocean Choice Limited / Groundfish Enterprise Allocation Council / Association of Seafood Producers
- Fisheries and Oceans Canada

2 Project Description

MKI proposes to conduct one or more 3D seismic surveys in the Northeast Newfoundland Slope over the next three years (2015-2017).

2.1 Project Components

2.1.1 Project Activity Area

The activity area for the 3D survey will occur within the same approved Project Area. Specific survey locations have yet to be selected but will be provided to the C-NLOPB and shared with fisher organizations and DFO as future updates.

2.1.2 Schedule

The duration of a 3D survey is estimated at 100 to 150 days in a given year. A survey would typically commence at the beginning of the summer but the exact dates will depend on the location and weather conditions.

2.1.3 Air Source Array and Hydrophone System

2.1.3.1 3-D Surveys

The 3D vessel will tow two sources each of three subarrays at equal distance, 100 to 200 m behind the ship. The sources will be activated alternately approximately every 25 m. Behind the source are the 10 to 16 streamer cables, each 8,100 m to 10,000 m in length and spread out over a width of 1500 m to 2400 m. The 3D seismic surveys provide data with greater resolution for the detection of potential existing oil and gas reservoirs, and in order to provide this greater resolution, the survey lines are in closer proximity, spaced about 600 m apart. However, data is not collected in consecutive lines. Upon completion of a survey line, the vessel runs out for the vessel turn around. The streamers extend a long distance behind the vessel. It will take about four hours for the vessel to turn around and collect another line. This may take 10-15 kilometre radius to complete before commencing the run in for the next survey line. Therefore, the next acquisition line in the grid may be spaced 10 to 15 kilometres from the previous acquisition line. Table 2.1 provides a comparison of typical 2D versus 3D parameters.

Table 2.1: Comparison of Typical 2D and 3D Survey Parameters

Parameter	2D	3D
Number and Length of Streamers	1 x 8100 m	10 to 16 x 8100 m
Streamer Separation	Single streamer	100 – 150 m between each streamer
Air Source Array total volume	3000 to 5000 cu in	3000 to 5000 cu in
Source Array Tow Depth	7 - 9 m	7 - 9 m

Record Length	8 - 13 sec	8 - 13 sec
Receiver Tow Depth	15-25 m	15-25 m
Vessel Turning Radius	8-12 km	10-15 km

In general the sound pressure level from a 3D source array is the same as a 2D source array. Sound attenuation was discussed in Sections 2 and 6 in the original EA report.

All streamers will be filled with polyurethane foam, thus “solid”. As a result there is no potential for leakage of fluids to the sea from in water equipment.

2.1.4 3D Vessel

The acquisition of proposed 3D programs will be carried out by a Ramform design seismic vessel (e.g., the M/V *Ramform Valiant* or a similar vessel; see Photo 1 below) which will tow the sound source (airgun array) and multiple streamers (10 to 16) containing receiving hydrophones. The specific seismic survey vessel that would be used is unknown at present but will be approved for operation in Canadian waters by Transport Canada and C-NLOPB as required. Ramform design seismic vessels are more powerful and have a longer at sea duration than typical 2D vessels and as a result the fuel capacity of these ships can range up to 1,550 t.



Photo 1: V Class Ramform Vessel

2.1.5 Vessel Operations

As with the 2D survey program, the 3D vessel speed will be approximately 10 to 12 knots while in transit (with towed gear onboard) and 4.5 knots when the survey gear is deployed, similar to a trawling fishing vessel.

The vessel owners and operator will comply with local and international standards and certification authorities through the submission of authorization requirements. The survey vessel will comply with all applicable regulations concerning management of waste and discharges of materials into the marine environment and meet the Offshore Waste Treatment Guidelines (NEB et al 2010). The 3D vessel will potentially be refuelled at sea using a dedicated supply vessel. MKI has within their safety management system approved policies and procedures that meet International Standards.

2.1.6 Logistical Support

2.1.6.1 Support Vessels

Two support vessels will be required for a 3D seismic survey; one to serve as a guard vessel (e.g., the M/V *Blain M.* or a similar vessel), and the other to serve as a supply, re-fuelling and crew change vessel. The specific support vessels that would be used during 3D surveys are unknown at present but will be approved for operation in Canadian waters by Transport Canada and C-NLOPB as required.

2.1.6.2 Shore Supplies

MKI will continue to use shore facilities in Newfoundland for refuelling and crew changes for 2D surveys. Bunkering of the 3D vessel in port will likely be at the commencement and conclusion of the survey, as required. No new shore base facilities will be established as part of this Project. MKI has dedicated representatives in St. John's for day-to-day survey management and liaison with fisher organizations, local services and regulators for both the 2D and 3D programs.

2.1.6.3 Helicopters

Ramform vessels are equipped with a helicopter platform and whilst it is not planned to use helicopters for crew changes or re-supply they could be used in case of medical and other emergencies.

2.2 Emissions and Waste Discharges

The project vessels and towed arrays will generate underwater noise. All the project vessels generate atmospheric, light, liquid, and solid emissions. Discharges and emissions from this program will be similar to those of any standard marine vessel and MKI will ensure compliance with applicable regulations as committed to in the original EA report.

2.3 Potential Accidents and Malfunctions

As described in the original EA in Section 2.6 there are unplanned situations that may be encountered during seismic operations. Potential hazards are addressed during site-specific planning as part of emergency response planning. Procedures are developed by MKI to ensure that such events are managed in a safe and environmentally sound manner. MKI have policies, plans, and procedures to prevent or mitigate effects of malfunctions and accidents.

All PGS 3D vessels are equipped with solid-streamer technology. As this type of streamer is not reliant on flotation fluid to achieve a neutral ballast state, it eliminates the risk of any accidental spill through damage to the streamer.

3 Potential Effects Assessment and Mitigation

In the original EA and responses to information requests, MKI committed to planning and best practice mitigation measures to reduce each of the potential adverse environmental effects that were identified in Sections 4.2.1 and 6.0, and potential interactions in Section 4.2.4. Section 6 provides the effects analysis and mitigation for seismic operations.

The footprint of the towed 3D streamer spread is 1.5 to 2.4 km wider than the 2D hydrophone deployment (zero spread); otherwise all deployed equipment is virtually the same. There will be three vessels in a 3D survey operation compared with two in a 2D survey operation. Also, the 3D survey effort entails closer surveys lines so the vessels will occupy a smaller survey area for a longer period of time. Therefore, the 3D survey will physically occupy more sea space compared to the 2D survey and thus there is more potential for spatial interactions with fishing efforts and entanglement with live fishing gear; and there is a potentially longer duration of underwater ensonification effects on marine life in a given area due to the closer acquisition lines and small survey grid compared to a 2D survey grid.

Mitigation measures implemented for monitoring and management of sea space around the vessels and towed equipment will be consistent as for the ongoing 2D surveys. The Statement Of Canadian Practice mitigations of a safety zone; ramp up, ramp up delay and shutdown procedures; reduced and continuous vessel speed; use of a guard vessel; presence of Environmental Observers and Fisheries Liaison Officers; Notice to Mariners, and weekly communications with commercial fisheries and the Department of Fisheries, as committed to in the original EA, provide several layers of mitigation measures. The purpose of the “ramp up” procedure is to provide an acoustic warning for marine mammals, fish and sea turtles to minimize their exposure to the array sound source that may cause impairment by motivating them to move away from the sound source. With the 10 - 15km spacing between sequential data acquisition lines, the sound exposure levels will be well below the sound range considered to cause behavioural or physical effects, as discussed in detail for each marine biological VEC in Section 6 of the original EA report.

As described in the original EA, there has never been a record of a cetacean entanglement offshore Atlantic Canada over the several decades of seismic surveys with 2D or 3D equipment. The “ramp up” procedure, along with delay and shutdown mitigations is established, in part, to avoid marine mammal and gear entanglement. Similarly, there has been no record of sea turtle entrapment offshore Atlantic Canada. As with the 2D programs, there will be turtle guards fixed to each tail buoy.

The potential of space user conflict with fishers and fishing gear from an increased number of towed streamers in a focussed survey area will be mitigated. This will be mitigated by the presence of a Fisheries Liaison Officer and the effective communication and planning procedures established by MKI since commencing seismic surveys in this region in 2012.

Table 3.1 provides a summary review of the VECs, the interaction with Project activities, a review of

potential effects and applied mitigation established in the original EA that are directly applicable to the 3D survey.

Table 3.1: Summary of Project Activity Interactions, Potential Effects and Mitigation Measures

VEC	Interaction	Potential Effects	Mitigation
Marine and Migratory Birds/Species at Risk/Critical Habitats	Vessel Presence	Disturbance from increased vessel traffic causing localized avoidance or attraction	Waste management implemented to control food waste discharges, maintaining compliance with OWTG (NEB et al 2010)
	Vessel lighting	Attraction to lights causing injury or mortality from hitting ship or becoming stranded or entangled in equipment	A dedicated observer will be on board the seismic vessel to record marine birds and incidents of collisions and stranding.
	Noise produced by air source array	Hearing damage	Implement ramp up procedure of air source array
	Accidental hydrocarbon spill	Oiling of birds	Vessel compliant with audit prior to survey. Maintenance of equipment and responsible management of such equipment. Compliance with OWTG (NEB et al. 2010) and MARPOL for all discharges. A dedicated observer will be on board the seismic vessel to record marine birds and incidents of oiling and stranding.
Marine Mammals/Species at Risk/Critical Habitats	Vessel Presence	Strikes Temporary behavioral (aversion or attraction) effects to vessels	Strike avoidance practices, including constant speed and course maintained by seismic vessels.
	Noise from increased vessel traffic	Behavioral changes Physiological changes Masking of sound Hearing impairment	Vessels would maintain a constant speed of about 4.5 knots while surveying. Implement ramp up procedure of air source array
	Sound produced from air source array	Communication masking; behavioral effects associated with seismic noise (e.g., avoidance, changes in migration, reproductive and feeding behaviors); and direct physical effects associated with seismic	Adherence to the Statement of Canadian Practice on the Mitigation of Seismic Noise in the Marine Environment. A 500-m safety zone from the air source array and monitoring program for whale species at risk during survey data acquisition will be

		noise from air gun during 3D programs, (e.g. TTS, PTS, mortality).	implemented. Ramp-up, ramp up delay, and shutdown procedures implemented. Dedicated Marine Mammal Observers will be onboard the seismic vessel. If a concentration of marine mammals is observed in a particular area, the survey can shift to another part of the Study Area until the concentration has moved away.
Sea Turtles/Critical Habitat	Vessel Presence	Collision with seismic vessel Entrapment in towed streamers	Vessels would maintain a constant speed of about 4.5 knots while surveying. Implement ramp up procedure of air source array. Environmental Observers onboard. Use of turtle guards.
	Sound produced from air source array	Auditory damage and behavioural effects (e.g., avoidance behaviour, increased swimming speeds).	Adherence to the Statement of Canadian Practice on the Mitigation of Seismic Noise in the Marine Environment. A 500-m safety zone from the air source array and monitoring program for sea turtles during survey data acquisition will be implemented. Ramp-up, ramp up delay, and shutdown procedures implemented. Dedicated Marine Mammal Observers will be onboard the seismic vessel.
Marine Fish and Shellfish/Species at Risk/Critical Habitats	Sound produced by air source array	Hearing and sound sensory damage Auditory and communication masking Avoidance behavior causing horizontal and or vertical distribution shift Physical and anatomical effects	Ramp-up and Shutdown procedures implemented. Operations will not take place within the EBSAs until after July.
	Noise from increase	Localized avoidance	Operations will not take place

	vessel traffic		within the EBSAs until after July
Traditional and Commercial Fisheries Fisheries Research Surveys	Seismic survey has the potential to affect the behavior and movement of commercial fish species	Potential loss of income to resource users due to change in fish behavior and spatial distribution.	Tracking of other area vessels through VMS A Notice to Mariners on the location and scheduling of seismic activities will be issued. Communication mechanisms will be developed with the fishing industry and DFO research surveys. Fisheries observers on the seismic vessel will monitor fishing activity and serve as a liaison between the fishing and seismic vessels; A Notice to Shipping and notification on the CBC Fisheries Broadcast on the location and scheduling of seismic activities will be issued.
	Fishing gear damage	Potential loss of income if gear is damaged by vessels and or towed array	Vessel tracking and communications as described above. MKI will comply with C-NLOPB's compensation guidelines.
Accidents/Malfunction	Accidents and spills would have the potential to release hydrocarbons into the marine environment through fuel loss.	Adverse changes to ecosystem process and marine life presence due to spills, depending upon the spill or accident characteristics.	All vessels will adhere to approved procedures, MARPOL and SOPEP Manuals Only solid streamers will be used
Effects of the Environment on the Project	Interaction with pack ice Extreme storms	The project schedule may be altered due to weather shutdowns	Weather forecasting service will be obtained Review of ice monitoring reports

4 Cumulative Effects Assessment

The assessment of cumulative effects entails the consideration of projects and activities that have been or will likely be carried out that have or would have residual effects that may act in a cumulative manner with the residual effects of the proposed Project on the environment.

4.1 Residual Effects from the Project

Potential adverse effects from the Project and mitigation measures are identified in Table 3.1. Those effects that were considered highly localized or negligible in magnitude were not considered in this assessment of cumulative effects, as it was determined they would not have potential to interact with residual effects of other projects in any measureable manner. This is summarized in the table below which also shows a level of confidence in the assessment.

Table 4.1: Residual Effects Rating

VEC	Residual Adverse Environmental Effect Rating	Probability of Occurrence (Likelihood)	Level of Confidence
Marine and Migratory Birds	Not Significant	na	High
Marine Fish and Shellfish	Not Significant	na	High
Marine Mammals	Not Significant	na	Medium
Sea Turtles	Not Significant	na	High
Species at Risk	Not Significant	na	High
Sensitive Areas	Not Significant	na	High
Commercial Fisheries	Not Significant	na	High
na = likelihood is only indicated for those Environmental Components that have a significant residual adverse environmental effect rating.			
Residual Effects Rating: S=Significant Adverse Environmental Effect; N=Non-significant Adverse Environmental Effect; P=Positive Environmental Effect			
Probability of Occurrence: Based on professional judgment; 1 = Low; 2 = Medium; 3 = High; N/A = Not applicable (effect is not predicted to be significant)			
Scientific Uncertainty: Based on scientific information and statistical analysis or professional judgment;			

In consideration of MKI's planned mitigation the following residual effects from the Project have potential to interact cumulatively:

- Temporary displacement of marine mammals due to exposure to anthropogenic sound input and vessel traffic; and
- Temporary displacement of fish due to exposure to anthropogenic sound input.

4.2 Identification of Other Projects and Activities

Other approved activities that would likely be carried out in the Project area over the same time period are identified in Table 4.2.

Table 4.2: Summary of Offshore Activities, Project Interactions and Mitigation Project

Activity	Interaction with Project	Mitigation Measures
Offshore Petroleum Production Exxon Mobil's HMDC, production until 2036. Suncor – Terra Nova prdn until 2027 Husky – White Rose prdn until 2020	The active production platform located in study area.	Avoidance mitigation as per C-NLOPB requirements for a safety zone around platforms/facilities
Offshore Petroleum Drilling Exxon Mobil Hebron Project commence offshore 2016-ongoing Husky exploration drilling 2008-2017 Suncor exploration drilling 2009-2017 Statoil exploration drilling 2008-2016	Four drilling rigs planned to operate on the Grand Banks presently and in the future. No spatial overlap anticipated due to distance between projects. Temporal overlap may occur.	Avoidance mitigation as per C-NLOPB requirements for a safety zone around platforms/facilities
Geophysical Exploration Husky 2D, 3D, 4D + geophysical surveys, in 2013 – 2020, March to November, Statoil 3D, 2D + geophysical surveys in 2011-2019, April to October Chevron 2D, 3D + geophysical in 2012-2017, May to November, 30 to 120 days Suncor 2D, 3D, 4D, 2014-2024 GXT 2D grav/mag, 2014-2018 ExxonMobil 3D/4D May to Dec 2015 MKI and TGS NOPEC 2D survey, 2012-2017 Bridgeport Aerial Gravity Survey 2015-2019	Eight programs in the same region with high potential for overlap. Possible for future temporal and spatial overlaps.	Notice to Shipping Notice to Mariners VMS tracking of all area vessels Internal MKI planning between 2D and 3D crews (SIMOPS)

Activity	Interaction with Project	Mitigation Measures
Commercial Marine Traffic Heavy domestic and international marine traffic over the Grand Banks.	Project is not transiting any shipping channels	Notice to Shipping VMS tracking of all area vessels
Commercial Fishing Fishing effort is diverse and shifting in response to stock locations	Temporal and spatial overlaps may occur.	Establish advance and ongoing communication with fishing industry representatives and DFO Avoidance of fishing gear through communication tools Notice to Shipping CBC Fishermen's Broadcast Notice to Mariners on the location and scheduling of seismic activities Dedicated FLO onboard VMS tracking of all area vessels Single Point of Contact
Scientific Research Surveys Spring and fall bottom trawl surveys, fall post-season crab trap survey	Temporal and spatial overlaps may occur	Establish advance and ongoing communication with fishing industry representatives, and DFO Avoidance of fishing gear through communication tools; Notice to Shipping, CBC Fishermen's Broadcast Notice to Mariners on the location and scheduling of seismic activities Dedicated FLO onboard VMS tracking of all area vessels Single Point of Contact

Any potential cumulative environmental effects would be minimal due to the mitigation measures that would reduce exposure of marine mammals to simultaneous and overlapping noise sources. Displacement of marine mammals and fish would be temporary and reversible. The distance between MKI's 2D and 3D seismic vessels, other vessels and offshore drilling and production facilities in the Project area would minimize the potential for cumulative effects to occur. Therefore, it is not likely that there would be any significant cumulative environmental effects resulting from this project.

5 Conclusions

The Project Area is not known to be an important feeding, rearing or mating area for any of the listed species at risk that could occur in the area. Ecological processes will not be disturbed outside natural variability, and ecosystem structure and function will not be critically affected. All effects are reversible, of limited duration, magnitude, and geographic extent. With the application of appropriate mitigation, all Project effects have been rated as not adversely significant. Most of the species that could occur in the Project Area are more vulnerable to direct and indirect fishing activities; entanglement in fishing gear; collisions with ships; and/or pollution.

As described in the original EA Report, all appropriate mitigation measures and response planning will be in place to limit any potential pollution as a result of the Project; vessel activity will be restricted to the Project Area; and noise levels associated with the Project are not predicted to result in physical harm to marine mammals, marine fish, seabirds or sea turtles. Based on the above, no harm to listed species or their critical habitat is anticipated to occur as a result of the Project at any time of year. Previous 2D, 3D seismic surveys, well site geohazard and VSP surveys conducted in this area have not resulted in claims that significant adverse effects to biological or socio-economic VECs of the area. Therefore, there is high confidence that the mitigation in place of avoidance is effective to ensure that no harm to listed species, critical habitats or fisheries harvesting is anticipated to occur as a result of the Project.

The significance of residual environmental effects (i.e., after mitigation has been applied), including cumulative effects, is predicted not likely to be significantly adverse for all VECs. In conclusion, this amendment to the environmental assessment predicts that MKI's proposed 3D seismic programs can be conducted with no likely significant adverse effects on the biological and socio-economic resources of the Northeast Newfoundland Slope.

6 Literature Cited

National Energy Board, Canada Nova Scotia Offshore Petroleum Board, Canada-Newfoundland and Labrador Offshore Petroleum Board. 2010. Offshore Waste Treatment Guidelines.

YOLO Environmental Inc. 2012. Environmental Assessment of MKI INVEST AS's Northeast Newfoundland Slope 2-D Seismic Survey Program 2012-2017. Prepared for RPS Energy (Canada) and MKI AS and TGS NOPEC Geophysical Company ASA.

Appendix A Consultation Report

INTRODUCTION

MKI received approval from the C-NLOPB for a 2D multi-year seismic survey offshore Newfoundland and Labrador in 2012. MKI is proposing to return to the Northeast Newfoundland Slope survey in late May of 2015. It is anticipated that the *M/V Sanco Spirit or an equivalent PGS Vessel* will arrive in Newfoundland late May 2015. The 2D program will be well within the previously assessed Study Area, defined in the multi- year Environmental Assessment. Additionally MKI intends to file an Amendment with the C-NLOPB to collect 3D data within the assessed area. For the 2015 survey, an additional vessel will be brought to Newfoundland to collect 3D data. The vessel will be one of the PGS owned Ramform class vessels. It is expected to arrive in Newfoundland in the later part of May 2015, and to commence operations upon approval from the C-NLOPB.

CONSULTATIONS

In preparation to provide the C-NLOPB with an update on the existing 2D multi-year Environmental Assessment and the 3D Amendment, MKI representatives travelled to Newfoundland to begin the consultations with stakeholders. The MKI representatives included Jerry Witney, Neil Paddy (Petroleum Geo-Services), Darlene Davis (RPS Energy) and Sue Belford (Keel HSE Management Inc.).

Table 1 – Stakeholder Meeting Schedule

Date	Time	Stakeholder	Attendees
Dec 16 th	11:00 am-12:30pm	FFAW / Unifor FFAW / Unifor One Ocean	Mr. Johan Joensen Ms. Robyn Saunders Ms. Maureen Murphy (Absent)
Dec 16 th	1:30 pm-2:30 pm	Ocean Choice Int'l Newfound Resource	Mr. Rick Ellis Mr. Joel Hickey
Dec 16 th	3:30pm– 4:30pm	Department of Fisheries & Oceans	Mr. Earl Dawe Mr. Darrell Mullowney

MEETING MINUTES**Fish Food & Allied Workers Union (FFAW/Unifor)****1368 Topsail Road****St. John's, NF**

Date: December 16, 2014

Time: 11:00 a.m. to 12:30 p.m.

Attendance:

- | | |
|-------------------|---|
| 1) Jerry Witney | MKI Representative / Petroleum Geo-Services (PGS) |
| 2) Darlene Davis | MKI Representative/ RPS Energy Canada Ltd. (RPS) |
| 3) Neil Paddy | MKI Representative/Petroleum Geo-Services (PGS) |
| 4) Robyn Saunders | FFAW |
| 5) Johan Joensen | FFAW |
| 6) Maureen Murphy | One Ocean (Absent) |
| 7) Sue Belford | Keel HSE Management Inc. |

The meeting opened with brief introductions.

MKI representative (JW) gave a presentation that outlined the multi year program (EA 2012-2017) which is a six year program. MKI is the Operator, has a cooperation agreement with TGS, and as a reminder MKI is a subsidiary of PGS. The program is funded by MKI and TGS. Data licensed to interested companies to make a profit at the end of the day.

MKI (JW) explained that Nalcor has a vested interest in the project as a pre-committing company. Pre-funding allows Nalcor to work with PGS on the design of the survey lines, etc., like any other company that has licence data.

MKI (JW) explained that the company has been active for three seasons, 2012, 2013 and 2014 utilizing the 2D vessel M/V Sanco Spirit on the Northeast Newfoundland Slope. It is MKI's intention to return in late May 2015 to resume the multi year program with the same vessel M/V Sanco Spirit, and MKI is currently working on an EA update and an amendment to the program for 2015.

MKI (JW) shared data collection details on three (3) current surveys.

North East Newfoundland Slope (Orphan Basin and Flemish Pass Basin)

2012 & 2013 22,489 km data acquired and processed

2014 21,750 km data acquired, to be processed

Labrador Sea

2011, 2012 & 2013	25,350 km data acquired and processed
2014	4,618 km data acquired, to be processed

Southern Grand Banks

2014	10,522 km data acquired, to be processed
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MKI (JW) reviewed the reporting structure relating to the fishing community used in the previous years, and FFAW concurred that good communications have been maintained in the past years with the fishery. Communication with FFAW and One Ocean have entailed:

- Twice daily vessel position and status information sent to stakeholders;
- Weekly communications meetings held between MKI, FFAW and Ocean Choice to review look ahead acquisition plan; and
- Updates of the operations were submitted to Single Point of Contact (SPOC) for the vessel and liaison with the fishing communities.

MKI (JW) reported that there were no incidents with fishing vessels during 2014 survey operations.

- The fisheries liaison officers' (FLOs'), supplied by the Fish, Food and Allied Workers, reports show that the M/V Sanco Spirit vessel encountered 9 fishing vessels on 6 separate days during the season.
- Drifting fishing debris was snagged on a source array door on August 10th and reported to the C-NLOPB.
- Other seismic operations (Statoil, EMGS) outside the 200 nm limit did have a number of encounters and incidents with foreign fishing vessels.

MKI (JW) noted that the seismic survey experienced restricted access to certain lines due to the Industry-DFO Collaborative Post-Season Trap Survey for Snow-Crab, and this resulted in some incomplete survey lines.

MKI (JW) explained that the C-NLOPB Land Tenure system is driving seismic exploration. MKI's 2014 seismic survey was focused over new Sectors for future Call for Bids announced last December: NL01-EN and NL01-LS. Nominations are now closed to subdivide the NL01-EN Sector into 9 Parcels each around 2,000 sq km. Nominations are also closed for the NL14-01EN Areas of Interest (AOI) to be announced March 15; the Call for Bids for this AOI will take place in December 2016. Another call for an AOI will be introduced for Labrador South in 2015.

MKI (JW) intends to collect further 2D seismic in the area in 2015 and complete the lines not acquired in 2014. NL14-01 should be announced March/April 2015. MKI potentially will infill the existing 10 X 10 km grid over this area, and potential extend the 10 x 10 km grid in the Project Area.

Additionally MKI is planning to conduct a 3D Multi Client Survey. The exact location is under review at this time. Other prospective areas are based on initial interpretation of previously acquired 2D seismic, and industry interest and feedback. All data collection will be well within the Study Area.

(JW) The vessel for the 3D survey will be one of the PGS Ramform-class vessels.



MKI discussed to its knowledge other activity the area and FFAW added its input into what the fishing Industry expects in 2015.

Seismic projects expected to occur in 2015:

- Statoil: 3D over EL blocks
- ExxonMobil: 3D over Hibernia

EMGS: EM program continuation in the Flemish Pass Basin

GXT: 2D Grand Span – possibly using two survey vessels

Suncor/ExxonMobil: Potential 3D over NL13-01

- Husky : Unsure at this time with their intentions

Drilling projects:

- Statoil : Continued Flemish Pass exploration program
- Other operators: Jeanne d'Arc Basin activity

FFAW provided information on a two vessel cable laying project (Hibernia Express) between New Jersey to Halifax, to Cape Race commencing April 1, followed by a leg to Ireland. TE Subcom is tasked with the trans- Atlantic cable installation on behalf of Hibernia Networks.

(JW) In summary to the meeting MKI will return to NE Newfoundland Slope in 2015

- Planning for both 2D and 3D seismic acquisition
- Decision will be based upon; Location of NL14-01, Various Business Drivers, other Land Tenure Announcements
- Expected that M/V Sanco Spirit and a "V Class" Ramform vessel will commence on NE Newfoundland Slope Survey late May 2015

Upon arrival, MKI will:

- Continue weekly communication meetings with FFAW, OCI and others
- Continue with avoidance of fixed gear and actively heavily fished areas
- Establish and circulate weekly acquisition plan

As in previous seasons, the following measures will be in place:

- Support vessels
- FLO present on seismic vessels
- Twice daily broadcast of seismic vessel position and status
- MMO's present on seismic vessels
- Inuit observers/Inuit MMO on board support vessel and seismic vessel

(JW) MKI has a shore manager stationed in St. John's for the duration of the project, and he is always available for assistance.

(SB) shared information and discussion on shrimp, snow crab and turbot fisheries.

(RS) Comment: The shrimp landings are decreasing in the south. Shrimp are moving north.

(FFAW) Comment: There will be no shrimp fishing in 3L in 2015. Fishing operations are more north. They are losing their quota in 3L including the area called the shrimp triangle. They await allocation from the DFO Ottawa in March/April. 200-400 m water depth is where they usually catch shrimp in 3L.

(RS) Comment: There is an increase in groundfish fishing, as fish are moving from the Gulf of Maine

seeking cooler water masses. Groundfish activity will be increasing in 3L and 3K – “the Bonavista Corridor” for cod.

(FFAW) Comment: the 2014 snow crab season was a really good year in 3L. Water temperatures at the bottom were really cold. Hydrographic studies of 3LNO show that they are colder on the bottom than 3K. The Grand Banks 3L and 3D are also shallower than 3K. Terminally moulted crab is a smaller size and will not be allowed in the fishery.

(FFAW) Comment: We are losing shrimp in 3L but crab is good. We are losing crab in 3K but good on shrimp.

(FFAW) Comment: They prefer to see old data used; it is pertinent that an EA is informed by the species in the past for context mapping spatial distribution.

(FFAW) Comment: Turbot fishermen had a good year. Turbot is Greenland halibut, haddock is a by-catch in Newfoundland.

(FFAW) Comment: For any foreign vessel that does not respond to attempted radio communication, FFAW wants operators to try to get vessel name to report to the Federal Agencies. They want to look into this issue. All FLO's will be asked to deliver more detail regardless if the vessel is inside or outside Canadian limits but within the NAFO regulated boundaries

(NP) MKI shared its policies on appropriate training for FLO's to work on their projects.

(FFAW) and (NP) discussed FLO availability for 2015, given the number of vessels and projects.

(JW) and (FFAW) agreed that future meetings would take place when MKI had more details to share on its 2D and 3D acquisition maps for discussion on the 2015 season

Meeting adjourned.

MEETING MINUTES**Ocean Choice and Newfound Resources****1315 Topsail Road****St. John's, NF**

Date: December 16, 2014

Time: 11:00 a.m. to 12:30 p.m.

Attendance:

- | | |
|------------------|---|
| 1) Jerry Witney | MKI Representative / Petroleum Geo-Services (PGS) |
| 2) Darlene Davis | MKI Representative/ RPS Energy Canada Ltd. (RPS) |
| 3) Neil Paddy | MKI Representative/Petroleum Geo-Services (PGS) |
| 4) Sue Belford | Keel HSE Management Inc. |
| 5) Joel Hicks | Newfound Resources Ltd. |
| 6) Rick Ellis | Ocean Choice International |

The meeting opened with brief introductions.

An MKI representative (JW) gave a presentation that outlined the multi year program (EA 2012-2017) which is a six year program. MKI is the Operator, has a cooperation agreement with TGS, and as a reminder MKI is a subsidiary of PGS. The program is funded by MKI and TGS. Data licensed to interested companies to make a profit at end of day. (JW) explained that Nalcor has a vested interest in the project as a pre-committing company. Pre-funding allows Nalcor to work with PGS on the design of the lines etc., like any other company that license data.

(JW) MKI has been active for three seasons, 2012, 2013 and 2014 in the Northeast Newfoundland Slope. It is MKIs intention to return this 2015 season on June 1st to resume the multi year program with the same vessel Sanco Spirit or suitable vessel, and MKI is currently working on an EA update and 3D Amendment to the program for 2015.

(JW) MKI shared data collection details on three (3) current surveys:

North East Newfoundland Slope (Orphan Basin and Flemish Pass Basin)

- | | |
|-------------|--|
| 2012 & 2013 | 22,489 km data acquired and processed |
| 2014 | 21,750 km data acquired, to be processed |

Labrador Sea

- | | |
|-------------------|---|
| 2011, 2012 & 2013 | 25,350 km data acquired and processed |
| 2014 | 4,618 km data acquired, to be processed |

Southern Grand Banks

2014 10,522 km data acquired, to be processed

(JW) Reviewed the reporting structure used in the previous years, and Ocean Choice concurred that good communications have been maintained in the past years with the fishery;

- Twice daily vessel position and status information sent to stakeholders
- Weekly communications meetings held between MKI, FFAW and Ocean Choice to review look ahead acquisition plan
- Updates of the operations were submitted to SPOC for the vessel and liaison with the fishing communities

(JW) Reported no incidents with fishing vessels during 2014 survey operations

- The fisheries liaison officers (FLO's) were supplied by the Fish, Food and Allied Workers
- Reports show that the M/V Sanco Spirit vessel encountered 9 fishing vessels on 6 separate days during the season
- Lost/drifting gear was snagged on source array door on August 10th – reported
- Other seismic operations (Statoil, EMGS) outside the 200 nm limit did have a number of encounters and
- incidents with foreign fishing vessels

(JW) MKI had restricted access to certain lines due to the Industry-DFO Collaborative Post-Season Trap Survey for Snow Crab, and this resulted in some incomplete survey lines

MKI (JW) explained that the Land Tenure system is driving seismic exploration. The MKI 2014 seismic survey was focused over Sectors for future Call for Bids announced last December: NL01-EN and NL01-LS. Nominations are now closed to subdivide the NL01-EN Sector into 9 Parcels each around 2,000 sq km. Nominations are also closed for the NL14-01EN Areas of Interest (AOI) to be announced March 2015; and the Call for Bids for this AOI will take place in December 2016

MKI (JW) indicated that other regions will be introduced in the coming year;

MKI (JW) intends to collect further 2D seismic in the area in 2015 and complete lines not acquired in 2014. NL14-01 should be announced March/April 2015. MKI potentially will infill of existing 10 X 10 km grid over this area, and potential extend the 10 x 10 km grid in the Project Area.

(JW) Additionally MKI is planning to conduct 3D Multi Client Survey. The exact location is under review at this time. Other prospective areas are based on initial interpretation of previously acquired 2D seismic and Industry interest and feedback. All data collection will be well within the Study Area.

(JW) The vessel for the 3D survey will be one of the PGS Ramform-class vessels.

(JW and OCI) MKI discussed to its knowledge other activity the area and OCI added its input into what Industry expects in 2015;

Seismic

Statoil: 3D over EL blocks

ExxonMobil: 3D over Hibernia

EMGS: EM program continuation in the Flemish Pass Basin

GXT: 2D Grand Span

Suncor/ExxonMobil: Potential 3D over NL13-01

Husky: Unsure at this time with their intentions

Drilling

Statoil: Continued Flemish Pass exploration program

Other operators: Jeanne d'Arc Basin activity

(JW) In summary to the meeting MKI will return to NE Newfoundland Slope in 2015

- Planning for both 2D and 3D seismic acquisition
- Decision will be based upon; Location of NL14-01, Various Business Drivers, other Land Tenure Announcements
- Expected that the M/V Sanco Spirit and a "V Class" Ramform will commence on NE Newfoundland Slope Survey late May 2015

Upon Arrival, MKI will:

- Continue weekly communication meetings with FFAW, OCI and others
- Continue with avoidance of fixed gear and actively heavily fished areas
- Establish and circulate weekly acquisition plan established and circulated

As in previous seasons, the following measures will be in place:

- Support vessels
- FLO present on seismic vessels
- Twice daily broadcast of seismic vessel position and status
- MMO's present on seismic vessels
- Inuit observers/Inuit MMO on board support vessel and seismic vessel

(JW) MKI has a shore manager stationed in St. John's for the duration of the project, and he is always available for assistance.

(JW) and (OCI) had further discussion as with FFAW with regard to foreign fishing vessels not responding to attempted radio contact.

(OCI) Comment: This is a NAFO regulated area, foreign fishing vessels are not responding. PGS offered to provide OCI with additional information.

(JW) One way communication does not work. No one really seemed to know where these vessels seemed to be.

(OCI) OCI owns 93% of the yellowtail quota. OCI also fishes for plaice, cod, and haddock west of the Grand Banks. Redfish are fished in 3L and not in 3MN. A new grey sole quota was released by NAFO. Turbot fishing in 2J and 3L was exceptional in 2014. Turbot are fished mostly in May and June in 3L.

(OCI) Comment: Area 3L will be closed for shrimp in 2015. Then it will be re-assessed for 2016. He suspects in his opinion it won't re-open until approximately 2018.

(OCI) Comment: The shrimp catch is decreasing and the cod catch is increasing. Fishers are experiencing a lot of cod by-catch.

(OCI) Comment: Small research produced for DFO on haddock, 2J, Area 6. Quota cuts are expected.

(OCI & SB) Comment: Snow crab remains steady in terms of landings based on 2010-2013 data.

(SB) No data yet available for 2014.

(SB) Comment: It is a struggle to gather effort specific data from DFO.

(MKI) and (OCI) discussion on the brick wall to try and obtain Fisheries Catch Data.

(OCI) Comment: Groundfish behaviour activity needs research sometime in the future as seismic moves forward.

(MKI) One Ocean, CAPP, needs the involvement of the IAGC (seismic) to try and have a meaningful research program. MKI can check with Houston Environmental Manager whom is a member of the IAGC on any discussions with regards to future research.

(NP) Comment: MKI may have a presentation on an accumulation of everything it knows regarding seismic source and the fishing industry. I will look into this.

(OCI) Comment: If seismic is happening in the east and fish are moving temporarily to the West, it would be nice to know.

(OCI) Comment: Georges Bank has an abundant amount of small scallops in the deep water. Fishing is changing and we can't explain it

(JW) and (OCI) agreed that future meetings would take place when MKI had more details to share on their 2D and 3D acquisition maps for discussion for the 2015 season.

Meeting adjourned.

MEETING MINUTES**Department of Fisheries and Ocean****St. John's, NF**

Date: December 16, 2014

Time: 3:30 p.m. - 4:30pm

Attendance:

- | | |
|----------------------|---|
| 1) Jerry Witney | MKI Representative / Petroleum Geo-Services (PGS) |
| 2) Darlene Davis | MKI Representative/ RPS Energy Canada Ltd. (RPS) |
| 3) Neil Paddy | MKI Representative/Petroleum Geo-Services (PGS) |
| 4) Sue Belford | Keel HSE Management Inc. |
| 5) Earle Dawe | Department of Fisheries and Oceans |
| 6) Darrell Mullowney | Department of Fisheries and Oceans |

The meeting opened with brief introductions.

MKI representative (JW) gave a presentation that outlined the multi year program (EA 2012-2017) which is a six year program. MKI is the Operator, has a cooperation agreement with TGS, and as a reminder MKI is a subsidiary of PGS. The program is funded by MKI and TGS. Data are licensed to interested companies to make a profit at end of day. (JW) explained that Nalcor has a vested interest in the project as a pre-committing company. Pre Funding allows Nalcor to work with PGS on the design of the lines etc., like any other company that license data.

(JW) MKI has been active for three seasons, 2012, 2013 and 2014 in the Northeast Newfoundland Slope. It is MKI intention to return this season in late May 2015 to resume the multi year program with the same vessel M/V Sanco Spirit or suitable vessel, and MKI is currently working on an EA update and 3D Amendment to the program for 2015.

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(JW) Reviewed the reporting structure used in the previous years, and indicated that FFAW has concurred that good communications have been maintained in the past years with the fishery. Communications had included:

- Twice daily vessel position and status information sent to stakeholders
- Weekly communications meetings held between MKI, FFAW and Ocean Choice to review look ahead acquisition plan
- Updates of the operations were submitted to SPOC for the vessel and liaison with the fishing communities

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(JW) other Regions will be introduced in the coming year.

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(JW) MKI discussed to its knowledge other activity in the area and what Industry expects in 2015.

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ExxonMobil: 3D over Hibernia

EMGS: EM program continuation in the Flemish Pass Basin

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Suncor/ExxonMobil: Potential 3D over NL13-01

Husky: Unsure at this time with their intentions

Drilling

Statoil: Continued Flemish Pass exploration program

Other operators: Jeanne d 'Arc Basin activity

(SB) shared information and discussion on shrimp, snow crab and turbot landings.

(JW) In summary to the meeting indicated that MKI will return to NE Newfoundland Slope in 2015.

MKI is planning for both 2D and 3D seismic acquisition.

Decisions will be based upon; location of NL14-01, various business drivers, and other Land Tenure Announcements.

It is expected that the M/V Sanco Spirit, (or suitable vessel) and a "V Class" Ramform will commence work on the NE Newfoundland Slope Survey in late May 2015

Upon arrival in St. John's, MKI will:

- Continue weekly communication meetings with FFAW & OCI
- Continue with avoidance of fixed gear and actively heavily fished areas
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- MMO's present on seismic vessels
- Inuit observers/Inuit MMO on board support vessel and seismic vessel

(JW) MKI has a shore manager stationed in St. John's for the duration of the project, and he is always available for assistance.

(DFO) Comment; DFO is definitely of the opinion that the shrimp are shifting north.

(SB) Comment: We have been attempting to get DFO data to show where the effort is by month and volume of landings.

(DFO)Comment: Data requests are sent to management to obtain the data creates a tremendous amount of work. It takes DFO quite some time to put this together. DFO 2014 data may be completed by February 2015. To obtain fishing effort distribution information, you need to go to specific individuals and several individuals work on this. Commercial fishery data can only come from formal request and this can take some time. DFO needs to key in manually all data and based on staffing and the nature of the data this can be very time consuming.

(DFO) Comment: Area 3L quotas have not changed much. May and June are prime time for crab and DFO appreciates that PGS continues to avoid this time frame.

(MKI) Comment: The snow crab study continues to present difficulty in the collection of survey data in this area.

(DFO) Comment: DFO agreed that there is nothing that can be done.

Meeting adjourned.