Project Description: Geochemical Data Acquisition and Seabed Sampling for Basin Modelling in Labrador Offshore (2015 to 2024)

Aivek Stantec Limited Partnership

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Table of Contents

LIST OF APPENDICIES

LIST OF TABLES

LIST OF FIGURES

Abbreviations

cm	centimetre
C-NLOPB	Canada-Newfoundland and Labrador Offshore Petroleum Board
COSEWIC	Committee on the Status of Endangered Species in Canada
CTD	Conductivity, temperature, depth
DFO	Fisheries and Oceans Canada
FFAW	Fish, Food and Allied Workers
h	hour
km	kilometre
m	metre
MBES	multibeam echosounder
NAFO	Northwest Atlantic Fisheries Organization
RV	Research Vessel
SARA	*Species at Risk Act*

1.0 INTRODUCTION

1.1 Background

MG3 is a specialist, independent geoscience survey company operating in both the offshore and coastal environment, providing worldwide marine geochemical, geophysical and geotechnical services. The onshore and offshore basins of Newfoundland and Labrador are vast and largely underexplored, and the modern technologies now available in onshore and offshore research could help identify potential new oil fields.

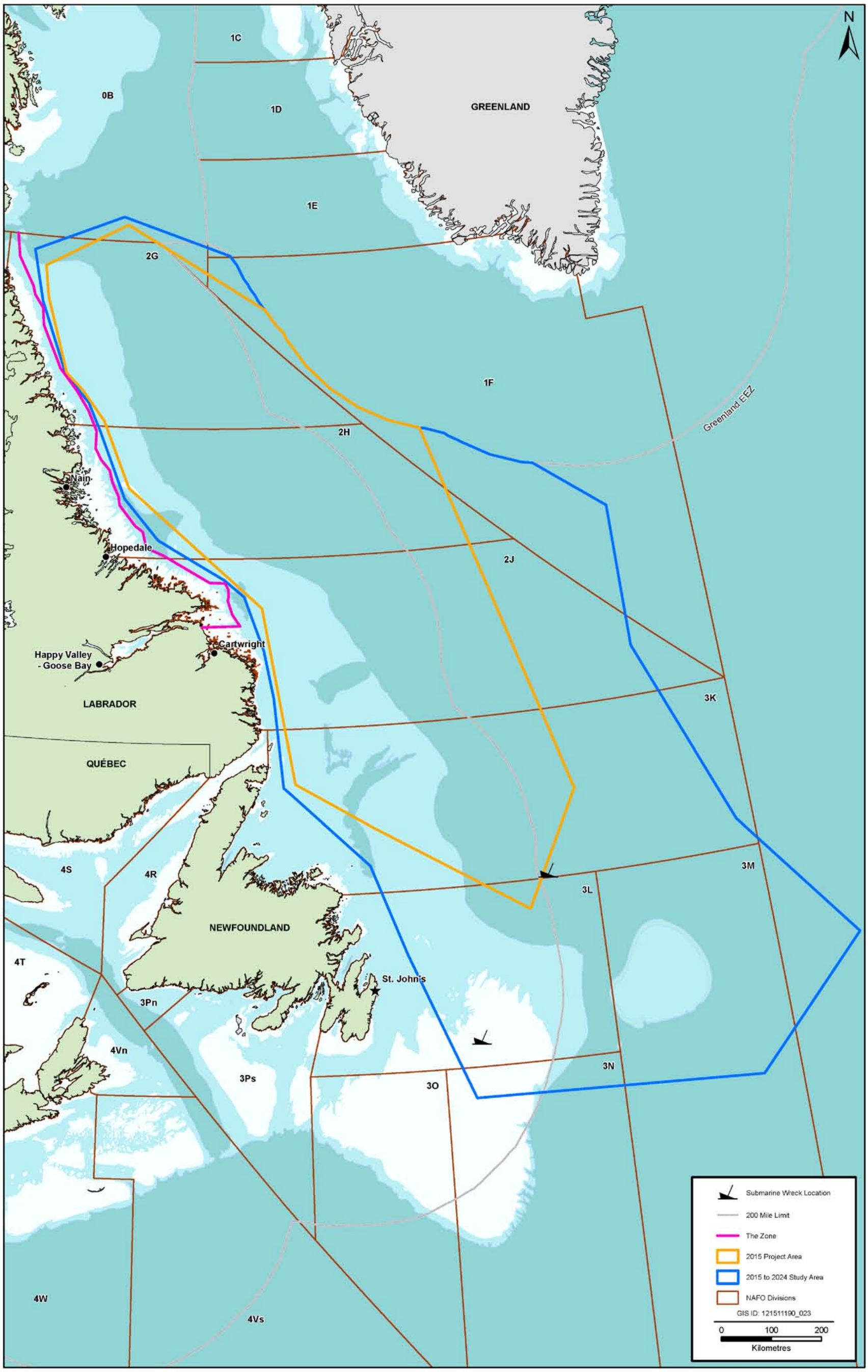
MG3 is proposing to conduct exploration activities in the Newfoundland and Labrador offshore area from the tip of Labrador to the Orphan basin to identify those areas that have the potential to contain oil-bearing structures/basins. The proposed Project is a multi-year program (2015 to 2024) to be conducted within the 2015 to 2024 Study Area/2015 Project Area illustrated in Figure 1-1 (corner coordinates are provided in Tables 1.1 and 1.2) and includes the following non-invasive research activities:

- collecting high-resolution bathymetry using a multibeam echosounder (MBES);
- sampling of natural seabed seeps;
- collection of shallow seabed cores;
- conducting seabed heat flow measurements; and
- sub-bottom profiler (used when needed).

Given the restricted nature of the proposed Project, interactions with the environment and commercial fisheries will be limited.

1.2 Regulatory Framework

The activities proposed for this Project can be summarized as sampling of potential natural seabed seeps, conducting MBES, collecting shallow seabed cores and conducting seabed heat flow measurements. According to the *Geophysical, Geological, Environmental and Geotechnical Program Guidelines* (Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB 2012)), an environmental assessment must be conducted on any proposed technical programs in the Newfoundland and Labrador Offshore Area. The limited nature of the proposed activities would suggest the requirement for a C-NLOPB review under the Accord legislation only, at a level comparable to a geotechnical program. That is, based on the activities as described, an environmental assessment pursuant to the *Canadian Environmental Assessment Act 2012* is not required.



Note: "The Zone" refers to the tidal waters of the Labrador Inuit Settlement Area.

Figure 1-1 2015 to 2024 Study Area and 2015 Project Area

Table 1.1 2015 to 2024 Study Area Corner Coordinates (NAD 83, zone 22)

Easting	Northing	Long_DD	Lat_DD	Long_DMS	Lat_DMS
206141.099	6749483.809	-56.399	60.772	-56° 23' 55.508"	60° 46' 19.088"
217865.582	6730409.026	-56.157	60.610	-56° 9' 25.031"	60° 36' 35.564"
229318.752	6701366.855	-55.909	60.358	-55° 54' 32.501"	60° 21' 28.717"
236425.262	6689795.002	-55.766	60.259	-55° 45' 55.938"	60° 15' 32.830"
239824.651	6681168.404	-55.693	60.184	-55° 41' 35.695"	60° 11' 2.795"
249590.606	6665258.442	-55.498	60.048	-55° 29' 53.612"	60° 2' 52.094"
253138.978	6656247.650	-55.424	59.969	-55° 25' 26.040"	59° 58' 9.427"
286921.164	6601155.084	-54.764	59.495	-54° 45' 51.142"	59° 29' 40.337"
297499.251	6589213.343	-54.566	59.393	-54° 33' 59.296"	59° 23' 33.899"
304261.170	6571999.208	-54.432	59.242	-54° 25' 55.302"	59° 14' 29.900"
337981.524	6516886.244	-53.801	58.762	-53° 48' 4.414"	58° 45' 41.511"
380747.898	6468476.258	-53.037	58.341	-53° 2' 13.481"	58° 20' 27.462"
381802.830	6467636.361	-53.019	58.334	-53° 1' 7.106"	58° 20' 1.350"
383108.751	6466156.810	-52.996	58.321	-52° 59' 44.175"	58° 19' 14.798"
433617.933	6425903.332	-52.122	57.970	-52° 7' 19.664"	57° 58' 11.419"
435170.061	6425059.110	-52.096	57.962	-52° 5' 44.397"	57° 57' 44.950"
435196.308	6425038.172	-52.095	57.962	-52° 5' 42.780"	57° 57' 44.286"
491920.714	6394148.137	-51.136	57.689	-51° 8' 7.847"	57° 41' 22.135"
553151.190	6373548.124	-50.113	57.501	-50° 6' 47.073"	57° 30' 5.023"
562128.720	6372190.485	-49.964	57.488	-49° 57' 49.108"	57° 29' 17.017"
599303.458	6359643.401	-49.349	57.369	-49° 20' 55.884"	57° 22' 7.616"
599701.698	6359582.892	-49.342	57.368	-49° 20' 32.146"	57° 22' 5.347"
608070.864	6352868.757	-49.206	57.306	-49° 12' 22.051"	57° 18' 21.457"
627412.762	6342269.634	-48.891	57.206	-48° 53' 26.676"	57° 12' 20.971"
630115.455	6340099.322	-48.847	57.186	-48° 50' 49.817"	57° 11' 8.101"
686758.319	6309001.153	-47.934	56.887	-47° 56' 3.734"	56° 53' 13.436"
747941.009	6288172.560	-46.953	56.672	-46° 57' 9.868"	56° 40' 18.404"
770570.078	6284656.177	-46.588	56.628	-46° 35' 17.633"	56° 37' 39.897"
908718.951	6188064.282	-44.498	55.666	-44° 29' 51.029"	55° 39' 56.679"
933541.094	5906746.664	-44.516	53.133	-44° 30' 57.713"	53° 7' 59.411"
1113915.331	5547652.998	-42.470	49.766	-42° 28' 11.100"	49° 45' 58.624"
1340624.235	5306050.809	-39.861	47.364	-39° 51' 39.680"	47° 21' 48.920"
1130463.426	5039626.476	-42.969	45.227	-42° 58' 7.483"	45° 13' 36.791"
557899.333	5033007.238	-50.260	45.448	-50° 15' 34.503"	45° 26' 53.485"

Easting	Northing	Long_DD	Lat_DD	Long_DMS	Lat_DMS
442062.667	5327563.332	-51.778	48.099	-51° 46' 41.429"	48° 5' 55.322"
380834.715	5511247.189	-52.654	49.742	-52° 39' 14.263"	49° 44' 30.834"
221006.619	5679924.336	-54.994	51.202	-54° 59' 38.707"	51° 12' 8.871"
216033.234	5859463.553	-55.214	52.810	-55° 12' 50.020"	52° 48' 36.108"
204097.109	5955947.231	-55.480	53.668	-55° 28' 48.078"	53° 40' 5.943"
173983.525	6067263.187	-56.054	54.647	-56° 3' 15.970"	54° 38' 49.554"
137577.716	6103668.996	-56.661	54.948	-56° 39' 41.195"	54° 56' 52.350"
11812.192	6194683.520	-58.767	55.652	-58° 45' 59.725"	55° 39' 5.508"
-47760.950	6284043.234	-59.884	56.382	-59° 53' 3.309"	56° 22' 54.134"
-84166.760	6423047.233	-60.786	57.569	-60° 47' 10.603"	57° 34' 10.007"
-102369.664	6482620.376	-61.236	58.072	-61° 14' 8.139"	58° 4' 20.442"
-143739.902	6545503.138	-62.099	58.569	-62° 5' 55.365"	58° 34' 7.839"
-175181.283	6694435.994	-63.088	59.830	-63° 5' 17.123"	59° 49' 49.133"
-181008.009	6799317.067	-63.542	60.741	-63° 32' 32.663"	60° 44' 26.398"
3538.145	6846678.470	-60.329	61.433	-60° 19' 43.333"	61° 26' 0.395"

Table 1.2 2015 Project Area Corner Coordinates (NAD 83, zone 22)

Easting	Northing	Long_DD	Lat_DD	Long_DMS	Lat_DMS
265573.350	6635969.463	-55.17888513	59.79495559	-55° 10' 43.986"	59° 47' 41.840"
286921.164	6601155.084	-54.76420616	59.49453818	-54° 45' 51.142"	59° 29' 40.337"
297499.251	6589213.343	-54.56647122	59.39274975	-54° 33' 59.296"	59° 23' 33.899"
304261.170	6571999.208	-54.43202826	59.24163902	-54° 25' 55.302"	59° 14' 29.900"
337981.524	6516886.244	-53.80122623	58.76153084	-53° 48' 4.414"	58° 45' 41.511"
380747.898	6468476.258	-53.03707819	58.34096174	-53° 2' 13.481"	58° 20' 27.462"
381802.830	6467636.361	-53.01864052	58.33370824	-53° 1' 7.106"	58° 20' 1.350"
383108.751	6466156.81	-52.99560409	58.32077729	-52° 59' 44.175"	58° 19' 14.798"
433617.933	6425903.332	-52.12212902	57.96983873	-52° 7' 19.664"	57° 58' 11.419"
435170.061	6425059.11	-52.09566594	57.96248599	-52° 5' 44.397"	57° 57' 44.950"
435196.308	6425038.172	-52.09521671	57.96230178	-52° 5' 42.780"	57° 57' 44.286"
491920.714	6394148.137	-51.13551303	57.68948185	-51° 8' 7.847"	57° 41' 22.135"
551730.991	6374025.927	-50.13667012	57.50585114	-50° 8' 12.012"	57° 30' 21.064"
798519.869	5634067.506	-46.76483436	50.78136964	-46° 45' 53.404"	50° 46' 52.931"
692686.324	5401233.707	-48.37939699	48.73430481	-48° 22' 45.829"	48° 44' 3.497"
394330.000	5586102.011	-52.4874062	50.41743578	-52° 29' 14.662"	50° 25' 2.769"
244643.030	5685109.98	-54.66017359	51.26005096	-54° 39' 36.625"	51° 15' 36.183"
207850.043	6041330.489	-55.5055792	54.43550763	-55° 30' 20.085"	54° 26' 7.827"
-37364.898	6304494.904	-59.75992345	56.57521368	-59° 45' 35.724"	56° 34' 30.769"
-74352.059	6443526.11	-60.67314831	57.76334031	-60° 40' 23.334"	57° 45' 48.025"
-111676.073	6508560.377	-61.45857754	58.28878509	-61° 27' 30.879"	58° 17' 19.626"
-141102.672	6546309.65	-62.05648672	58.57983614	-62° 3' 23.352"	58° 34' 47.410"
-163020.318	6701599.158	-62.89864014	59.91285742	-62° 53' 55.104"	59° 54' 46.287"
-161919.552	6765163.518	-63.08589086	60.47292356	-63° 5' 9.207"	60° 28' 22.525"
10059.959	6829986.564	-60.16428132	61.29379742	-60° 9' 51.413"	61° 17' 37.671"

2.0 THE PROPOSED PROJECT

The proposed Project is comprised of the following components: sampling for natural oil seeps; conducting MBES; shallow seabed coring; and heat flow measurements of the seabed using a thermal probe. Not all datasets will be acquired every year. MG3 is proposing to collect the following data in 2015:

- conducting MBES at all locations to identify live seeps;
- sampling of potential natural seabed seeps (by collecting water samples);
- collection of shallow seabed cores using a gravity core method at up to 200 locations in 2015;
- conducting seabed heat flow measurements using a thermal probe for the same 200 locations in 2015; and
- sub-bottom profiler (used when needed).

2.1 Multibeam Echosounder

A 30 kHz MEBS will be used to collect data providing high-resolution bathymetry in depths of 10 to 5,000 m. The high-resolution data allow differentiation between pockmarks and iceberg plough marks on the seafloor. In addition, the resolution of the MBES data permits the identification of additional smaller pockmarks that cannot be resolved with existing seismic data. The MBES will be used to identify active seeps and will be collected in areas where active oil slicks are present on the ocean surface.

2.2 Detection of Natural Seabed Seeps

Natural seeps accounted for 160,000 tonnes of the 260,000 tonnes of petroleum released into the marine environment in North America from 1990 to 1999 (National Academy of Sciences 2002). MG3 is proposing to conduct a sampling program to identify areas of potential natural seabed seeps.

Samples to detect the presence of oil from natural seabed seeps will be collected with an AGI (GORE) sampling kit. The sampler is hydrophobic (i.e., repels water) and can collect hydrocarbons from very thin oil layers in the water. The deployment/retrieval mechanism is basically fishing line (folding casting device, weighted bobbers and fishing line and hardware); the sampling containers are deployed by casting them out from the vessel. Laboratory analysis (by thermal desorption/gas chromatography/mass spectrometry) can detect approximately 100 compounds from C_6 to C_{35}, including key biomarkers (AGI 2013).

As MG3 is proposing to collect samples along a pre-identified sampling design at specific slick locations identified by satellite, it is proposed that the sampler will be cast from the bow of the vessel, allowing the sampler to ride the bow wave of the vessel for five minutes as the vessel maintains a speed of 3.7 to 5.6 km/h (2 to 3 knots).

2.3 Shallow Core Collection

Substrate cores will be collected to a depth of 6 m using a gravity corer (refer to Figure 2-1 for a picture of the proposed gravity coring system). The gravity corer will be lowered to within 50 m of the substrate. Once positioned, the corer will be triggered to release and penetrate into the substrate. Gravity core samples will be collected at up to 100 locations in 2015, with potential for additional sampling in subsequent years.

Source: Seaforth 2013

Figure 2-1 Thermistor (heat-flow probes) Outriggers on Gravity Coring System

2.4 Heat Flow Measurements

The temperature of the substrate can give an indication of the potential for hydrocarbons beneath the surface, and can aid in maturity calculation for oil and gas exploration. Heat flow measurements will be taken using a FIELAX HeatFlowProbe thermal probe. Heat flow measurements will be collected at up to 100 locations in 2015, with potential for additional sampling in subsequent years.

Fine, soft sediments (e.g., clays and silts) are required to achieve good penetration by the heat-flow probes. Prior to releasing the gravity corer to sample the substrate, an MBES and sub-bottom profiler will be used to determine if any subsurface hazards are present in the sampling area.

2.5 Sub-bottom Profiler

The sub-bottom profiler proposed for the project is a parametric sub-bottom profiler. It is mounted on the hull of the vessel and consists of eight modules consisting of 16 channels each, for a total of 128 channels. Overall, this sub-bottom profiler has a maximum primary source level of 243 dB @ 1m and a typical secondary source level of 185 to 208 dB @ 1m.

2.6 Study/Project Area

The 2015 to 2024 Study Area for the multi-year geotechnical data acquisition program is illustrated in Figure 1-1. The 2015 program focuses on the Labrador offshore area, specifically the Hopedale Basin, Saglek Basin, St. Anthony Basin and Orphan Basin.

2.7 Vessel

As the geochemical data acquisition program is designed to collect information to be used in a basin model, accurate positioning data are key. The data will be collected using a vessel with dynamic positioning capabilities. The vessel will also be required to be able to deploy and retrieve the various sampling equipment proposed as part of the geochemical data acquisition program. Given the 2015 Project Area (Figure 1-1), the vessel will also be required to work in the harsh conditions of the Labrador offshore area and the northern Grand Banks/Orphan Basin/ Flemish Pass/Cap areas.

MG3 will ensure that a certified vessel will be used that is capable of working in Labrador Sea conditions. The selected vessel will have equipment and protocols and procedures in place for prevention of pollution by oil, sewage and garbage in accordance with the *Canadian Shipping Act* and international standards and certification authorities. At no time will a survey vessel enter or attempt to conduct any survey work in restricted or protected areas.

MG3 will consult with the Fish, Food and Allied Workers (FFAW) and One Ocean on the location of their members who fish in the area and contact the local FFAW representative to provide information on the vessel movements during the survey program. MG3 will consult with the Nunatsiavut Government on the location of their beneficiary members who fish in the area.

2.8 Schedule

MG3 are proposing to conduct the natural seabed seep sample collection, heat probe and gravity core sample collection components of the research program in August/September of 2015. The program is anticipated to require 21 days to conduct all sample collection; MG3 have scheduled a four-week period to conclude the program, allowing for weather delays. Future programs (2016 to 2024) will be conducted during the ice-free season.

3.0 ENVIRONMENTAL SETTING

Given the generally non-intrusive nature of the proposed Project activities (casting natural seabed seep samplers into the ocean surface using fishing line and collecting heat gradients and cores using a gravity corer from a science vessel), Project-environment interactions are anticipated to be few. If Project-environment interactions occur, the components of the environment most likely to be potentially affected by the proposed Project are species at risk, fish habitat (sediment) and commercial fisheries (vessel conflict). As such, the description of the environmental setting is focused on those components of the environment.

The 2015 Project Area includes both the Labrador Shelf and deeper waters in the Labrador Sea. Sea surface temperatures are warmest in August and coldest in March. Air temperatures are warmest in July-August and coldest in January-February. The average number of foggy days is highest from May to August. Seasonal sea or pack ice can occur from November to July, with the maximum southern extent occurring from February to the middle of March. Icebergs can occur from March to July, especially in the region nearest the Grand Banks (Husky Energy 2010; RPS Energy 2012).

A number of species at risk (as listed under the *Species at Risk Act* (SARA) or assessed as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)) have the potential to occur throughout the proposed Study/Project Area (Figure 1.1), either as sporadic visitors or regular inhabitants. These include the following species listed on SARA Schedule 1: blue whale (Endangered); North Atlantic right whale (Endangered); leatherback sea turtle (Endangered); Ivory Gull (Endangered); white shark (Endangered); northern wolffish (Threatened); spotted wolffish (Threatened); Atlantic wolffish (Special Concern); fin whale - Atlantic population (Special Concern); Sowerby's beaked whale (Special Concern) and polar bear (Special Concern). Barrow's Goldeneye (Special Concern) and Harlequin Duck (Special Concern) are two primarily coastal species that could occur in the Study/Project Area. Eskimo Curlew (Endangered) is thought to be extinct.

Species assessed as at risk by COSEWIC (but are not listed on SARA Schedule 1) that could occur in the Study/Project Area include Atlantic cod - Newfoundland and Labrador population (Endangered), porbeagle shark (Endangered), cusk (Threatened), shortfin mako shark (Threatened), blue shark - Atlantic population (Special Concern), basking shark - Atlantic population (Special Concern), American plaice - Newfoundland and Labrador population (Threatened), roughhead grenadier (Special Concern), roundnose grenadier (Endangered), Atlantic salmon (various populations) (Endangered, Threatened, Special Concern), Acadian redfish (Threatened), deepwater redfish (Threatened). Spiny dogfish (Special Concern), harbour porpoise (Special Concern), killer whale (Special Concern), loggerhead sea turtle (Endangered), beluga whale (various populations) (Endangered, Threatened, Special Concern), bowhead whale (Eastern Canada – West Greenland population) (Special Concern), thorny skate (Special Concern), smooth skate - Funk Island population (Endangered) (note Hopedale Channel and Nose of the Grand Banks populations have been assessed by COSEWIC as Data Deficient; there

is also a Flemish Cap population that is outside Canadian jurisdiction, but within the multi-year Study/Project Area), American eel (Endangered), northern bottlenose whale (Davis Strait-Baffin Bay-Labrador Sea population) (Special Concern) and Atlantic bluefin tuna (Grand Banks of Newfoundland only) (Special Concern).

The Labrador Sea/Grand Banks/Orphan Basin/Flemish Cap is a highly productive ecosystem, with a spring phytoplankton bloom that starts in March and peaks in the spring, followed by a zooplankton bloom; there is another phytoplankton bloom that peaks in the fall (C-NLOPB 2010). Corals are found in deeper waters (>200 m). Northern shrimp, snow crab and Greenland halibut are important commercial fish species occurring within the Study/Project Area. Coral aggregations found in the Labrador Sea (location of the 2013 survey) are located between Makkovik Bank and Belle Island Bank, Saglek Bank and Hatton Basin (C-NLOPB 2010) (note that the 2013 program will not be conducted in these areas).

Commercial fisheries in the 2015 to 2024 Study Area are focused primarily on northern shrimp, which accounts for approximately 85 percent of the harvest in Northwest Atlantic Fisheries Organization (NAFO) 2GHJ (Husky Energy 2010), and approximately 60 percent of the harvest in 3KLMN and 2J (RPS Energy 2012). Shrimp spawn in the late summer and fall and are harvested using mobile gear (trawl). Snow crab mate in late winter and spring and are an important component in 3KLMN and 2J; they are harvested using fixed gear (crab pots). Greenland halibut is the other species most often harvested in the Study/Project Area and spawn during December to April; they are harvested using both fixed gear (gillnets and longlines) and mobile gear (otter trawls). These three species account for approximately 95 percent of the harvested fish in the Study/Project Area (C-NLOPB 2010, 2011; Husky Energy 2010).

The southern portion of the 2015 to 2024 Study Area includes the Orphan Basin, Flemish Pass/Cap and the northern Grand Banks. Ongoing oil and gas activities in these areas include exploration drilling, production platforms and seismic surveys.

Fisheries and Oceans Canada (DFO) research vessel surveys will be conducted in NAFO Areas 3KLMNO in the spring and fall of 2015 and in 2HJG in in the fall of 2015. (G. Sheppard, pers. comm.). Other potential marine traffic in the 2015 Project Area are Department of National Defence vessels and cruise ships. MG3 will contact DFO prior to the start of their research program to determine if there are any research vessels in the area. MG3 will also contact the Department of National Defence to determine if there are any naval exercised scheduled during the proposed research program.

The 2015 to 2024 Study Area is used by approximately 30 bird species. The Hawke Channel, edge of the Labrador Shelf and Funk Island have high densities during the breeding season, with many birds sharing breeding space. In the southern portion of the 2015 to 2024 Study Area, the Flemish Pass, Orphan Basin and Sackville Spur have been identified as important areas to different bird species/groups.

Marine mammals (including baleen and toothed whales and seals) are common in the 2015 to 2024 Study Area, especially in the summer, and polar bears are found in the northern portion of the Study Area. A number of these species (including polar bear) are considered to be at risk species by either SARA and/or COSEWIC.

Sensitive areas include a Marine Protected Area at Torngat Mountains National Park, Gilbert Bay, Gannett Islands Ecological Reserve, Important Bird Areas (none of which are inside the 2015 to 2024 Study Area), the Bonavista Cod Box, the Placentia Bay-Grand Banks Large Ocean Management Area (and potential Ecological and Biological Sensitive Areas).

4.0 HEALTH, SAFETY AND ENVIRONMENT MANAGEMENT

MG3 recognizes its operational activities have the potential to impact on the environment and is committed to:

- Adopting an environmental vision that makes environmental protection and business value compatible;
- Complying with all applicable environmental legislation and other applicable requirements;
- Preventing pollution and minimizing the extend of environmental damage occurring as a result of our operations and activities; and,
- Continuously improving our environmental performance.

MG3 will ensure the survey vessel will have equipment and protocols and procedures in place for prevention of pollution by oil, sewage and garbage in accordance with the *Canadian Shipping Act* and international standards and certification authorities. Solid wastes, recyclables, hazardous materials and non-biodegradable materials will be stored and returned to shore for proper handling and disposal. At no time will a survey vessel enter or attempt to conduct any survey work in restricted or protected areas.

Transport Canada will conduct a safety inspection of the vessel in accordance with requirements of the C-NLOPB. MG3 will have a representative on board the vessel to accompany Transport Canada during their inspection.

MG3 recognizes the importance of health and safety and have developed a corporate Occupational Health and Safety System (OHSAS). The OHSAS integrates the internationally recognized requirements of ISO 18001:2007 into the company's Total Quality Management System that is accredited by DNV. Copies of MG3's OHSAS Policy and Environmental Policy are provided in Appendix A.

5.0 STAKEHOLDER CONSULTATION

MG3 has initiated contact with the C-NLOPB, providing an overview description of the proposed Project to determine the level of environmental assessment that may be required from the C-NLOPB. MG3 will continue to consult with the C-NLOPB during the preparation of the environmental assessment to ensure that all potential issues are addressed by the environmental assessment. The official start of the consultation process is initiated with the submission of this Project Description.

MG3 proposes to meet with the FFAW/One Ocean in St. John's prior to the submission of the environmental assessment to provide details on the proposed Project to the commercial fishing community. MG3 will also contact, via phone or email, any local FFAW staff representative as suggested/identified by the FFAW Petroleum Industry liaison. This could include members who are members of the NunatuKavut Community Council, as the Study/Project Area parallels parts of the Labrador Coast (Cartwright through to the Straits) that NunatuKavut Community Council members reside/fish.

MG3 will also consult (likely via teleconference) with the Nunatsiavut Government to provide information on the proposed Project, as the multi-year Study Area parallels the Nunatsiavut Zone (The Zone). The Project will not include any sampling within The Zone. The consultation will include a discussion of Nunatsiavut fishers who may be harvesting in the Study/Project Areas, as they are not represented by the FFAW.

MG3 plans to use a Fisheries Liaison Officer and a Marine Mammal Observer during the survey.

6.0 REFERENCES

AGI (Amplified Geochemical Imaging, LLC). 2013. Offshore Petroleum Slick Sampling. Available at: https://www.agisurveys.net/Offshore_Slick_Sampling.html

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APPENDIX A

MG3 OHSAS Policy and Environmental Policy

MG3 OHSAS Policy

MG3 is a marine geophysical, geochemical and geotechnical survey company that charter and operate highly sophisticated and technically complex ocean survey vessels and equipment.

To fulfil the Company roles and objectives operations will commonly occur in environments and under conditions that may expose personnel to health and safety hazards and potential risk. Consequently the Board of Directors of MG3 recognise the requirement for a Company OHSAS (Occupational Health & Safety system) and have integrated the requirements of ISO 18001:2007 into the Company's Total Quality Management System that is accredited by DNV.

MG3 is fully committed to:

- The operation of an effective OHSAS system at all Company workplaces and premises that provides the maximum possible protection to all persons from exposure to any hazards, risks, ill health and diseases while working or visiting Company owned premises and operated vessels.
- The fundamental importance and corporate obligation to ensure that all 3rd parties, local environment, fauna and wildlife experience the minimum interference and disturbance while remaining protected and safeguarded from all Company operations and related activities.
- The compliance with collective agreements, codes of practice, professional bodies, national and International regulations and requirements as well as the incorporation, whenever available, of any industry best practices and experience including those from other similar industries in regard to occupational health and safety.
- The provision of appropriately trained and qualified personnel able to identify risk and hazards in the workplace and having the necessary authority to either stop the work or identify and implement precautions to mitigate or remove the risk.
- The promotion of the OHSAS policy and this while recognising that the implementation of a cost effective OHSAS Company system is an integral part of improving not only health and welfare throughout the Company but also overall business performance.
- The principle of total inclusivity and recognises the importance of every person's contribution to the safety process, actively encourages all employees participation to achieve the Company's goals for continuous high standards of health and safety and the reduction of accidents, incidents and injuries in the workplace.
- Regular site inspections and audits to ensure the continued efficiently of the system to provide a high standard of health and safety while ensuring continuous improvement as new business demands, legislation and technology are introduced as well as experience is gained and lessons learned from all incidents and accidents.
- The continuous improvement of the OHSAS system by measuring health and safety performance of its employees, sub-contractors and visitors while providing a cost effective approach to ensure health and safety in the workplace.
- Provide the policy statement of the Company to any interested parties to demonstrate to clients and stakeholders the Company's commitment to providing a well-trained and highly motivated management team and workforce with a strong commitment to health and safety in the workplace.

Signed [redacted]

[redacted] (CEO)

Date

1st May 2014

MG3 Environmental Policy

MG3 is a responsible company that recognises its operational activities impact on the environment and is committed to:

- Adopting an environmental vision that makes environmental protection and business value compatible,
- Complying with all applicable environmental legislation and other applicable requirements,
- Preventing pollution and minimising the extent of environmental damage occurring as a result of our operations and activities, and
- Continuously improving our environmental performance.

We ensure that these aims are achieved by undertaking the following:

- establishing and maintaining standards for environmental protection within all the Company's operations and undertakings and to adherence to all applicable statutory and other regulations, codes, guidelines and sources of good environmental practice,
- integrating the requirements of ISO 14001:2004 into the Company's Total Quality Management System that is accredited by DNV and maintaining certified status,
- maintaining and reviewing when necessary all environmental standards, policies and regulations taking into account existing and also new standards, policies, regulations and guidelines and notify employees and contractors as soon as practicable of any changes,
- communicating these standards and encouraging all Company personnel to develop a keen awareness of environmental issues and to participate in methods to prevent incidents and provide protection of health and the environment,
- ensuring that sub-contracted companies and third parties providing services to MG3, the Client and the project are fully informed of our environmental aspirations and adhere to these standards without detracting from their own and/or their agencies/company's legal responsibilities and requirements,
- ensuring environmental protection and incident response arrangements are in place regarding project, subcontracted and other 3rd party personnel working on vessels under contract to MG3 and that suitable precautions are in place for environmental protection, and
- ensuring that the Company's objectives are achieved by auditing, inspection and continual improvement of activities and procedures related to protection of the environment.

Signed [redacted]

[redacted] (CEO)

Date

1st May 2014

MG3 Quality Policy

MG3 aims to provide high quality of service and equipment, according to the expectation of its customers. The Organisation operates an accredited Total Quality Management System (TQM System) with the quality components meeting or exceeding the standards of ISO 9001:2008. This includes aspects of quality with specific relevance to the work of onshore and offshore procedures.

Management commitment to quality

The company's management is committed to:

- Developing and improving the Quality Management System.
- Continually improving the effectiveness of the QMS.
- Enhancing customer satisfaction.

The management has a continuing commitment to:

- Ensuring that customer needs and expectations are determined and fulfilled with the aim of achieving customer satisfaction.
- Communicating throughout the organization the importance of meeting customer needs and all relevant statutory and regulatory requirements.
- Establishing the quality policy and its objectives are fulfilled throughout the Organization.
- Ensuring that the Management Reviews set and review the quality objectives, and report on the Internal Audit results as a means of monitoring and measuring the processes and the effectiveness of the QMS.
- Ensuring the availability of resources and to make sure the all relevant procedures meet the quality standards of ISO 9001:2008.

Defining the policy

The structure of the Quality Management System is defined in the company's Quality Manual.

In summary:

- All personnel understand the requirements of the quality policy and abide by the requirements outlined in the Quality Manual.
- The Organisation complies with all relevant statutory and regulatory requirements.
- The Organisation constantly monitors its quality performance and implements improvements when appropriate.
- This policy is regularly reviewed to ensure its continuing suitability for purpose.
- Copies of the quality policy are made available to all members of staff.
- As a means of communicating the effectiveness of the QMS, copies of Management Reviews or extracts are provided to individual members of staff in accordance with their roles and responsibilities.

Signed [redacted]

[redacted] (CEO)

Date

1st May 2014