

LC-SB-026

Drill Bits and Tooling

Scope of Work Summary:

The Muskrat Falls Project is the portion of the Lower Churchill Project (LCP) that involves hydroelectric generation in Labrador and transmission to the island of Newfoundland for Nova Scotia and Newfoundland markets. See <http://www.nalcorenergy.com>. Labrador Island Link Limited Partnership (Company) is developing the transmission facilities from central Labrador to eastern Newfoundland across the Strait of Belle Isle (SOBI). Transmission across SOBI involves the installation of three subsea cables - the Marine Crossing Project. Three below ground/sea floor conduits will be installed on each side of the SOBI for both transitioning the cables from shore to deep water and providing protection from surface ice and icebergs. Horizontal directional drilling (HDD) will be used to establish holes for the conduits. Additional holes may potentially be required for communication cables.

The length of each cable conduit (casing) will be approximately 1500m on the Labrador side and 2300m on the Newfoundland Island side. The conduits will be installed in bores which are to be drilled from shore and extend out under the SOBI and exit the ocean floor at a depth of 60 - 90 meters below sea level. The geology in the area consists of sedimentary sandstone, limestone, dolomite, shale, and Precambrian granite. Ocean floor sediment consists of clay, silt, sand, gravels and cobbles. See Attachments for Overall SOBI Map, HDD Alignment Overviews, Construction Staging Areas, and Plan and Profile Zone Limits. Access to the holes will be possible from the shore position only.

The Work is located in Shoal Cove, Newfoundland, and Forteau Point, Labrador.

The drilling program is anticipated to commence in Q4-2013 in the Shoal Cove area on the west coast of the island and in early-2014 in the Forteau Point area of Labrador. The work must be completed by the end of the year 2015 to facilitate cable lay and pull-in in early 2016. Both locations are remote with harsh environments. Planning and logistics are key to efficient operations and meeting schedule. Ground access to the island of Newfoundland from Nova Scotia and between Newfoundland and Labrador is via ferry.

Company Group shall supply drill rig(s) and all equipment required for the Work aside from the specialty equipment required for directional drilling specified in this. The drill rig(s) will be capable of more than 600,000 pounds of push / pull and 60,000 lb-ft of rotary torque. The mud pumps will have flowrate capacity of a minimum of 1000 gpm at a pressure of 1500 psi. Company Group will set surface casing according to the Plan and Profile Zone Limits.

The Contractor shall be responsible for recommending equipment such as bits, reamers, stabilizers, etc., required to drill the ideal bore size for installation of 273 mm (10.75 in) casing. The planned bore size will be finalized as the SOBI HDD Execution Plan is finalized for each bore, considering input from all contractors involved.