



Atlantic Canada  
Flemish Pass Exploration  
Drilling Project

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**Document Approval Matrix**

Issue	Date	Reason for Change	Author(s)	Endorsed by
Rev 1	27-Sept-2021	N/A	<b>Mark White, HSSE Lead</b>	<b>Todd Hartlaub, Senior Manager, NA Exploration</b>
				

## 1.0 INTRODUCTION

CNOOC Petroleum North America ULC (CNOOC; formerly known as Nexen Energy ULC) completed an exploration drilling program at Exploration License EL1144 in the Flemish Pass portion of the Canada-Newfoundland and Labrador Offshore Area.

CNOOC drilled a single exploration well in 2021, Pelles A-71. The Pelles prospect is located on EL1144 (Figure 1) in approximately 1160 m water depth. Drilling activities were conducted utilizing the Stena Forth, a harsh environment drill ship under the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB) Operations Authorization.

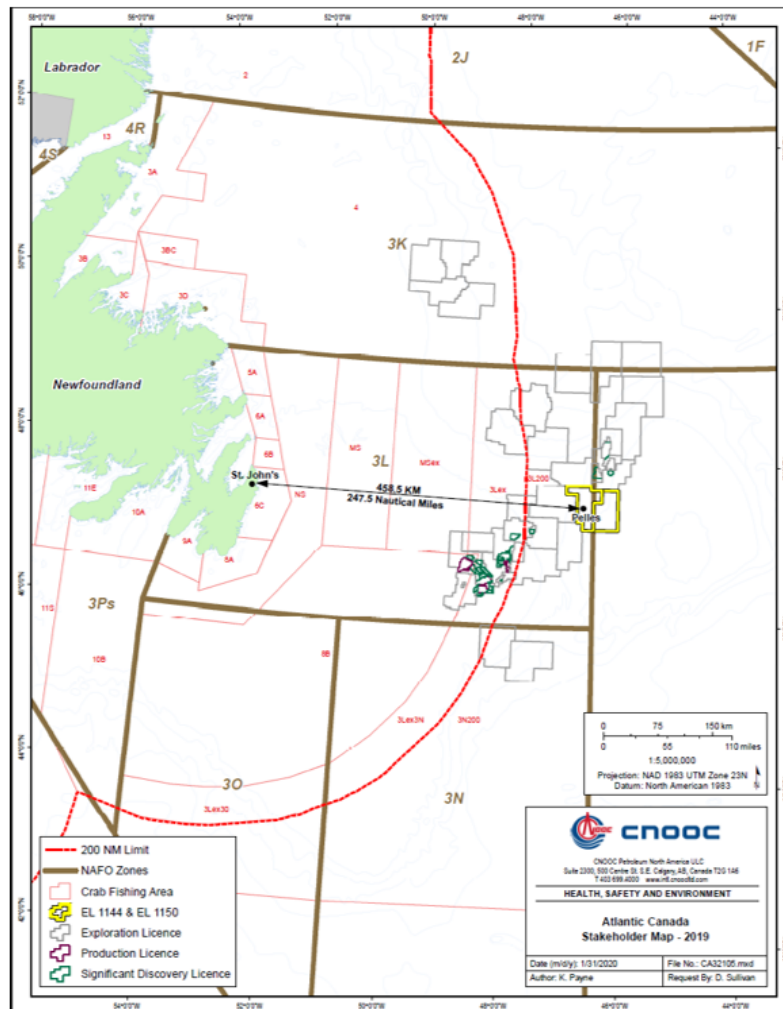


Figure 1. Stakeholder Map

This document summarizes the activities completed by CNOOC to comply with the Condition 2.8 set out in the Decision Statement under Section 54 of the Canadian Environmental Assessment Act (CEAA), 2012 (hereafter known as the “Decision Statement”) that was issued December 17<sup>th</sup>, 2019.

## 2.0 COMMUNICATIONS AND CONSULTATION

Where identified as a requirement under the Decision Statement, CNOOC engaged in consultation with stakeholders in the development of the required project plans and follow up programs.

CNOOC developed a Commercial Fisheries Plan and an Indigenous Fisheries Communication Plan in consultation with the C-NLOPB, Commercial and Indigenous Fisheries prior to the commencement of operations. Prior to and throughout operations, CNOOC provided updates in accordance with these plans.

CNOOC also developed an exploration website for placing project documents that are required to be posted by the conditions set out in the decision statement. The website can be found at the following address:

<https://cnocinternational.com/en/operations/americas/canada/atlantic-canada>

CNOOC will continue to publish the required project documentation as it becomes finalized. A notification will be sent to stakeholders within 48 hours of posting on the external website.

## 3.0 FISH AND FISH HABITAT

CNOOC implemented mitigations to aid in the protection of fish and fish habitat. These mitigations were conducting a pre-drilling coral and sponge survey, monitoring drill cuttings, discharge monitoring and underwater sound monitoring.

### 3.1 PRE-DRILLING SURVEY

CNOOC conducted a pre-drilling underwater visual survey at the Pelles A-71 location. The survey was designed to determine locations of aggregations of coldwater corals and sponges and was developed in consultation with the C-NLOPB and Fisheries and Oceans Canada (DFO). The location of the planned Pelles A-71 well site was revised to maintain 100 m separation from drilling activities and C-NLOPB defined coral colonies. Fish and fish habitat were characterized for the area including details on seabed substrate and coral, sponge, fish, and invertebrate presence and density. The seabed video survey was conducted with an ROV at the Pelles A-71 site and was assessed against C-NLOPB guidance on coral colonies.

### 3.2 DRILL CUTTINGS MONITORING

CNOOC developed and implemented a drill cuttings monitoring follow up program in consultation with DFO and the C-NLOPB. The plan was implemented during Pelles A-71 drilling operations in order to verify the accuracy of predictions made in the Environmental Impact Statement.

#### 3.2.1 Synthetic-Based Fluid on Cuttings

CNOOC had a performance target for Synthetic-Based Fluids on Cuttings (SOC) discharged to sea based on the Offshore Waste Treatment Guidelines of not exceeding 6.9g/100g oil on wet solid. This target was maintained for the duration of the campaign with 3.84g/100g 48 hour cumulative (rolling) massed average SOC wet being the highest level reached.

### **3.2.2 Drill Cuttings Modelling**

Drill cuttings were predicted to be mostly distributed SSW from the wellhead with the majority of cuttings deposited within 500 m, with some SBM cuttings out to 2 km. Cuttings deposition extent and thickness was evaluated through a combination of visual assessments, depth penetration measurements, comparison to subsea infrastructure, and deposition poles. Based on these combined survey methodologies, the observed accumulated drill cuttings footprint was limited to within 100 m from the wellhead with drifts of low quantities of drill cuttings approximately 625 m from the wellhead. Overall, the observed drill cuttings deposition had a lower extent and lower thickness relative to model predictions.

### **3.3 DISCHARGE MONITORING**

CNOOC treated all discharges into the marine environment in compliance with the approved Environmental Protection Plan that was drafted in accordance with the Offshore Waste Treatment Guidelines. Monthly compliance monitoring reports were submitted to the C-NLOPB for regulated waste streams.

CNOOC chemicals were selected in accordance with CNOOC's Chemical Screening Procedural Aid that was created in alignment with the Offshore Chemical Selection Guidelines for Drilling & Production Activities on Frontier Lands.

### **3.4 UNDERWATER SOUND MONITORING**

CNOOC developed and implemented an underwater sound monitoring program in consultation with DFO and the C-NLOPB. The plan was implemented by WOOD / JASCO during Pelles A-71 operations in order to verify the accuracy of underwater sound levels as predicted in the Environmental Impact Statement.

Sound levels recorded at 1km from the Stena Forth exceeded background levels but were lower than predicted during pre-campaign modelling. At 40 km from the Stena Forth sound levels from the drill ship were difficult to detect.

JASCO recorded no exceedance of the threshold for permanent threshold shifts at the 1km site, and no threshold exceedances for temporary hearing threshold shifts in low-frequency cetaceans. JASCO recorded threshold exceedances for temporary threshold shift criteria for high frequency cetaceans, at the 1km recorder, during the first fifteen days of drilling, during the last three days of drilling, and on two occasions in between. JASCO attributed these exceedances to a high frequency source: perhaps a USBL pinger or acoustic modem. The exceedances were on the order of 3-5 dB per day. An animal would need to remain at close proximity to such a source for many hours before experiencing a temporary hearing threshold shift, and research suggests that animals would avoid the source rather than incur an actual threshold shift.

## **4.0 MARINE MAMMAL AND SEA TURTLES**

CNOOC developed a marine mammal monitoring plan for vertical seismic surveys in consultation with DFO and the C-NLOPB. This plan was implemented during Vertical Seismic Profiling (VSP) operations on the Pelles A-71 well.

The plan included monitoring for marine mammals and sea turtles inside the 500-metre radius safety zone around the seismic source during VSP activities by visual observation and passive acoustic monitoring (PAM). During project operations, mitigation protocols were implemented by

qualified marine mammal observers (MMO) and passive acoustic monitors. VSP was conducted from the *Stena Forth* at the Pelles A-71 well site between June 23, 2021 and June 24, 2021. All marine mammal and sea turtle mitigation was conducted aboard the supply vessel, *MV Siem Pilot*. The VSP program lasted 8.5 hours, during which time 3 marine mammals were detected by the PAM operator outside of the 500m safety zone. No delays or shutdowns were required during the program.

In addition to VSP activities, CNOOC is required to report injured, dead or stranded marine mammals or sea turtles. There were no sightings of injured, dead or stranded species throughout Pelles A-71 operations.

## **5.0 MIGRATORY BIRDS**

CNOOC conducted seabird observations and monitoring in accordance with the requirements of the “Seabird Observation and Monitoring Follow Up Program” that was developed in consultation with Environment and Climate Change Canada and the C-NLOPB.

PAL Aerospace conducted all seabird observations on the Pelles A-71 well site from the MODU. During the operational period, a total of 804 seabird observation entries recorded 23,685 seabirds. Observations were conducted between April 28<sup>th</sup> and July 7<sup>th</sup>, 2021.

Daily stranded seabird surveys were conducted daily at dawn during the Pelles A-71 exploration drilling program that included the *Stena Forth* drillship and the *Secunda Siem Pilot*, *Maersk Clipper*, *Maersk Mobiliser* and *Skandi Vinland* support vessels. There was a total of 22 birds found; 4 carcasses disposed of at sea, 4 carcasses sent ashore; 1 live seabird that died in transit to shore and 13 live seabirds released.

With 9 bird mortalities for the entire duration of the exploration program at Pelles A-71 it is unlikely that the project had population-level effects within the project area. The mitigative measures that are currently in place have been proven effective and no additional mitigations are recommended at this time.