

From: [Ait Ouferoukh, Mouloud](#)
To: [Tremblay, Jean-Daniel](#)
Subject: LCP Master Package Dictionary
Date: Thursday, June 28, 2012 11:45:52 AM
Attachments: [505573-0000-39RA-I-0006_01.pdf](#)

Attached here the package dictionary.

Thanks.

Mouloud Ait Ouferoukh

Document Control
Lower Churchill Project
350 Torbay Road, Suite 2
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Document Front Sheet



LOWER CHURCHILL PROJECT

NE-LCP Contractor/Supplier

Contract or Purchase Number and Description: LC-G-002 – Lower Churchill Project		Contractor/Supplier Name: SNC – Lavalin Inc.	
Document Title: LCP Master Package Dictionary		Total Number of Pages Incl. Front Sheet 447	
Contractor/ Supplier Document Number:		Revision Number:	
EPC(M) Document Number: 505573-0000-39RA-I-0006		Issue Number: 01	
NE-LCP Document Number: LCP-SN-CD-0000-PM-LS-0001-01		NE-LCP Issue Number: B2	
Approver's Signature: 		Date (dd-mmm-yyyy): 13-Apr-2012	Review Class:
Comments:		Equipment Tag or Model Number:	

NE-LCP or EPC(M)

REVIEW DOES NOT CONSTITUTE APPROVAL OF DESIGN DETAILS, CALCULATIONS, TEST METHODS OR MATERIAL DEVELOPED AND/OR SELECTED BY THE CONTRACTOR, NOR DOES IT RELIEVE THE CONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OR OTHER OBLIGATIONS.

01 – REVIEWED AND ACCEPTED – NO COMMENTS

02 – REVIEWED – INCORPORATE COMMENTS, REVISE AND RESUBMIT

03 – REVIEWED - NOT ACCEPTED

04 – INFORMATION ONLY

05 – NOT REVIEWED

Lead Reviewer: 	Date (dd-mmm-yyyy): 18-APR-2012	Area Manager: 	Date (dd-mmm-yyyy): 18 APR 2012
NE-LCP or EPC(M) Management: 	Date (dd-mmm-yyyy): 18-APR-2012		

General Comments:



Lower Churchill Project

LCP Master Package Dictionary

SLI Document No. 505573-0000-39RA-I-0006

Nalcor Reference No. LCP-SN-CD-0000-PM-LS-0001-01

Date: 13-April-2012

A handwritten signature in blue ink, appearing to read "C. Fernandez", written over a horizontal line.

(C.Fernandez)



LCP Package Dictionaries List - Register



505573-0000-39RA-0-0006
LCP-SN-CD-0000-PM-LS-0001-01

Rev: 01
Date: 13-Apr-2012

Component	Type	Code	Revised Package Name	PD Updated		Remarks
				YES	NO	
C1	C - Contract	CH0002	Supply and Install Accommodations Complex Buildings	X		
C1	C - Contract	CH0003	Supply and Install Administrative Buildings	X		
C1	C - Contract	CH0004	Construction of Southside Access Road	X		
C1	C - Contract	CH0005	Supply and Install Accommodations Complex Site Utilities	X		
C1	C - Contract	CH0006	Construction of Bulk Excavation Works and Associated Works	X		
C1	C - Contract	CH0007	Construction of Intake and Powerhouse, Spillway and Transition Dams	X		
C1	C - Contract	CH0008	Construction of North Spur Stabilization Works	X		
C1	C - Contract	CH0009	Construction of North and South Dams	X		
C1	C - Contract	CH0023	Construction of Reservoir Clearing South Bank	X		
C1	C - Contract	CH0024	Construction of Reservoir Clearing North Bank	X		
C1	C - Contract	CH0029	Construction of Site Restoration at Muskrat Falls	X		
C1	C - Contract	CH0030	Supply and Install Turbines and Generators	X		
C1	C - Contract	CH0031	Supply and Install Mechanical and Electrical Auxiliaries (MF)	X		
C1	C - Contract	CH0032	Supply and Install Powerhouse Hydro-Mechanical Equipment	X		
C1	C - Contract	CH0033	Supply and Install Powerhouse Cranes	X		
C1	C - Contract	CH0034	Supply and Install Powerhouse Elevator	X		
C1	C - Contract	CH0039	Supply and Install McKenzie River Permanent Bridge	X		
C1	C - Contract	CH0046	Supply and Install Spillway Hydro-Mechanical Equipment	X		
C1	C - Contract	CH0048	Construction of Site Clearing Access Road & Ancillary Areas	X		
C1	C - Contract	CH0049	Supply and Install Log Booms	X		
C1	C - Contract	CH0050	Supply of Concrete including Batch Plant (MF)	X		
C1	C - Contract	CH0052	Construction of Habitat Compensation Works	X		
C1	P - Purchase Order	PH0014	Supply of Generator Step-up Transformer	X		
C1	P - Purchase Order	PH0015	Supply of Isolated Phase Bus	X		
C1	P - Purchase Order	PH0016	Supply of Generator Circuit Breakers	X		
C1	P - Purchase Order	PH0035	Supply of Station Service Transformers	X		
C1	P - Purchase Order	PH0036	Supply of Auxiliary Transformers	X		
C1	P - Purchase Order	PH0037	Supply of 25kV Switchgear	X		
C1	P - Purchase Order	PH0038	Supply of Emergency Diesel Generators	X		
C1	S - Service Contract	SH0001	Physical Hydraulic Model	X		
C1	S - Service Contract	SH0018	Provision of Catering, Housekeeping and Janitorial Services (MF)	X		
C1	S - Service Contract	SH0019	Provision of Security Services	X		
C1	S - Service Contract	SH0020	Provision of Medical Services	X		
C1	S - Service Contract	SH0021	Provision of Road Maintenance and Snow Clearing Services (MF)	X		
C1	S - Service Contract	SH0022	Provision of Fuel Supply and Dispensing Services (MF)	X		
C1	S - Service Contract	SH0040	Provision of Garbage Removal and Disposal Services (MF)	X		
C1	S - Service Contract	SH0041	Provision of Ground Transportation Services (HVGB to MF)	X		
C1	S - Service Contract	SH0051	Provision of Buildings Maintenance Services (MF)	X		
C3	C - Contract	CD0501	Supply and Install Converters and Cable Transition Compounds	X		
C3	C - Contract	CD0502	Construction of AC Substations and Synchronous Condensers Facilities	X		
C3	C - Contract	CD0503	Construction of Earthworks at Various Power Distribution Sites	X		
C3	C - Contract	CD0508	Supply and Install of Electrode Sites	X		
C3	C - Contract	CD0509	Construction Telecommunication Services - Phase 2	X		
C3	C - Contract	CD0510	Supply and Install Permanent Communication Systems	X		
C3	C - Contract	CD0512	Construction of Construction Power Facilities	X		
C3	C - Contract	CD0534	Supply and Install Soldiers Pond Synchronous Condensers	X		
C3	C - Contract	CD0535	Construction Telecommunication Services - Phase 2 Remote Camps	X		
C3	C - Contract	CD0538	Supply and Install Accommodations Camp (CF)	X		
C3	P - Purchase Order	PD0505	Supply of Switchyard Equipment, AC Substations at CF, MF and SP	X		
C3	P - Purchase Order	PD0513	Supply of 138/25 kV Transformers	X		
C3	P - Purchase Order	PD0514	Supply of 138 kV & 25 kV Circuit Breakers	X		
C3	P - Purchase Order	PD0515	Supply of 230 kV, 138 kV & 25 kV Disconnect Switches	X		
C3	P - Purchase Order	PD0518	Supply of 138 kV Capacitor Voltage Transformers	X		
C3	P - Purchase Order	PD0519	Supply of 25 kV Vacuum Interrupters	X		
C3	P - Purchase Order	PD0520	Supply of 25 kV 6 x 3.6 MVAR Capacitor Banks	X		
C3	P - Purchase Order	PD0522	Supply of Pre-fabricated Control Room Building	X		
C3	P - Purchase Order	PD0523	Supply of Substation Service Transformer	X		
C3	P - Purchase Order	PD0529	Supply of 25 kV Reclosers	X		
C3	P - Purchase Order	PD0530	Supply of 138 kV & 25 kV Surge Arrestors	X		
C3	P - Purchase Order	PD0531	Supply of MV Instrument Transformer	X		
C3	P - Purchase Order	PD0533	Supply and Install Early Works Telecom Devices	X		
C3	P - Purchase Order	PD0537	Supply of Power Transformers, AC Substations at CF, MF and SP	X		
C3	P - Purchase Order	PD0561	Supply of D20 RTU and Cabinet (CF) - Construction Power	X		
C3	P - Purchase Order	PD0562	Supply of Protection Front Panels and Protection Relays (CF) - Construction Power	X		
C3	P - Purchase Order	PD0563	Supply of 138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs - Construction Power.	X		
C3	S - Service Contract	SD0536	Provision of Integrated Commissioning Support Services	X		
C3	S - Service Contract	SD0560	Provision of Early Works Construction Telecommunication Services (MF)	X		
C4	C - Contract	CT0319	Construction of 315 kV HVac Transmission Line (MF to CF)	X		
C4	C - Contract	CT0327	Construction of 350 kV HVdc Transmission Line - Section 1	X		
C4	C - Contract	CT0341	Clearing of Right-of-Way for 315 kV HVac Transmission Line (MF to CF)	X		
C4	C - Contract	CT0342	Construction of AC Transmission Lines - Island	X		
C4	C - Contract	CT0343	Clearing of Right-of-Way for HVdc Transmission Line - Section 1	X		
C4	C - Contract	CT0345	Clearing of Right-of-Way for HVdc Transmission Line - Section 2	X		
C4	C - Contract	CT0346	Construction of 350 kV HVdc Transmission Line - Section 2	X		
C4	P - Purchase Order	PT0300	Supply of Transmission Line Conductors - 315 kV HVac	X		
C4	P - Purchase Order	PT0301	Supply of HVac Insulators - 315 kV HVac	X		
C4	P - Purchase Order	PT0302	Supply of Steel Towers - 315 kV HVac	X		
C4	P - Purchase Order	PT0303	Supply of Tower Hardware - 315 kV HVac	X		
C4	P - Purchase Order	PT0304	Supply of Optical Ground Wire (OPGW) - 315 kV HVac	X		
C4	P - Purchase Order	PT0307	Supply of Steel Tower Foundations - 315 kV HVac	X		
C4	P - Purchase Order	PT0308	Supply of Steel Tower Foundations - 350 kV HVdc	X		
C4	P - Purchase Order	PT0326	Supply of Steel Wires - 315 kV HVac	X		
C4	P - Purchase Order	PT0328	Supply of Transmission Line Conductors - 350 kV HVdc	X		
C4	P - Purchase Order	PT0329	Supply of HVdc Insulators - 350 kV HVdc	X		
C4	P - Purchase Order	PT0330	Supply of Steel Towers - 350 kV HVdc	X		
C4	P - Purchase Order	PT0331	Supply of Tower Hardware - 350 kV HVdc	X		
C4	P - Purchase Order	PT0334	Supply of Steel Wires - 350 kV HVdc	X		
C4	P - Purchase Order	PT0335	Supply of Anchor Materials - 315 kV HVac	X		
C4	P - Purchase Order	PT0336	Supply of 25 kV Distribution Line Hardware	X		
C4	P - Purchase Order	PT0337	Supply of 25 kV Distribution Line ADSS Fibre Optic Cable	X		
C4	P - Purchase Order	PT0338	Supply of 25 kV Distribution Line Conductors	X		
C4	P - Purchase Order	PT0339	Supply of 25 kV Distribution Line Insulators	X		
C4	P - Purchase Order	PT0340	Supply of Wood Poles for 138/25 kV Distribution Line	X		
C4	P - Purchase Order	PT0347	Supply of Re-terminations Materials	X		
C4	P - Purchase Order	PT0351	Supply of Wood Poles	X		
C4	P - Purchase Order	PT0352	Supply of Anchor Materials - 350 kV HVdc	X		
C4	P - Purchase Order	PT0353	Supply of Optical Ground Wire (OPGW) - 350 kV HVdc	X		
C4	S - Service Contract	ST0309	Provision of Geotechnical Investigation Services - 315 kV HVac	X		
C4	S - Service Contract	ST0310	Provision of Geotechnical Investigation Services - 350 kV HVdc	X		
C4	S - Service Contract	ST0311	Provision of Survey Services - 315 kV HVac	X		
C4	S - Service Contract	ST0312	Provision of Survey Services - 350 kV HVdc	X		
SM	S - Service Contract	SM0700	Provision of General Freight Forwarding Services	X		
SM	S - Service Contract	SM0701	Provision of Third Party Quality Surveillance & Inspection Services	X		
SM	S - Service Contract	SM0703	Provision of Happy Valley-Goose Bay Project Office Space	X		
SM	S - Service Contract	SM0704	Provision of Surveying Services	X		
SM	S - Service Contract	SM0705	Provision of Laboratory Services	X		
SM	S - Service Contract	SM0706	Supply and Maintenance of Project Vehicles	X		
SM	S - Service Contract	SM0707	Provision of Helicopter Services	X		
SM	S - Service Contract	SM0709	Provision of Air Transportation Services	X		
SM	S - Service Contract	SM0710	Supply and Maintenance of various IT Equipment	X		
SM	S - Service Contract	SM0713	Provision of Geotechnical Investigation Services	X		
SM	S - Service Contract	SM0714	Provision of EPCM Services - SNC Lavalin Inc.	X		
SM	S - Service Contract	SM0715	Provision of Expediting Services	X		

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LCP
PACKAGES DICTIONARIES –
COMPONENT 1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0002	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Complex Buildings	Revision No.:	01
(short):	Accommodations Complex Buildings	Date:	13-Apr-2012
Discipline:	Architectural		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	Terry McCarthy
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of work Summary:

This contract includes the design, fabrication, supply, delivery, installation, and commissioning of a new 1,500 person accommodation complex including an initial 150 person starter camp. Also included are associated furnishings, fittings, equipment, mechanical and electrical systems and components.

Work Included:

- Accommodations Buildings comprised of either 26 Type 2 dormitory modules or 16 Type 3 dormitory modules. Decision pending post RFP close (milestone 10).
- Initial 150 person Starter camp Kitchen/Dining/Recreation Building along with 2 Type 3 dormitory modules or 3 Type 2 dormitory modules.
- Main Kitchen, Dining and Recreation Centre Building (includes Medical facility).
- Weather proof corridors adjoining kitchen/recreation building to dormitory modules.
- Associated fittings, equipment and furniture for each building.
- Building foundations.
- Exterior stairs, ramps and pads.
- Water and sanitary sewer service connections from tie in point 1.5m outside building footprint.
- Electrical power connections from transformers.
- Communications cabling within buildings and connection to termination pole.

Approximate Quantities (major items only):

ITEM	DESCRIPTION	UNIT	QUANTITY
1	92 Person 2-storey Dormitory	ea	16
2	Kitchen/Dining/Recreation Building	m ²	3990
3	Artic Corridors (Modules)	m	220
4	Starter Kitchen	m ²	337

Contract Basis:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

Work Excluded:

Description	Package No.
Clearing, Grubbing and Grading of Camp Site	CH0048

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: CH0002	Type: C-Contract
Titles (long): Supply and Install Accommodations Complex Buildings	Revision No.: 01
(short): Accommodations Complex Buildings	Date: 13-Apr-2012

Installation of Camp utilities, water, sewer, and electrical distribution	CH0005
Administrative buildings	CH0003
Catering and Camp maintenance	SH0018 / SH0051

Quality: Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section: The following main documents are used to define the scope:
Muskrat Falls Accommodation Complex Functional Design Brief (723469-MF-1501-40EB-0001-1)

Interface with other Packages:

Description	Package No.
Administrative Buildings	CH0003
South Side Access Road	CH0004
Site Clearing Access Road and Ancillary Areas	CH0048
Accommodation Complex Site Utilities	CH0005
Security	SH0019
Medical Services	SH0020
25 kV Distribution Lines	CD0512
Communications	CD0510

Specific Site Conditions: Sub-grade for this contract will be prepared under contract CH0004. 3rd party bearing capacity survey required prior to start of construction.

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- CH0048 Site Clearing Access Road and Ancillary Areas
- CH0004 South Side Access Road
- CH0005 Accommodation Complex Site Utilities

Any other packages that cannot proceed before the subject package has started:

- CH0006 Bulk Excavation and Associated Civil Works (Starter camp in CH0002 is necessary to accommodate work force for CH0006)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0002	Type: C-Contract												
Titles (long): Supply and Install Accommodations Complex Buildings	Revision No.: 01												
(short): Accommodations Complex Buildings	Date: 13-Apr-2012												
Specific Environment Conditions:	Contractor shall adhere to Project-Wide Environmental Protection Plan (P-WEPP) and develop a Contractor-Specific Environmental Protection Plan (C-SEPP). Contractor shall be responsible for waste disposal and fuel supply.												
Specific Safety Conditions:	Use of heavy equipment. Use of cranes and slings. Working at heights in excess of 3m and therefore use of safety guards and fall arrest.												
Special Requirements:	The buildings will be prefabricated modules delivered to and assembled on site.												
Free Issued Materials:	Not Applicable												
Major Equipment List:	Not Applicable												
Schedule and Milestones:	<table border="0"> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
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Budget:	TBD												
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IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD																			
Package No.: CH0003	Type: C-contract																		
Titles (long): Supply and Install Administrative Buildings	Revision No.: 01																		
(short): Administrative Buildings	Date: 13-Apr-2012																		
Work Excluded:	<u>Remarks:</u> Lumps sum contract.																		
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Specific Environment Conditions:	Contractor shall adhere to Project-Wide Environmental Protection Plan (P-WEPP) and develop a Contractor-Specific Environmental Protection Plan (C-SEPP). Contractor shall be responsible for waste disposal and fuel supply.																		

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0003	Type: C-contract												
Titles (long): Supply and Install Administrative Buildings	Revision No.: 01												
(short): Administrative Buildings	Date: 13-Apr-2012												
Specific Safety Conditions:	Use of heavy equipment. Use of cranes and slings. Working at heights in excess of 3m and therefore use of safety guards and fall arrest.												
Special Requirements:	The buildings will be prefabricated modules delivered to and assembled on site.												
Free Issued Materials:	Not Applicable												
Major Equipment List:	Not Applicable												
Schedule and Milestones:	<table border="1"> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>TBD</td> </tr> </table> <p>Dates for milestones will be updated once the Project baseline schedule is in place.</p>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	TBD
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IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0004	Type:	C-Contract
Titles (long):	Construction of Southside Access Road	Revision No.:	01
(short):	Southside Access Road	Date:	13-Apr-2012
Discipline:	Civil		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	Terry McCarthy
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of work Summary:

This contract package mainly consists of construction of approximately 22 km of access road from the Trans Labrador Highway on the south side of the Churchill River to the main project site. It also includes the access road to and grading of the Accommodation Complex Site, grading of Company's Laydown area, and access roads to designated pits and quarries. Decision is pending on construction of approximately 6 km of new road alignment from the Trans Labrador Highway near the existing Churchill River bridge to the end of the existing Forest Access Road.

Work Included:

- Construction of access road to RLU70 standard from the end of the existing forest access road to the main project site at Muskrat Falls.
- Construction of access road to accommodations complex site.
- Design, supply and installation of two (2) new Panel bridges.
- Installation of one (1) Company supplied Panel bridge.
- Grubbing and grading of accommodations complex site and associated roads to complex facilities.
- Grubbing and grading of the Owner's Laydown Area.
- Construction of approximately 5 km of access road to designated gravel pits and rock quarries.
- Supply of crushed granular materials for finish grading of accommodations complex site.
- Minor upgrading, snow clearing and maintenance of the existing forest access road during road construction.

Approximate Quantities (major items only):

ITEM	DESCRIPTION	UNIT	QUANTITY
1	GRUBBING	HA	44.8
2	EXCAVATION		
2.1	Solid Rock	m ³	131,310
2.2	Other Material	m ³	154,205
2.3	Quarried Rock	m ³	251,950
2.4	Other Material Borrow	m ³	28,100
3	SELECTED GRANULAR BASE COURSE (MG 3)	t	111,000
4	SUPPLY AND INSTALLATION OF PIPE CULVERTS		
4.1	</= 1200mm Diameter	m	820
4.2	</= 3000mm Diameter	m	93
5	STRUCTURAL PLATE ARCH (10.1x5.45m Standard Arch)	m	20
6	TEMPORARY BRIDGES (15.24m Panel Bridges)	LS	3
7	SUPPLY AND INSTALLATION OF GUIDE RAIL	m	4,168

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: CH0004	Type: C-Contract
Titles (long): Construction of Southside Access Road	Revision No.: 01
(short): Southside Access Road	Date: 13-Apr-2012

Contract Basis:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

This is a combination unit price contract with lump sum items.

Work Excluded:

Description	Package No.
Clearing of the access roads, pits and quarries, accommodations complex site and Owner’s Laydown area	CH0048
Installation of Accommodations Complex Site utilities	CH0005
Construction of 25 kV powerline	CD0512
Construction of McKenzies River Permanent Bridge	CH0039

Quality

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main documents are used to define the scope:
 505573-311A-41EC-0001 Design Criteria – Main Access Road

Interface with other Packages:

Description	Package No.
Accommodations Complex Buildings	CH0002
Administrative Buildings	CH0003
Accommodation Complex Site Utilities	CH0005
Bulk Excavation Works	CH0006
Site Clearing Access Road and Ancillary Areas	CH0048
Construction Power Facilities	CD0512
Communication Equipment	CD0510

Specific Site Conditions:

Remote site, rough terrain, several major stream crossings (Caroline Brook 50m³/s, Jacoby’s Brook 66m³/s, and McKenzie River 145m³/s)

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- CH0048 Site Clearing Access Road and Ancillary Areas

Any other packages that cannot proceed before the subject package has started:

- CH0002 Accommodations Complex Buildings
- CH0003 Administrative Buildings
- CH0005 Accommodation Complex Site Utilities

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0004 Titles (long): Construction of Southside Access Road (short): Southside Access Road	Type: C-Contract Revision No.: 01 Date: 13-Apr-2012												
Specific Environment Conditions:	• CH0006 Bulk Excavation Works Impact to stream, wetland, and forest environments. Seasonal constraints of working near streams and crossings. Approval of Environmental Assessment. Permit Approvals.												
Specific Safety Conditions:	Use of heavy equipment in remote areas with difficult access.												
Special Requirements:	Not Applicable.												
Free Issued Materials:	Equipment to be supplied by the Company includes one (1) 15.2m prefabricated panel bridge for the initial crossing at Caroline Brook												
Equipment List:	Not Applicable												
Schedule and Milestones:	<table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;">EOI Date:</td> <td style="border: none;">26-Sep-2011</td> </tr> <tr> <td style="border: none;">RFP Date:</td> <td style="border: none;">05-Dec-2011</td> </tr> <tr> <td style="border: none;">Award Date:</td> <td style="border: none;">TBD</td> </tr> <tr> <td style="border: none;">Start Construction:</td> <td style="border: none;">TBD</td> </tr> <tr> <td style="border: none;">Construction Complete:</td> <td style="border: none;">TBD</td> </tr> <tr> <td colspan="2" style="border: none;">Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	26-Sep-2011	RFP Date:	05-Dec-2011	Award Date:	TBD	Start Construction:	TBD	Construction Complete:	TBD	Dates for milestones will be updated once the Project baseline schedule is in place.	
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Construction Complete:	TBD												
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Budget:	TBD												
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>												
IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0005	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Complex Site Utilities	Revision No.:	01
(short):	Accommodation Complex Site Utilities	Date:	13-Apr-2012
Discipline:	Civil/Mechanical/Process/Electrical		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	Terry McCarthy
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of work Summary

This contract package includes supply and installation of water and sewerage utilities, including mechanical and electrical components and connections and associated infrastructure for the Accommodations Complex site including administrative buildings. Grading of the site and the installation of accommodation and administrative buildings is being carried out by other contractors. This contract involves the supply of site services to those buildings and includes the potable and fire water distribution system, the sewage distribution system, and the electrical distribution system.

Work Included:

- Water Treatment Facility (Pumphouse and Chlorination Building).
- Water Distribution system including valves, hydrants and service connections to within 1.5 m from buildings.
- Installation of temporary water, sewer and power supply for starter camp.
- Design, supply and installation of water storage reservoir (1100 m³).
- Drilling and development of water wells for Starter camp, Main Camp and Company Laydown.
- Design, supply and installation of sewage treatment plant.
- Sewer Distribution system including temporary septic tank and disposal field for the starter camp, manholes and service laterals to within 1.5 m from buildings.
- Sewer Distribution system including septic tank and disposal field for the Company laydown area.
- Installation of concrete equipment foundations including spill containment pad for fuel dispensing area.
- Installation of diesel generators, 600V synchronizing switchgear and diesel fuel tank.
- Installation of 25kV switchgear.
- Installation of pad mounted and pole mounted transformers.
- Supply and installation of site lighting.
- Supply and installation of vehicle block heater system.
- Finish grading, fencing and pad for the Heliport.
- Supply and installation of approximately 2.8 km of perimeter security fence.
- Finished grading of camp site including parking lots, roads and ancillary areas.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0005	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Complex Site Utilities	Revision No.:	01
(short):	Accommodation Complex Site Utilities	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Site preparation including clearing, grubbing and grading of camp site and access road to the camp site	CH0004 / CH0048
The supply and installation of Accommodations Complex and Administrative Buildings	CH0002 / CH0003
Supply of emergency generators including diesel fuel tanks, switchgear and transformer	PH0036 / PH0037 / PH0038
Supply of granular material for finished grading of road, parking lots and ancillary areas	CH0004

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003 for general civil work scope.

Major Equipment requires determination of the Equipment Quality Rating (Refer to Procurement packages for Free Issued Materials) :

Water Pumphouse/chlorination:

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0005	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Complex Site Utilities	Revision No.:	01
(short):	Accommodation Complex Site Utilities	Date:	13-Apr-2012

Water Storage Tank:

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Sewage Treatment Plant:

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main documents are used to define the scope:
Muskrat Falls Accommodation Complex Functional Design Brief (723469-MF-1501-40EB-0001-1)

Interface with other Packages:

Description	Package No.
Accommodations Complex Buildings	CH0002
Administrative Buildings	CH0003
Southside Access Road	CH0004
Site Clearing Access Road and Ancillary Areas	CH0048
Auxiliary Transformers	PH0036
25 kV Switchgear	PH0037
Emergency Diesel Generators	PH0038

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.:	CH0005
Titles (long):	Supply and Install Accommodations Complex Site Utilities
Titles (short):	Accommodation Complex Site Utilities
Type:	C-Contract
Revision No.:	01
Date:	13-Apr-2012

Specific Site Conditions:	Geotechnical investigation required to substantiate volume of rock excavation and type of STP outfall.																																																																
Specific Schedule Conditions:	<p>Any other packages that have to be started before the subject package can proceed:</p> <ul style="list-style-type: none"> CH0048 Site Clearing Access Road and Ancillary Areas CH0004 South Side Access Road <p>Any other packages that cannot proceed before the subject package has started:</p> <ul style="list-style-type: none"> CH0006 Bulk Excavation and Associated Civil Works 																																																																
Specific Environment Conditions:	<p>Permit approvals.</p> <p>Design of Sewage Treatment Plant (STP) outfall not complete. Plan based on subterranean outfall which will require geotechnical investigation and Department of Environment approval.</p>																																																																
Specific Safety Conditions:	<p>Use of heavy equipment.</p> <p>Use of cranes and slings.</p> <p>Use of trench boxes in open excavations.</p>																																																																
Special Requirements:	Potable water source is from drilled (artesian) wells. Well pump tests required to confirm water quantity and quality.																																																																
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD											
Package No.: CH0005	Type: C-Contract										
Titles (long): Supply and Install Accommodations Complex Site Utilities	Revision No.: 01										
(short): Accommodation Complex Site Utilities	Date: 13-Apr-2012										
Major Equipment List:	1570-TNK-0001 MAIN FUEL STORAGE TANK FOR DG SETS Maintenance Grade 3 material for finish grading.										
	25kV Switchgear 600V Synchronizing Switchgear 500 kW and 1000 kW Diesel Generators Water Pumphouse/chlorination Water Storage Tank Sewage treatment plant										
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Construction Complete:	TBD										
Budget:	TBD										
Applicable Sub-Project/SPV	<table border="1"> <tr> <td>Muskrat Falls Generation</td> <td><input checked="" type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>		
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>								
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>								
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>										

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0006	Type:	C- Contract
Titles (long):	Construction of Bulk Excavation and Associated Works	Revision No.:	01
(short):	Bulk Excavation Works	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Michel Maeyens	Package Engineer: Maeyens	Michel Maeyens
	Michel Maeyens		
	QA / QC: Ken Morrison	Contract Admin. / Buyer::	Stella Roche

Scope of work Summary

Overburden and Rock Excavation for the Spillway Structure and Intake, Powerhouse and Tailrace structure, excluding tailrace rock plug, hereafter referred to a Powerhouse Complex; Pre-construction percussion drilling to determine thickness of overburden prior to commence excavation;
 Additional site investigation (powerhouse Complex, Dam and Cofferdam construction by others (CH0009) and North Spur by others (CH0008)
 Construction of RCC Riverside Cofferdam and associated Rock fill Cofferdams to protect Spillway and Powerhouse Complex against flooding.

Ref: Package CH0007: Construction of Intake and Powerhouse, Spillway and Transition Dams.

Ref. Package CH0008: Construction of North Spur Stabilization Works.

Ref. Package CH0009: Construction of North and South Dams.

Work Included:

- Additional pre-construction percussion drilling to validate rock elevations and define location of overburden slopes;
- Construction of the RCC riverside cofferdam and Rock fill dams to protect powerhouse and spillway excavation (Up to Elevation 21.0 m, downstream of the Spillway and Elevation 26.0 m upstream of the Spillway).
- Construction of Tailrace Rock fill cofferdam to protect powerhouse excavation;(up to Elevation 21.0 m)
- Powerhouse excavation (overburden and rock) and consolidation works;
- Powerhouse intake excavation (overburden and rock) and consolidation works;
- Powerhouse tailrace excavation (overburden and rock) and consolidation works;
- Spillway excavation (overburden and rock) and consolidation works;
- Note: Consolidation works consist of Rockbolts, Rock Dowels, Welded Wiremesh and Shotcrete
- Installation of chainlink wire mesh along all excavated slopes to protect personnel and equipment from potential falling rock;;
- South transition dam excavation;
- Center transition dam excavation;
- North transition dam excavation;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0006	Type:	C- Contract
Titles (long):	Construction of Bulk Excavation and Associated Works	Revision No.:	01
(short):	Bulk Excavation Works	Date:	13-Apr-2012

The north upstream rock fill cofferdam, including foundation preparation and treatment	CH0009	
The north downstream cofferdam, including foundation preparation	CH0009	
The north RCC dam, including foundation preparation, treatment, drainage, electrical works, mechanical works and instrumentation; The south dam including excavation (Overburden and Rock) foundation preparation, treatment, drainage and instrumentation;	CH0009	
North spur improvement	CH0008	
Switchyard extension – civil works	TBC	
Removal of Downstream Section (downstream of the Spillway) of the Riverside RCC Cofferdam	CH0009	
Additional site investigations inclusive of North Spur, south dam, north RCC dam, north upstream and downstream cofferdams and borrow areas. This package will include conventional core drilling, seismic and resistivity surveys, pumping tests and test pits;	SM0713	
Clearing of Project Site area	CH0048	
Removal of Tailrace Rock plug	CH0007	

Quality

Refer to the quality documents

Reference Section

- The following main documents are used to define the scope:
- Design Criteria as formulated for the Lower Churchill Project
 - MF 1380 – Muskrat Falls Site Information for Tenderers
 - Ref no; 723468-MF 1380-40ER-0001
 - Specific Design Calculations

Interface with Other Packages

Description	Package No.
Main Site Access Road South Side	CH0004
Accommodation Complex Building	CH0002
Intake and Powerhouse, Spillway and Transition Dams	CH0007
North Spur Stabilization Works	CH0008

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0006	Type: C- Contract												
Titles (long): Construction of Bulk Excavation and Associated Works	Revision No.: 01												
(short): Bulk Excavation Works	Date: 13-Apr-2012												
Specific Site Conditions	The Construction of structures near or in the Churchill River will require strict safety enforcement.												
Specific Schedule Conditions	<p>The commencement date of the CH0006 package (scheduled to be on July 2, 2012) is very critical as major delays will require a rethink of the diversion structures, possibly with a higher risk for flooding of the Spillway Structure., with possible impact to its completion date, in turn very critical for CH0007. It is noted that in order to complete the diversion structures as planned that these would have to be completed before the end of October 2012, time after which freezing conditions may occur. Possible mitigation measures could be envisaged, as e.g. by building a temporary shelter (done in other projects) This will have a cost, but in turn will minimize the risk.</p> <p>The Contractor is asked to mobilize drilling equipment for the North Spur immediately after contract award</p>												
Specific Environment Conditions	As CH0006 will create large excavations below ground and river levels, inflow of water is expected (either natural ground water or by rain). This water will be pumped into two sedimentation ponds which will filter the water before returning it to the river at the specified suspension levels (less than 30 ppm). It will also take care of any explosive residues (particularly diesel, which will be one of the components of the explosives – ANFO). As part of the quality control the Contractor will have to demonstrate that the explosives used are totally consumed i.e. have an adequate oxygen balance, in order to minimize pollution of the water by diesel or other components. Adequate drainage systems are provided to take care of natural run-off water and have it returned to the river in a natural way.												
Specific Safety Conditions	<p>As mentioned in the Specific Site Conditions, safety is a concern when constructing structures close or in the water. Prior to commencement of any work near the river a special security fence will be constructed between the riverside perimeter and the RCC Cofferdam. The site investigations defined in this package will partly have to be done in the river between the upstream and downstream falls and will require special measures to ensure the safety of the drilling crews.</p> <p>The usage of large amount explosives will also need a strict control, during storage, charging and during blasting in order to avoid any accidents (by fly rock or others).</p>												
Special Requirements(All)	Environmental and Safety Requirements are provided in the Agreement in several documents.												
Equipment List	Not Applicable												
Schedule and Milestones	<table border="1"> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
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Budget	TBD												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0006	Type:	C- Contract
Titles (long):	Construction of Bulk Excavation and Associated Works	Revision No.:	01
(short):	Bulk Excavation Works	Date:	13-Apr-2012

Applicable Sub-Project/SPV

Muskkrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>
<p>IBA Package</p> <p>YES <input type="checkbox"/> NO <input checked="" type="checkbox"/></p>			

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0007	Type:	C-Contract
Titles (long):	Construction of Intake and Powerhouse, Spillway and Transition Dams	Revision No.:	01
(short):	Intake, Powerhouse, Spillway & Trans Dams	Date:	13-Apr-2012

Discipline:	Civil	Package Engineer:	Hafid Bouzaïene
Responsibilities: Area Manager:	Luc Turcotte	Contract Admin. / Buyer:	Ron Adamcyk
QA / QC:	Ken Morisson		

Scope of Work Summary

This contract includes;

Construction of the powerhouse and the intake which includes concreting, steel structure, embedment parts and miscellaneous metals as well as the architectural works related to the envelop of the powerhouse building.

Construction of the gated spillway including the upstream and downstream permanent bridges and downstream temporary bridge over the gated spillway.

Construction of the centre and north transition dams.

Construction of the Powerhouse/Intake cofferdam (separation wall), inclusive of temporary road and temporary upstream bridge.

Civil works related to permanent access roads to the powerhouse and to the spillway, as well as the upstream temporary bridge over the spillway approach channel and the downstream temporary bridge over the gated spillway.

Work Included:

Intake and Powerhouse

- Concreting of the powerhouse and the intake structure (inclusive the delivery of the concrete from the batch plant to the pour location, formwork and related civil works).
- Foundation preparation. The excavation (overburden and rock) and consolidation works are done by other CH0006.
- Supply and installation of the steel superstructure and all miscellaneous metals, including stairs, ladders, hand rails and guardrails;
- Downstream transformer deck including fire walls, containment and bases for GSU transformers.
- Architectural works related to the envelop of the powerhouse and the intake (architectural interior works is included in package CH0031) ;
- Civil works related to permanent access roads, parking area and retaining walls;
- Drainage holes, grouting curtains, dental excavation and secondary rock excavation where required within the powerhouse;
- Civil work for the interconnection cables between the powerhouse and the switchyard;
- Supply and installation of embedded and non-embedded metalwork which includes piping, embedded grounding and related works;

Spillway

- Concreting of the gated spillway (including the delivery of the concrete from the batch plant to the pour location, formwork and related civil works);
- Foundation preparation. The excavation (overburden and rock) and consolidation works are done by other CH0006;
- Curtain grouting;
- Supply and installation of the upstream permanent bridge over the gated spillway;
- Supply and installation of the downstream permanent bridge over the gated spillway;
- Supply and installation of miscellaneous metals (supply and installation of the hoist enclosure steel superstructure is part of package CH0046);

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0007	Type:	C-Contract
Titles	(long): Construction of Intake and Powerhouse, Spillway and Transition Dams	Revision No.:	01
	(short): Intake, Powerhouse, Spillway & Trans Dams	Date:	13-Apr-2012

- Supply and installation of embedded parts which include piping, embedded grounding and related works;
- Curtain grouting;
- Concrete foundation for electrical building;
- Civil work for the interconnection cables between the powerhouse and the spillway

Transition Dams

- Concreting of the centre and north transition dams (including the delivery of the concrete from the batch plant to the pour location, formwork and related civil works);
- Foundation preparation. The excavation (overburden and rock) and consolidation works are done under CH0006;
- Curtain grouting and drainage;
- Supply and installation of embedded parts, miscellaneous metals and embedded grounding.

Cofferdam

- Concreting of the Powerhouse/Intake cofferdam (spillway upstream training wall) including formwork and the delivery of the concrete from the batch plant to the pour location;
- Foundation preparation. The excavation (overburden and rock) and consolidation works are done under CH0006;
- Removal of upstream and downstream spillway cofferdams.

Access Roads and Temporary Bridges

- Concreting of abutments and centre pier of upstream temporary “Bailey” bridge over the spillway approach channel (including the delivery of the concrete from the batch plant to the pour location, formwork and related civil works);
- Supply, installation and subsequent removal/handover of the temporary upstream bridge over the spillway approach channel;
- Supply, installation and subsequent removal/handover of the temporary downstream bridge over the gated spillway;
- Concreting of the retaining structures related to the access roads and temporary bridges;
- Civil works;
- Supply and installation of embedded parts and miscellaneous metals.

Tailrace Rock Plug

- Removal of the rock plug in tailrace.

Approximate Quantities (only major items are included)

Item	Description	Unit	Quantity
1	Powerhouse and Intake		
1.1	Concrete CVC	m ³	328,000
1.2	Structural Steel	Ton	3,300

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0007	Type:	C-Contract
Titles (long):	Construction of Intake and Powerhouse, Spillway and Transition Dams	Revision No.:	01
(short):	Intake, Powerhouse, Spillway & Trans Dams	Date:	13-Apr-2012

2	Spillway and other related Structures		
2.1	Concrete CVC	m ³	67,000
2.2	Structural Steel	Ton	400
3	Transitions Dams		
3.1	Concrete CVC	m ³	47,000
4	Separation Wall		
4.1	Concrete CVC	m ³	10,000

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Supply and installation of Hydro-Mechanical Equipment (gates, trashracks and embedments) for the intake	CH0032
Supply and installation of Hydro-Mechanical Equipment for spillway gates including the hoist enclosure steel superstructure	CH0046
Supply and installation of the turbine, generator and governor	CH0030
Supply and installation of all electrical and mechanical equipments including the architectural interior works for the powerhouse and the intake. The architectural works related to the envelope of the powerhouse and the intake are included in package CH0007.	CH0031
Supply and installation of insulated power and control cables	CH0031
Supply and installation of cranes, hoists and associated structures	CH0033
Supply and installation of powerhouse elevator	CH0034
Supply of Concrete including Batch Plant	CH0050
Supply of Generator Step-up Transformer	PH0014
Construction of the Southside Access Road	CH0004
Bulk excavation, consolidation and slope protection works related to the powerhouse, the intake, the spillway and transition dams	CH0006
Construction of north upstream and downstream cofferdams, including foundation preparation and treatment	CH0009
Construction of south dam including excavation (overburden and rock) foundation preparation, treatment, drainage and instrumentation	CH0009
Construction of north RCC dam, including foundation preparation,	CH0009

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0007	Type:	C-Contract
Titles (long):	Construction of Intake and Powerhouse, Spillway and Transition Dams	Revision No.:	01
(short):	Intake, Powerhouse, Spillway & Trans Dams	Date:	13-Apr-2012

	treatment, drainage, electrical works, mechanical works and instrumentation																														
	Construction of the South transition Dam	CH0009																													
Quality	Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification																														
Reference Section	<p>The following main documents were used to define the scope:</p> <ul style="list-style-type: none"> LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design 723468-40ER-0001-00 - MF 1340 - Review and Confirmation of Muskrat Falls Layout M FA-SN-CD-3300-CV-DC-0001-01 - Design Criteria - Civil 																														
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0007	Type:	C-Contract
Titles (long):	Construction of Intake and Powerhouse, Spillway and Transition Dams	Revision No.:	01
(short):	Intake, Powerhouse, Spillway & Trans Dams	Date:	13-Apr-2012

Specific Site Conditions

- The construction of structures near the Churchill River will require strict safety enforcement.
- Bedrock at the Muskrat Falls site consists of hard, unweathered gneiss

Specific Schedule Conditions

- Any other packages that have to be started before the subject package can proceed:
- CH0004 – Construction of Southside Access Road
 - CH0006 – Bulk Excavation Works. The completion of CH0006 is very critical to ensure CH0007 Contractor can commence the concrete works in time to ensure the overall construction schedule of the LCP. Bulk Excavation Works shall be completed no later than April 2013.
 - CH0030 - Supply and Install Turbines and Generators. Powerhouse hydraulic passages layout drawings shall be ready by the end of May 2013. Embedment primary anchors must be supplied before concrete is poured.
 - CH0032 – Supply and Install Powerhouse Intake Hydro-Mechanical. Embedment primary anchors must be supplied before concrete is poured.
 - CH0034 – Supply And Install Powerhouse Elevator
 - CH0046 – Supply and Install Spillway Hydro-Mechanical Equipment. Embedment primary anchors must be supplied before concrete is poured.
 - CH0049 – Supply and Install Log Booms. Booms must be installed before creation of the winter headpond, and must be modified prior to impoundment to El. 39.
 - CH0050 – Supply of Concrete including Batch Plant (MF). Concrete batch plant shall be ready to produce first concrete no later than April 2013.
 - PH0014 – Supply of Generator Step-up Transformer
- Any other packages that cannot proceed (or be completed) before the subject package has started:
- CH0030 - Supply and Install Turbines and Generators. Powerhouse structural steel is required at site by 03-Mar-2014. Erection bay and Powerhouse crane shall be available by 09-Oct-2014. Delays will have a major impact on the Turbine and Generator package.
 - CH0031 - Supply And Install Mechanical And Electrical Auxiliaries (MF)
 - CH0032 - Supply and Install Powerhouse Intake Hydro-Mechanical
 - CH0033 – Supply And Install Powerhouse Cranes
 - CH0034 – Supply And Install Powerhouse Elevator
 - CH0046 – Supply And Install Spillway Hydro-Mechanical Equipment
 - Intake Transition/South Access shall be completed by 17-May-2014
 - Transitions Dams / Ready for diversion by 04-Jul-2014
 - Access across the spillway shall be available by 18-Jul-2015
 - Spillway – all rollways shall be completed before the impoundment of the reservoir to El. 39.0 m

Specific Environment Conditions

Waste concrete from washing of the mixers and trucks should be disposed of in appropriate approved waste disposal areas outside the site.
Dewatering of the excavations will produce water that will be pumped into sedimentation

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0007	Type:	C-Contract
Titles (long):	Construction of Intake and Powerhouse, Spillway and Transition Dams	Revision No.:	01
(short):	Intake, Powerhouse, Spillway & Trans Dams	Date:	13-Apr-2012

Specific Safety Conditions	ponds to filter the water before returning it to the river at the specified suspension levels (less than 30 ppm). Adequate drainage systems shall be provided to handle natural run-off water and have it returned to the river in a natural way.	
	Strict safety is required when constructing structures close to or in the water.	
Special Requirements (All)	Environmental and Safety Requirements are provided in the Agreement in several documents.	
Free Issued Materials	Not Applicable	
Major Equipment List	N/A	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0008	Type:	Contract
Titles (long):	Construction of North Spur Stabilization Works	Revision No.:	01
(short):	North Spur Stabilization Works	Date:	13-Apr-2012
Discipline:	Geotechnical		
Responsibilities:	Area Manager: Michel Maeyens	Package Engineer:	Alvaro Ceballos
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of work Summary	This contract includes; Groundwater control of the North spur; Drainage works in the North spur; Stabilization works of the North spur; Minor Electrical works related to the pumpwell system; Minor Mechanical works related to the pumpwell system.			
Work Included:	<p>This package includes:</p> <ul style="list-style-type: none"> • Clearing of work areas. • Overburden excavation ; • Embankment construction of different materials; • Slurry cut-off walls construction; • Construction of relief wells; • Pumpwells installation including the electrical and mechanical works; • Refurbishing of existing pumpwells including the electrical and mechanical works; • Instrumentation of the North spur; • Permanent access roads construction; • Construction access roads; • Relocation and protection of a portage trail and boat launches. 			
Approximate Quantities (only major Items included)	Item	Description	Unit	Quantity
	1	Overburden Excavation	m ³	680,000
	2	Embankments (All Materials)	m ³	1,100,000
	3	Slurry Wall Construction	m ²	42,000
	4	Pumpwells (new)	Units	07
	5	Pumpwells (refurbishing existing well)	Units	22

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0008	Type:	Contract
Titles (long):	Construction of North Spur Stabilization Works	Revision No.:	01
(short):	North Spur Stabilization Works	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Geotechnical investigations, which are included in package WS0713	WS0713
Construction road from the South shore, which is included in package (RCC Dams and River Cofferdams)	CH0009

Quality

The contractor shall comply with the Quality Requirement Specification number: 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope of the works:

Design Criteria as formulated for the Lower Churchill Project;
Geotechnical Investigations performed in package CH0006 (Bulk Excavation Works);
Specific design calculations and specialized studies

Interface with Other Packages

Description	Package No.
RCC Dams and River Cofferdams: Construction of the construction road from the south shore through the upstream cofferdam after diversion. The road will allow the utilization of rockfill coming from the required excavations.	CH0009
Construction of log booms access road in the upstream part of the North Spur. (Construction of Log Booms)	CH0049
315 kV HVac Transmission Line Construction: Transmission line will be constructed prior to stabilization works.	CT0319
Construction Contract for Construction Power: Construction line will be constructed prior to stabilization works and shall be diverted during the construction of the slurry cut-off wall located in the Northwest part of the Spur.	CD0512

Specific Site Conditions

No access to the site available from the south shore until diversion of the river.
Aproximately 300 kVA of construction power will be supplied to the contractor.

Specific Schedule Conditions

Some stabilization works and instrumentation shall be done before diversion of the river.

Specific Environment Conditions

No special requirements other than the Environmental and Safety Requirements provided in the Agreement in several documents.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0008	Type: Contract												
Titles (long): Construction of North Spur Stabilization Works	Revision No.: 01												
(short): North Spur Stabilization Works	Date: 13-Apr-2012												
Specific Safety Conditions	Environmental and Safety Requirements will be provided in the Agreement in several documents.												
Equipment List	Not applicable												
Schedule and Milestones	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: right;">EOI Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">RFP Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Award Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Construction Complete:</td> <td>Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
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Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/>												
	Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>												
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0009	Type:	C-Contract
Titles (long):	Construction of North and South Dams	Revision No.:	01
(short):	North and South Dams	Date:	13-Apr-2012
`Discipline:			
Responsibilities:	Area Manager: Michel Maeyens	Package Engineer:	Michel Maeyens
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of work Summary

Package CH0009 includes the excavation and construction of Rock fill Cofferdams with impervious till core and cutoffs and associated filters and transition zones, and the construction of the South Rockfill Dam and North RCC dam.

Work Included:

- The North Upstream Rockfill Cofferdam, including cutoff, foundation preparation and treatment. Foundation preparation may consist of jet grouting, pending on the results of the site investigations to be undertaken in SM0713
 - The North Downstream Cofferdam.
 - The North RCC Dam, including excavation, foundation preparation, treatment, drainage, electrical works, mechanical works and instrumentation.
 - The South Rockfill Dam including foundation preparation, treatment, drainage, and instrumentation.
 - The South Transition Dam (CVC), between the Powerhouse and Rock Fill Dam, including retaining walls..
 - This package will include hardware supply for the monitoring of instrumentation consisting of vibrating wire piezometers, opens standpipe piezometers, joint meters, crest monuments, Flow –V-notch type flow meters, seismographs and central unit readout stations.
 - Removal of the downstream part (from the Spillway D/S) of the RCC Riverside Cofferdam (built by CH0006)
 - Access Road around North Spur from the upstream cofferdam to the North spur
 - Temporary Access Roads
 - Borrow Areas
- Ref: Package CH0007: Construction of Intake and Powerhouse, Spillway and Transition Dams
- Ref. Package CH0008: Construction of North Spur Stabilization Works
- Ref. Package CH00006: Construction of Bulk Excavation Works and Associated Civil Works.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0009	Type:	C-Contract
Titles (long):	Construction of North and South Dams	Revision No.:	01
(short):	North and South Dams	Date:	13-Apr-2012

Approximate Quantities (major items only):

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	COFFERDAMS		
1.1	Overburden Excavation (all structures)	m ³	24,700 m ³
1.2	Till (Rockfill Cofferdams)	m ³	187,000 m ³
1.3	Rockfill, granular, Rip-Rap	m ³	199,000 m ³
1.4	Large blocks for Diversion	m ³	52,000 m ³
2	DAMS		
3	NORTH RCC DAM		
3.1	Overburden Excavation	m ³	70,000 m ³
3.2	Rock Excavation	m ³	2,700 m ³
3.3	RCC	m ³	189,000 m ³
3.4	Conventional Concrete	m ³	27,300 m ³
3.5	Cement for Grouting	kg	110,000 kg
3.6	Drainage holes (Foundation and Dam)	m	5,000 m
4	SOUTH ROCKFILL DAM		
4.1	Overburden Excavation	m ³	100,500 m ³
4.2	Compacted Till	m ³	22,200 m ³
4.3	Rockfill (All categories)	m ³	92,300 m ³
4.5	Concrete CVC (South Transition Dam between Powerhouse and Rockfill Dam))	m ³	11,900 m ³
5	Removal of RCC Cofferdam	m ³	15,800 m ³

Contract Basis:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
 Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0009	Type:	C-Contract
Titles (long):	Construction of North and South Dams	Revision No.:	01
(short):	North and South Dams	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Tailrace Cofferdam, including foundation preparation and treatment	CH0006
Riverside Cofferdam to be constructed	CH0006
Powerhouse intake Cofferdam (separation Wall)	CH0007
Construction of Bulk Excavation Works and associated Civil Works inclusive of: <ul style="list-style-type: none"> • Powerhouse / Intake Excavation; • Tailrace excavation; • Spillway excavation; • Switchyard and switchyard extension excavation and backfill 	CH0006
Intake and Powerhouse Construction	CH0007
Spillway Structure Construction	CH0007
Transition Dams(North and Centre)	CH0007
North Spur Improvement	CH0008
Construction of access road/cofferdam at upstream end of Intake Approach Channel	CH0007
Construction of temporary access bridges	CH0007

Quality

Refer to the quality documents

Reference Section

The following main documents are used to define the scope:

- Design Criteria as formulated for the Lower Churchill Project
- MF 1380 – Muskrat Falls Site Information for Tenderers
Ref no; 723468-MF 1380-40ER-0001
- Specific Design Calculations

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0009	Type:	C-Contract
Titles (long):	Construction of North and South Dams	Revision No.:	01
(short):	North and South Dams	Date:	13-Apr-2012
Interface with Other Packages	<p>The completion of portions of CH0007 is very critical to ensure CH0009 Contractor can commence the river diversion works in time by constructing the North Upstream Cofferdam. The construction of the North Upstream Cofferdam is very critical in order to ensure the construction of the North RCC dam, which is a critical activity to be constructed in a relatively tight schedule.</p> <p>Noted is that CH0007 depends upon on the timely completion of the Bulk Excavation (CH0006), which in turn depends on the Completion of the Southside Access Road.</p> <p>Construction of the South Dam is not on a critical path.</p>		
Specific Site Conditions	<p>The closure of the river for diversion through the spillway works and the construction of the North Upstream Cofferdam will be the most critical activity. It is noted that concerns exist on the quality of the foundation of the Cofferdam, potentially located on a weaker rock zone, which may require additional treatment, by Jet grouting or other techniques. Additional Site investigation in the river bed to be undertaken by CH0006 will shed more clarity on the type of foundation works to be undertaken.. Careful scheduling of the construction works sequence will be needed.</p>		
Specific Schedule Conditions	<p>In view of the relatively tight schedule for the construction of the Cofferdams and North RCC Dam careful scheduling of the construction works sequence will be needed. This is particularly true for the North Upstream Cofferdam in view of potential foundation treatment. South Dam must be completed before impoundment.</p>		
Specific Environment Conditions	<p>The Construction of the North Upstream Cofferdam into the river will necessitate extra care in order to avoid excessive contamination of the river during its construction.</p>		
Specific Safety Conditions	<p>Construction of the North Upstream Cofferdam in fast flowing water will require extra safety measures in order to ensure the safety of the personnel.</p>		
Special Requirements(All)	<p>Environmental and Safety Requirements are provided in the Agreement in several documents.</p> <p>Special care will also be required when constructing the road from the North Upstream Cofferdam towards the and onto the North Spur</p>		
Equipment List	<p>The Contractor will be required to submit details on the instrumentations to be installed in the dams. These are specified in the Technical Specifications</p> <p>Equipment consists typically of vibrating wire piezometers, opens standpipe piezometers, joint meters, crest monuments, flow –V-notch type, seismographs and central unit readout stations.</p>		

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0009 Titles (long): Construction of North and South Dams (short): North and South Dams	Type: C-Contract Revision No.: 01 Date: 13-Apr-2012												
Schedule and Milestones	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
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Receive Initial Vendor Drawings:	TBD												
Forecast at Site:	TBD												
Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.												
Budget	TBD												
Applicable Sub-Project/SPV	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Muskrat Falls Generation</td> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 40%;">Labrador – Island Transmission Link</td> <td style="width: 10%; text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>				
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Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>										
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0023	Type: RFQ	C-Contract
Titles (long):	Construction of Reservoir Clearing South Bank	Revision No.:	01
(short):	Reservoir Clearing South Bank	Date:	13-Apr-2012
Discipline:	CIVIL		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	William Evans
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary:	This contract includes clearing 986 ha of merchantable and non-merchantable wood on the South Bank in the ice and stickup zones of the Muskrat Falls Reservoir. It also includes clearing forest access road rights-of-way to construct 93 km of road and 20 ha of storage yard areas.																		
Work Included:	<ul style="list-style-type: none"> • Construct 93 km of forest access roads along the South Bank of the reservoir. • Install 60 stream crossings which include 25 temporary bridges and 35 culverts >1000 mm in diameter. • Clear and prepare 20 ha of storage yard areas. • Mechanical harvesting of merchantable & non-merchantable wood. • Process merchantable wood at roadside to remove limbs and tops. • Truck merchantable wood to specified storage yards. • Clear and mulch non-merchantable wood, limbs and tops, deadfalls and shrubs. 																		
Quantities:	<table border="1"> <thead> <tr> <th>ITEM</th> <th>DESCRIPTION (Base Case)</th> <th>UNIT</th> <th>QUANTITY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Merchantable and non-merchantable wood</td> <td>Ha</td> <td>986</td> </tr> <tr> <td>2</td> <td>Forest access road</td> <td>km</td> <td>93</td> </tr> <tr> <td>3</td> <td>Storage yard areas</td> <td>Ha</td> <td>20</td> </tr> </tbody> </table>			ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY	1	Merchantable and non-merchantable wood	Ha	986	2	Forest access road	km	93	3	Storage yard areas	Ha	20
ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY																
1	Merchantable and non-merchantable wood	Ha	986																
2	Forest access road	km	93																
3	Storage yard areas	Ha	20																
Contract Basis:	<p style="text-align: right;">Lump Sum <input type="checkbox"/></p> <p style="text-align: right;">Unit Rates <input type="checkbox"/></p> <p style="text-align: right;">Combination Lump Sum – Unit Rates <input checked="" type="checkbox"/></p> <p style="text-align: right;">Cost Reimbursable <input type="checkbox"/></p> <p><u>Remarks:</u></p>																		
Work Excluded:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Construction of fish habitat replacement & terrestrial habitat</td> <td>CH0052</td> </tr> </tbody> </table>			Description	Package No.	Construction of fish habitat replacement & terrestrial habitat	CH0052												
Description	Package No.																		
Construction of fish habitat replacement & terrestrial habitat	CH0052																		
Quality:	<ul style="list-style-type: none"> • Quality requirements are defined in document 505573-0000-38RA-I-0003, Contractor Quality Requirements Specification. 																		

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0023	Type: RFQ	C-Contract
Titles (long):	Construction of Reservoir Clearing South Bank	Revision No.:	01
(short):	Reservoir Clearing South Bank	Date:	13-Apr-2012

Reference Section:

- Reservoir Preparation Plan: LCP-PT-ED-0000-EN-PL-0002-01
- Design Philosophy for Reservoir Preparation: LCP-PT-ED-0000-EN-PH-0006-01

Interface With:

Description	Package No.
Construction Power to Site	CD0512
Bulk Excavation	CH0006
Construction Switch Yard	CD0502
Fish & Terrestrial Habitat Construction	CH0052
Supply and Install Log Booms	CH0049

Specific Site Conditions:

- The South Bank of the reservoir is remote and will be accessed by a single forest access road which will start at the Power House Development Area and continue along the bank to the western end of the reservoir.
- Communications will be supplied by the contractor.

Specific Schedule Conditions:

- CH0004 and CH0048 have to be completed before this package can proceed.
- CH0006 has to be started and the road to the spoil area completed before this package can proceed
- There are no packages that cannot proceed before this package has started.

Specific Environmental Conditions:

- Concerns with soil stabilization & runoff, and fuel storage & use.

Specific Safety Conditions:

- Operating heavy equipment on slopes, trucking in winter conditions in steep terrain, operating away from base camp.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.:	CH0023
Titles (long):	Construction of Reservoir Clearing South Bank
Titles (short):	Reservoir Clearing South Bank
Type:	RFQ C-Contract
Revision No.:	01
Date:	13-Apr-2012

Special Requirements:	<ul style="list-style-type: none"> Owner reserves the right to negotiate the South Bank Reservoir Clearing with the successful bidder for the North Bank Reservoir Clearing. 												
Free Issued Materials:	Not Applicable												
Equipment List:	Not Applicable												
Schedule/Dates:	<table border="1"> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
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RFP Date:	TBD												
Award Date:	TBD												
Receive Initial Vendor Drawings:	TBD												
Forecast at Site:	TBD												
Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.												
Budget:	TBD												
Applicable Sub Project/SPV:	<table border="1"> <tr> <td>Muskrat Falls Generation</td> <td><input checked="" type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>				
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>										
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>										
IBA Package:	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0024	Type: RFQ	C-Contract
Titles (long):	Construction of Reservoir Clearing North Bank	Revision No.:	01
(short):	Reservoir Clearing North Bank	Date:	13-Apr-2012

Discipline:	CIVIL		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	William Evans
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary:

This contract includes clearing 756 Ha of merchantable and non-merchantable wood on the North Bank in the ice and stickup zones of the Muskrat Falls Reservoir. It also includes clearing forest access road rights-of-way to construct 64.8 km of road and 13 ha of storage yard areas.

Work Included:

- Construct 64.8 km of forest access roads along the North Bank of the reservoir.
- Install 39 stream crossings which include 17 temporary bridges and 22 culverts >1000 mm in diameter.
- Clear and prepare 13 ha of storage yard areas.
- Mechanical harvesting of merchantable & non-merchantable wood.
- Process merchantable wood at roadside to remove limbs and tops.
- Truck merchantable wood to specified storage yards.
- Clear and mulch non-merchantable wood, limbs and tops, deadfalls and shrubs.

Approximate Quantities (major items only):

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Merchantable and Non-Merchantable Wood	Ha	756
2	Forest Access Road	m ²	64.8
3	Storage Yard Areas	Ha	13

Contract Basis:

Lump Sum
 Unit Rates
 Combination Lump Sum – Unit Rates
 Cost Reimbursable
Remarks:

Work Excluded:

Description	Package No.
Construction of fish habitat replacement & terrestrial habitat	CH0052

Quality:

Quality requirements are defined in document 505573-0000-38RA-I-0003, Contractor Quality Requirements specification.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0024	Type: RFQ	C-Contract
Titles (long):	Construction of Reservoir Clearing North Bank	Revision No.:	01
(short):	Reservoir Clearing North Bank	Date:	13-Apr-2012

Reference:

- Reservoir Preparation Plan: LCP-PT-ED-0000-EN-PL-0002-01
- Design Philosophy for Reservoir Preparation: LCP-PT-ED-0000-EN-PH-0006-01

Interface With:

Description	Package No.
Clearing AC Line	CT0341
Construction AC Line	CT0319
Construction Power to Site	CD0512
Upstream Cofferdam	CH0009
North Spur Stabilization	CH0008
Fish & Terrestrial Habitat Construction	CH0052
Supply and Install Log Booms	CH0049
Permanent Power to Site	TBD

Specific Site Conditions:

- Access to the clearing sites from 7 locations on the TLH and 3 locations from existing access roads.
- Camp accommodations and services will be supplied by the contractor.
- Communications will be supplied by the contractor.

Specific Schedule Conditions:

- There are no packages that have to be started or completed before this package can proceed.
- There are no packages that cannot proceed before this package has started.

Specific Environmental Conditions:

- Concerns with soil stabilization & runoff, and fuel storage & use.

Specific Safety Conditions:

- Operating heavy equipment on slopes, trucking in winter conditions in steep terrain, operating away from base camp.

Special Requirements:

- Owner reserves the right to negotiate the South Bank Reservoir Clearing with the successful bidder for the North Bank Reservoir Clearing.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0024	Type: RFQ	C-Contract
Titles (long):	Construction of Reservoir Clearing North Bank	Revision No.:	01
(short):	Reservoir Clearing North Bank	Date:	13-Apr-2012

Free Issued Materials:

Not Applicable

Equipment List:

Not Applicable

Schedule/Dates:

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

TBD

Applicable Sub Project/SPV:

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Project:

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0029	Type:	C-contract
Titles (long):	Construction of Site Restoration at Muskrat Falls	Revision No.:	01
(short):	Site Restoration	Date:	13-Apr-2012
Discipline:	Civil		
Responsibilities: Area Manager:	Wallace Piercey	Package Engineer:	Terry McCarthy
QA / QC:	Ken Morrison	Contract Admin. / Buyer:	TBD

Scope of work Summary:	At the conclusion of construction, temporary infrastructure will be removed and restoration of sites will be carried out in accordance with Environmental Guidelines.										
Work Included:	All temporary infrastructure associated with construction sites will be dismantled and removed. This includes the accommodations complexes, workshops, material storage and laydown areas, marshalling yards and concrete plants. Permanent drainage patterns will be established at the sites through grading to prevent erosion. Bridges and culverts along temporary access roads will be removed, road surfaces will be scarified to promote natural regeneration of surface cover.										
Approximate Quantities (major items only):	<table border="1"> <thead> <tr> <th>ITEM</th> <th>DESCRIPTION</th> <th>UNIT</th> <th>QUANTITY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>TBD</td> <td></td> <td></td> </tr> </tbody> </table>			ITEM	DESCRIPTION	UNIT	QUANTITY	1	TBD		
ITEM	DESCRIPTION	UNIT	QUANTITY								
1	TBD										
Contract Basis:	To be determined.										
Work Excluded:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Borrow pits and quarries</td> <td></td> </tr> <tr> <td>Temporary and Permanent access roads to borrow pits and quarries</td> <td></td> </tr> <tr> <td>Temporary infrastructure for transmission lines</td> <td></td> </tr> </tbody> </table>			Description	Package No.	Borrow pits and quarries		Temporary and Permanent access roads to borrow pits and quarries		Temporary infrastructure for transmission lines	
Description	Package No.										
Borrow pits and quarries											
Temporary and Permanent access roads to borrow pits and quarries											
Temporary infrastructure for transmission lines											
Quality:	Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.										
Reference Section:	The following main documents are used to define the scope:										
Interface with other Packages:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>TBD</td> <td></td> </tr> </tbody> </table>			Description	Package No.	TBD					
Description	Package No.										
TBD											

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: CH0029	Type: C-contract
Titles (long): Construction of Site Restoration at Muskrat Falls	Revision No.: 01
(short): Site Restoration	Date: 13-Apr-2012

Specific Site Conditions:	To be determined.	
Specific Schedule Conditions:	Any other packages that have to be started before the subject package can proceed: (Not Applicable) Any other packages that cannot proceed before the subject package has started: (Not Applicable)	
Specific Environment Conditions:	To be determined.	
Specific Safety Conditions:	To be determined.	
Special Requirements:	To be determined.	
Free Issued Materials:	Not Applicable	
Major Equipment List:	Not Applicable	
Schedule and Milestones:	EOI Date: TBD RFP Date: TBD Award Date: TBD Start Construction: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget:	As per DG3	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0030	Type:	C- Contract
Titles	(long): Supply and Install Turbines and Generators	Revision No.:	01
	(short): Turbines and Generators	Date:	13-Apr-2012

Discipline:	Heavy Mechanical		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	Jean-Marc d'Arcy
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Chris Woodmass

Scope of Work Summary

Design-engineering, supply and installation of four (4) turbine-generator units having a capacity of 229 MVA each under a rated net head of 35 m, 0.9 p.f. and 15 kV.

The units are of the vertical axis Kaplan turbine type directly coupled to a salient pole synchronous generator.

Each turbine is fed from a three bay intake on the upstream wall of the powerhouse and connected to a concrete semi-spiral case. The water is returned to the tailrace through an elbow draft tube.

Technical Specifications and other criteria/parameters for the supply of the units are imposed on the Contractor and included in the Contract.

Work Included:

- Kaplan Turbines, vertical axis units;
- Digital Governor Systems with servomotors and high pressure oil supply systems;
- Synchronous Generators, vertical axis, water/air cooling;
- Static Excitation Systems including transformers, rectifiers, field breakers, automatic and manual voltage regulation, etc., and black start capability;
- Generator Neutral Cubicles;
- Control, protection and monitoring system, including cabling between the control and protection panels and the equipment supplied as part of the turbine/generator package;
- Split phase CT's on the line side of the generator;
- Generator neutral phase CT's;
- Electrical and mechanical ancillary services inside the generator pit and the turbine pit;
- Cable trays inside the generator pit;
- Lighting inside generator pit;
- Fire detection and protection inside generator

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: CH0030
 Titles (long): Supply and Install Turbines and Generators
 (short): Turbines and Generators

Type: C- Contract
 Revision No.: 01
 Date: 13-Apr-2012

Approximate Quantities
 (major items only):

Item	Description	Unit	Quantity
1	Turbines, vertical Kaplan, 206 MW, 35 m head	ea	04
2	Generators, vertical synchronous, 229 MVA, 15 kV, 0.9 p.f., 60 Hz	ea	04
3	Governors	ea	04
4	Static Excitation Cubicle	ea	04
5	Excitation transformer	ea	04
6	Unit Protection system (T/G group, GSU Transformer and line)	ea	04
7	Unit Control and Monitoring Systems	ea	04
8	Powerhouse Control System	ea	04
9	Turbines, vertical Kaplan, 206 MW, 35 m head	ea	01

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
 Remarks:

Work Excluded:

Description	Package No.
Main lighting and convenience outlets	CH0031
Fire detection and protection system external to the generator enclosure	CH0031
Building security system	CH0031
Water filtration system for shaft seal lubrication and cooling and piping outside of generator pit	CH0031
Plant water level indicators supplied and installed by Electrical/Mechanical Auxiliary Contractor.	CH0031
Station service power	CH0031
Intake gates, hoists, bulkhead gates, trashracks	CH0032
Draft tube gates and draft tube overhead crane	CH0046

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0030	Type:	C- Contract
Titles (long):	Supply and Install Turbines and Generators	Revision No.:	01
(short):	Turbines and Generators	Date:	13-Apr-2012

Primary grounding	CH0007
External communications	CD 0510
Remote Terminal Unit (RTU)	CD 0510
Construction power	CH0512/CH0005

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

For Work Package CH0030, Quality Assurance is conducted by the Company.

- All quality control as specified in the RFP will be done by the Contractor as per the Contractor's Quality Plan in Order to meet the Engineer's Technical Specifications
- The Quality Plan will be reviewed and accepted by Engineer and confirmed at Award of contract.
- The Quality Plan will allow Engineer to witness and reproduce any of the Contractors Quality Control Activities.
- The Engineer reserves the right to impose Quality control activities to the Contractors and its sub-suppliers

Reference Section

The following main document was used to define the scope:

- DG3 Capital Cost Estimate – Basis of Estimate
Lower Churchill Project – Basis of Design; LCP-PT-ED-0000-EN-RP-0001-01
- Design Criteria as formulated for the Lower Churchill Project
- RFP Scope of Work
- RFP Technical Specifications
- Preliminary Design Drawings

Interface with Other Packages

Description	Package No.
Construction of the Powerhouse including the construction of the water passage for the turbines and the concrete foundations for the turbine and generator within package CH0030 as detailed in the construction schedule.	CH0007

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	Tie-ins to powerhouse services outside package CH0030. Adequate use of powerhouse space will require coordination during the construction phase.	CH0031
	Supply and Install Powerhouse Hydro-Mechanical Equipment	CH0032
	Supply and Install Powerhouse Crane	CH0033
	Supply of Generator Step-up Transformer	PH0014
	Supply of Isolated Phase Bus	PH0015
	Supply of Generator Circuit Breakers	PH0016
Specific Site Conditions	As required in the RFP	
Specific Schedule Conditions	<p>Any other packages that have to be started before the subject package can proceed:</p> <ul style="list-style-type: none"> CH0007 – Powerhouse civil works <p>Items that have to be completed before the subject package can proceed:</p> <ul style="list-style-type: none"> Timely achievement of the installation and embedment of major turbine components (CH0030) to be embedded in the concrete (CH0007) requires close coordination. Timely execution of activities involves the 2 packages Contractors CH0033 – Powerhouse Overhead Crane <p>Any other packages that cannot proceed before the subject package has started:</p> <ul style="list-style-type: none"> CH0031 - Installation of mechanical and electrical auxiliaries in the Powerhouse 	
Specific Environment Conditions	<p>Environmental concerns when constructing structures close to water.</p> <p>Follow site and Contractor’s environmental management plans.</p>	
Specific Safety Conditions	<p>Safety concerns when working close to water.</p> <p>Engineer will be reviewing and accepting all work procedures.</p>	
Special Requirements (All)	Environmental and Safety Requirements are provided in the Agreement documentation.	
Free Issued Materials	Not Applicable	
Major Equipment List	See Equipment List	

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Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

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Package No.:	CH0031	Type:	C-Contract
Titles	(long): Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
	(short): Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

Discipline:	Generation		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	Martin Landry
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Steve Mullen

Scope of Work Summary

The scope of work of Package CH0031 includes Mechanical piping, HVAC systems and Powerhouse, Intake, Dams and Spillway Auxiliary Electrical Systems and installation of Major Electrical Equipment and cabling under the supervision of Suppliers. Site testing of the supplied equipment and installations is also included. Supply and installation of Mechanical and Electrical Auxiliaries and Architectural Interior Works for the Muskrat Falls Powerhouse are also included.

Work Included:

Spillway – Gate Areas and Tunnels

Supply and installation of:

- HVAC and Clear Water Drainage
- Diesel Generator including Fuel storage Tank
- Normal and emergency lighting systems
- Convenience and welding receptacles
- 600 Vac, 208/120 Vac, 125 Vdc distribution panels and MCC's
- 600-600/347 Vac and 600-208/120 Vac dry type transformers
- 25 kV-600 V step-down transformer
- 600V, 2000A busway from 25 kV-600 V transformer to MCC
- 25 kV power cables and terminations
- LV power, control and communication cables
- Cable trays and conduits
- Water level-meter system
- Surface grounding and connection to embedded/buried grounding
- Secondary grounding
- Fire Detection system

Installation of:

- Telecommunication panels and controllers
- Security and CCTV systems

Intakes – Gate Rooms and Maintenance Areas

Supply and installation of:

- HVAC and Clear Water Drainage
- Normal and emergency lighting systems
- Convenience and welding receptacles
- 600 Vac, 208/120 Vac, 125 Vdc distribution panels and MCC's
- 600-600/347 Vac and 600-208/120 Vac dry type transformers
- Power, control and communication cables
- Indoor/outdoor cable trays and conduits
- Level-meter system
- Surface grounding and connection to embedded/buried grounding
- Secondary grounding

Installation of:

- Communication system telephones, panels and components
- Security and CCTV systems

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North Dam, South Dam, Centre Dam and South Transition Dam

Supply and installation of:

- HVAC and Clear Water Drainage
- Normal and emergency lighting systems for galleries and stairs
- Outdoor lighting for South Dam and Centre Dam

Powerhouse and Office Block

Supply and installation of:

- Miscellaneous Hoists
- Mechanical systems: HVAC, Raw Water, Cooling Water, Service Water, Shaft Seal Water, Dewatering, Clear Water Drainage, Oily Water Drainage, Domestic Water, Wastewater, Piezometer and water level, Low and high Pressure Compressed air system and Oil Handling
- Mechanical shop equipment
- Fire Detection and Protection System (including fire extinguishers)
- 600Vac switchgear and MCC's
- 600 V, 2500 A busway between 600 V switchgear and MCC's
- 600/347 Vac, 208/120 Vac, 125 Vdc, 48 Vdc distribution panels
- 600-600/347 Vac and 600-208/120 Vac dry type transformer
- 25 kV-600 V step-up transformer
- Emergency diesel generator including Fuel Tanks
- 125 V and 48 V batteries, chargers and battery racks
- 120 Vac UPS system
- Grounding connections to the surface grounding in the power station complex, including equipment and structure grounding
- 25 kV power cable complete and terminations
- Power, control and communication cables
- Cable trays and conduits
- Power, control and communication cables between powerhouse and switchyard
- Normal and emergency lighting systems
- Convenience and welding receptacles

Installation of:

- Powerhouse major electrical equipment: Isolated phase bus (IPB), Generator circuit breakers, generator step-up (GSU) transformers
- Installation of 15 kV-600/347 V station service transformers
- Telephone system and wiring
- Access control, Intrusion alarm and CCTV systems

Others for all locations:

- Pre-commissioning procedures and tests of supplied and installed equipment and systems including submission of Test reports.
- O&M manuals of supplied equipment and systems
- As built annotated drawings
- Unloading and storage of equipment supplied by others for installation by CH0031
- Supply and installation of the emergency diesel generator and all installations for Contractor's use

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Architectural Interior Works for Powerhouse and Office Block

- Insulated metal wall panel system applied to interior concrete walls.
- Concrete masonry unit system for interior walls and partitions.
- Gypsum board wall assemblies, including non-structural metal stud framing, thermal and acoustic insulation, for interior partitions.
- Interior metal doors, frames and hardware, including mechanical and electrical access doors.
- Interior fixed glazing in metal frames.
- Floor finishes, including ~~concrete floor hardener~~, safety coatings, ceramic & quarry tile, resilient sheet and tile flooring, and safety sheet flooring.
- Wall finishes, including painting of masonry, gypsum board and metal, drainage board systems, etc.
- Ceiling systems, including suspended acoustical panel systems and suspended gypsum board ceiling systems.
- Fire and safety systems, including fireproofing, firestopping, and safety blankets.
- Toilet and washroom accessories, including but not limited to, toilet partitions, grab bars, tissue & towel dispensers, waste receptacles, hand dryers, soap dispensers, lockers, cabinets, and shelving.
- Architectural woodwork, including kitchen cabinets & hardware, washroom vanities, plastic laminates, and trimwork.
- Equipment and furnishings, including kitchen appliances, window coverings & blinds, marker & tack boards, identification & directional signage, furniture for offices, meeting & training rooms, lunch room, etc. and shop benches.
- Miscellaneous architectural specialties.
- Pre-commissioning procedures.
- Operation and Maintenance manuals.
- As-built drawings of completed work.

Approximate Quantities
(major items only):

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Station Service Switchgear, 600/347 V, 3 phase, 4 wire, 4000 A, 42 kA IC,	ea	2
2	Unit Motor Control Centre, 600/347 V, 3 phase, 4 wire, 1200 A, 42 kA IC	ea	4
3	Essential Service MCC, 600/347 V, 3 phase, 4 wire, 1200 A, 42 kA IC,	ea	1
4	Station Service MCC, 600/347 V, 3 phase, 4 wire, 3000 A, 42 kA IC,	ea	2
5	Intake MCC, 600/347 V, 3 phase, 4 wire, 1200 A, 42 kA IC,	ea	1
6	Emergency Diesel Generator Set, rated 600 kW @ 0.8 pf, 600/347 V, three phase	ea	1
7	Panelboard, 400 A, 600/347 V, 3 phase, 4 wire, 72 circuit, 35 kA IC	ea	18
8	Panelboard, 225 A, 600/347 V, 3 phase, 4 wire, 72 circuit, 35 kA IC	ea	2
9	Panelboard, 225 A, 600/347 V, 3 phase, 4 wire, 42 circuit, 35 kA IC	ea	6

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10	Panelboard, 225 A, 208/120 V, 3 phase, 4 wire, 42 circuit, 14 kA IC.	ea	12
11	Dry-type Isolation Transformer, 75 kVA, three phase, 600 V delta primary, 600/347 V wye secondary.	ea	6
12	Dry-type Isolation Transformer, 30 kVA, three phase, 600 V delta primary, 600/347 V wye secondary.	ea	3
13	Dry-type Distribution Transformer, 45 kVA, three phase, 600 V delta primary, 120/208 V wye secondary.	ea	12
14	125 Vdc Battery Charger (Station Control and Protection), 600 V, 3 phase input, 125 Vdc, 400 A output.	ea	4
15	125 Vdc Battery Charger (Field Flashing and Emerg. Ltg), 600 V, 3 phase input, 125 Vdc, 200 A output.	ea	2
16	125 Vdc Battery Bank (Station Control and Protection), 60 cell, lead acid batteries, 1500 Ah,	ea	2
17	125 Vdc Battery Bank (Field Flashing and Emerg. Ltg), 60 cell, lead acid batteries, 800 Ah.	ea	1
18	125 Vdc Station Control and Protection Distribution Panel, 600 A, 10 kA IC,	ea	2
19	25 Vdc Field Flashing and Emergency Lighting Distribution Panel, 200 A, 10 kA IC, 66 circuit	ea	1
20	48 Vdc Battery Charger (Telecommunications), 600 V, 3 phase input, 48 Vdc, 400 A output.	ea	4
21	48 Vdc Battery Bank (Telecommunications), 24 cell, lead acid batteries, 1600 Ah	ea	2
22	48 Vdc Telecommunications Distribution Panel, 100 A, 10 kA IC, 42 circuit:	ea	2
23	Uninterruptible Power Supply (UPS), 20 kVA, 125 Vdc input and 600 Vac single phase bypass input, 120 Vac, 60 Hz output.	ea	2
24	Uninterruptible Power Supply (UPS) Distribution Panel, 400 A, 120 Vac, single phase, 60 Hz, 66 circuit	ea	1
25	Fire alarm system	lot	1
26	Cable Tray, Ladder type, Hot Dipped Galvanized Steel, CSA Load Class D, 100 mm cable depth, straight lengths, widths as follows:		
	150 mm	m	2000
	300 mm	m	3000
	450 mm	m	1200
	600 mm	m	1500
	750 mm	m	1200
27	Rigid Steel Conduit, size 21 mm	m	7000
28	Rigid Steel Conduit, size 27 mm	m	3000
29	Rigid Steel Conduit, size 41 mm	m	1500
30	Rigid Steel Conduit, size 53 mm	m	1200
31	Rigid Steel Conduit, size 78 mm	m	1200

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32	Rigid Steel Conduit, size 103 mm	m	1200
33	Grounding conductor, Bare Soft Drawn Copper, size 2/0 AWG	m	8000
34	Grounding conductor, Bare Soft Drawn Copper, size 4/0 AWG	m	500
35	Thermit weld connections (Cadwelds)	ea	1000
36	1000 V Type TC (tray cable) Power Cable, Class B stranded copper conductors insulated with XLPE type RW90 conductor sizes as follows:		
37	2 C 14 AWG	m	2500
38	4C14 AWG	m	10000
39	2 C12 AWG	m	15000
40	3C 12 AWG	m	6000
41	2C 10 AWG	m	15000
42	3C 10 AWG	m	6000
43	4C 10 AWG	m	1200
44	2C 8 AWG	m	1500
45	3C 8 AWG	m	6000
46	8 AWG	m	1200
47	4C #6 AWG	m	5000
48	3C #1 AWG	m	2500
49	3C #1/0 AWG	m	1200
50	3C 250 kcmil	m	1200
51	4C 250 kcmil	m	1200
52	3C 500 kcmil	m	600
53	Unshielded twisted pair cable, stranded copper conductors, 14 AWG, one (1) pair	m	5000
54	Single conductor, Class B stranded copper, 1000 V XLPE Type RW90 insulation, size 500 kcmil.	m	1000
55	Single conductor copper ground wire, Type TW insulation, size 3 AWG	m	300
56	Industrial type electric Blower Unit Heater, 5 kW, 600 V, three phase, complete with built-in thermostat.	ea	60
57	Heavy Duty Safety Switch, 30 A, 600 V, three phase, unfused, visible blade, CSA 1 enclosure.	ea	100
58	Industrial outlet box, cast iron, 150 mm x 150 mm x 100 mm, complete with cover	ea	500
59	Fluorescent Light fixture, polycarbonate housing, enclosed and gasketed lens, 2 x 32 W lamps, premium electronic ballast, 347 V.	ea	300
60	Fluorescent Light fixture, commercial troffer with prismatic acrylic lens, recessed in T-Bar ceiling, 4 x 32 W lamps, premium electronic ballast, 347 V.	ea	80
61	Fluorescent Light fixture, industrial striplight with wire guard, 2 x 32 W lamps, premium electronic ballast, 347 V.	ea	225

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62	High Bay Light fixture, spun aluminum reflector, 1000W metal halide lamp and ballast, 347 V.	ea	50
63	High Bay Light fixture, spun aluminum reflector, 1000W metal halide lamp and ballast, 250W quartz auxiliary lamp, 347 V.	ea	25
64	Low Bay Light fixture, aluminum reflector with glass diffuser, 250W metal halide lamp and ballast, 347 V.	ea	80
65	Floodlight, Enclosed Glass Dome, wall mounted, corrosion resistant housing, 150W metal halide, 347V.	ea	20
66	Floodlight, Outdoor Wall pack, corrosion resistant housing, 250W HPS, 347V.	ea	65
67	Floodlight, Outdoor type, pole mounted, 400W HPS, 347V, complete with 10m galvanized steel pole	ea	40
68	Exit Sign, LED type, universal mounting, with self-powered Ni-Cad battery for minimum 90 minutes of operation.	ea	55
69	Commercial style Emergency Lighting Battery Unit, 120 Vac input, 24 Vdc output, complete with two 9 W quartz halogen lamps and lead acid battery sized to suit attached lamps for 90 minutes..	ea	30
70	Industrial Emergency Lighting fixture, surface mounted on wall, with cast back box, prismatic glass globe, and 50 W, 125 Vdc incandescent lamp.	ea	100
71	Industrial Emergency Lighting fixture, surface mounted on wall, with cast back box, prismatic glass globe, and 100 W, 125 Vdc incandescent lamp.	ea	75
72	Welding Receptacle, pin and sleeve type complete with interlocking unfused safety switch, 60 A, 600 V, three phase, four wire, CSA 4X enclosure complete with spring-loaded weatherproof cover.	ea	40
73	Convenience Receptacle, 15 A, 120 V, duplex, CSA type 5-15R, complete with single-gang sectional outlet box and stainless steel cover.	ea	150
74	Convenience Receptacle, 20 A, 120 V, duplex, CSA type 5-20R, complete with surface mounted type FD cast outlet box and dual-lift weatherproof cover.	ea	150
75	Hard Drawn Copper Ground Bar, 6 mm x 100 mm.	ea	500
76	Stand-off insulators to mount ground bar.	ea	250
77	Panelboard, 100 A, 125 Vdc, 30 circuit, CSA Type 2 enclosure, complete with tinned copper bus, surface mounting trim, provided with quantity of fourteen bolt-on breakers, each 15 A, 2-pole.	ea	12
78	Reinforced Concrete Duct Bank, 1200 mm wide x 500 mm high, installed in 1500 mm deep trench, complete with eight 129mm (5 inch) PVC ducts and four 103mm (4 inch) PVC ducts.	ea	10
79	Cable Trench, 1000 mm wide x 1200 mm deep, covered with 300 mm deep sand at bottom of trench,	ea	300

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	and back-filled.		
80	Teck 90, 1000 V Power Cable, Class B stranded copper conductors insulated with XLPE type RW90, size 4C # 350 kcmil.	ea	1500
81	Teck 90, 600 V Control Cable, Class B stranded copper conductors insulated with XLPE type RW90, size 12C # 12 AWG.	ea	6000
82	Precast concrete pull pit for electrical cables, 1800 x 1800 x 2000 mm high, complete with steel cover.	ea	8
84	Indoor Dry-Type Transformer, three phase, 60 Hz, ANN, 1.6 MVA, 600 V primary, 25 kV secondary.	ea	1
89	Copper Bus Duct assembly, suitable for indoor location, 2500 A, 600 V, 3 phase, 4 wire, complete with: 4 x 90° elbows; 2 x flanged end sections; 25 m straight length.	ea	2
85	Copper Bus Duct assembly, suitable for indoor location, 2500 A, 600 V, 3 phase, 4 wire, complete with: 4 x 90° elbows; 2 x flanged end sections; 60 m straight length.	ea	2
86	Copper Bus Duct assembly, suitable for indoor location, 800 A, 600 V, 3 phase, 4 wire, complete with: 4 x 90° elbows; 2 x flanged end sections; 40 m straight length.	ea	2
87	Raw water and cooling water system		
	Automatic self-cleaning strainer Cast iron body - Flanges 12" dia., class 125 Capacity 165 l/s - Filtration size 0.8 mm	ea	4
	Strainer, Cast iron body - Flanges 12" dia., class 125 Capacity 165 l/s - Filtration size 0.8 mm - Stainless steel strainer	ea	4
	Control panel for automatic self-cleaning strainer	ea	4
	Control panel for motorize butterfly valve	ea	4
88	Fire protection system		
	Horizontal Centrifugal pump with electric motor Cast iron body - Flanged connections 10 " & 8" dia., class 250 - Bronze impeller - Split case - Double suction type - ULC and FM - with steel base - Capacity 107 l/s at 950 kPa - 200 HP - 1800 RPM	ea	2
	Vertical Jockey pump, Stainless steel body - Flanges connections 1,25" dia. - simple suction - stainless steel impeller and shaft - class 250 Capacity 0,63 l/s at 1100 kPa - 5 HP - 3600 RPM	ea	1
	Fire protection cabinet - capacity 75 L/s at 1200 kPa - type deluge system - 6" dia.- ULC/UL and FM	ea	4
	Control panel for centrifugal pumps, NEMA/UL/CSA type 3 et IP53 - Control conform to NFPA-20	ea	2
	Control panel for vertical jockey pump, NEMA/UL/CSA type 3 et IP53 - Control conform to	ea	1

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	NFPA-20		
	Fire protection flowmeter - Flange connection - class 150 - Carbon steel body - capacity 160 L/s at 950 kPa - 10" dia. - FM approved	ea	1
	Fire hose cabinets 1-1/2" - surface mounted - with 100 ft hose and accessories - capacity 4,5 L/s - Meet NFPA 14 pressure - UL - Dimensions 30" x 30" x 8" depth	ea	20
	Fire extinguishers - steel body - type ABC dry chemical - 9 kg - ULC/UL	ea	51
	Fire extinguishers - aluminium body - type CO2, carbon dioxide - 7 kg - ULC/UL	ea	13
	Fire extinguishers - stainless steel body - type K - 9 kg - ULC/UL	ea	1
	Clean agent fire suppression system - system shall include - Storage tank for clean agent, clean agent, smoke and heat detectors, control panel, alarm bell, distribution pipe and nozzels and all others components - Dimensions of room : Control room = 9 m x 7 m x 3 m height - Communication room = 6.3 m x 7 m x 3 m height - Diesel generator room = 8.5 m x 7.5 m x 3 m height - Diesel storage room = 7.5 m x 3 m x 3 m height.	ea	1
89	Domestic water system		
	Urinal - Wall mounted - Porcelain vitrified - Water supply from the above - With sensor operated flush valve.	ea	5
	Y-strainer 2" dia., carbon steel body and stainless steel screen, Socket weld connections, capacity 3 L/s at 750 kPa, class 600, Filtration size 0.1 mm	ea	1
	totalizing flow meter, 2" dia., capacity 3 L/s at 750 kPa, flanged connection, class 150 - cast aluminium body	ea	1
	Elongated Toilet - Porcelain vitrified - isolated tank - Used 6 Liter by flush - floor mounted	ea	10
	Kitchen sink - 18-8 Stainless steel - Size: 510 mm x 510 mm x 200 mm height - Satin finished bowl, mirror finished rim, 20 gauge - with faucet	ea	1
	Washroom sink - Porcelain vitrified - oval shape - Size: 432 mm x 521 mm x 178 mm height - with faucet	ea	10
	Service sink - stainless steel 304 - Size: 610 mm x 610 mm x 360 mm height - Satin finished - 16 gauge - with faucet	ea	1
	Floor sink - stainless steel 316 - Size: 610 mm x 610 mm x 560 mm height - Satin finished - 16 gauge - with backsplash and faucet	ea	3
	Multi-station sinks - 8 station island sink - stainless steel 304 - Size: 1829 mm x 762 mm x 1169 mm	ea	1

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	height - Polished finished - 14 gauge		
	Shower faucet	ea	2
	Electric water heater, Volume 450 Liters, capacity 18 kW, 600/3/60, 1-1/2" inlet and outlet connections, 28-1/2" dia., with cleanout	ea	1
	Electric water heater, Volume 10 Liters, capacity 1.5 kW, 120/3/60, 1/2" inlet and outlet connections, 14" dia.	ea	1
	Electric tankless water heater, capacity 126 kW, 600/3/60, Flow 1.45 L/s 1" inlet and outlet connections	ea	3
	Safety station eye/face wash and shower, stainless steel shower head, bowl, flag handle and floor flange, 1 1/4" IPS Schedule 40 stainless steel pipe and fittings, 1" IPS and 1/2" IPS stainless steel stay open ball valves, and polished stainless steel pull rod. Unit shall have (4) polypropylene 'GS Plus' spray heads with integral "flip-top" dust covers, filters, and 1.8-GPM flow control orifices mounted on a stainless steel head assembly. Unit shall meet or exceed ANSI Z358.1 – 2009	ea	5
	Domestic water treatment equipment, flow 4 L/s	ea	1
90	Service water system		
	Horizontal Centrifugal pump with electric motor, Cast iron body - Flanged connections 10" & 8" dia. Class 125, Split case - Double suction type - bronze impeller - Capacity 37 l/s à 530 kPa - with steel base - 50 HP - 1800 RPM	ea	3
	Control panel for centrifugal pumps	ea	1
	Y-strainer 3" dia., carbon steel body and stainless steel screen, Flanged connections, class 150, capacity 8 L/s at 750 kPa, Filtration size 0.1 mm	ea	12
91	Dewatering system		
	Vertical pump, two stages, Flanged connections 12" dia., class 150, Capacité 170 l/s at 440 kPa, motor 125 HP, pump length = 36,5 meters, Stainless steel bowl and impeller, steel column paint inside and outside with epoxy coating - 1800 RPM	ea	3
	Control panel for vertical pumps	ea	1
	Submersible pump, aluminium body, stainless steel shaft, galvanized steel strainer, 8" hose connection, 100 L/s at 130 kPa, 50 hp - 3600 RPM	ea	1
	Control panel for submersible pump installed on trolley	ea	1
	Filter basket 20" dia., 20" Flanged connections, class 150, carbon steel body and cover, stainless steel strainer, filtration 1/8"	ea	1
92	Drainage system		
	Vertical pump, two stage, Flanged connections 10"	ea	3

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	dia., class 150, Capacité 60 l/s at 550 kPa, motor 60 HP, pump length = 36,5 meters, Stainless steel bowl and impeller, steel column paint inside and outside with epoxy coating - 1800 RPM		
	Control panel for vertical pumps	ea	1
	Submersible pump, 30 L/s at 400 kPa, motor 27 HP, cast iron/chrome impeller, Stainless steel body, shaft and strainer, 6" hose connection - 3600 RPM	ea	1
	Control panel for submersible pump installed on trolley	ea	1
93	Wastewater system		
	Submersible pump, 5 HP, Connection flange 3" dia., class 125, capacity 5 l/s at 290 kPa, cast iron body, brass impeller, stainless steel shaft and cutters - 1800 RPM	ea	2
	Portative pneumatic pump, Connections 4" dia. Flanged connections, class 125, capacity 5 l/s à 280 kPa, aluminium body, work at 860 kPa air pressure	ea	1
	Concrete septic tank, volume 13 m³, L=5200 mm W=2850 mm H= 1815 mm	ea	1
	Septic tank filter, flow capacity 5 200 L/day, filtration size = 1.6 mm, with high level switch alarm.	ea	1
	Septic field, Flow capacity 4 542 l/day	ea	2
	Fiberglass pumping tank, dia. 2100 mm and height = 1200 mm	ea	1
	Control panel for submersible pumps	ea	1
94	Shaft seal water system		
	Sand filter, Flow 4 L/s, water filtered at 25 microns, with all valves and accessories, skid mounted, Stainless steel body and pipe, 3" flanged connections, class 150, 52" dia. X 72" height, density of filtration =2,8 L/s/m² of area, working pressure 750 kPa	ea	3
	Control panel for sand filter	ea	1
	Y-strainer 4" dia., carbon steel body and stainless steel screen, flanged connections	ea	2
	Dosing pump for hypochlorous, 3.31 L / h to 1035 kPa, 115/1/60, strokes/min = 180, 1/42 and 3/8" connections	ea	2
	190 Liter polyethylene tank for hypochlorous, dia.=560 mm x 860 mm height	ea	2
	Totalizing flow meter, 2" dia., Capacity = 4 L/s at 750 kPa, internal coating = Polyurethane, signal outlet 4-20 mA	ea	1
95	Low pressure air system		
	Screw compressor with integrated control panel, single stage, Sheet metal enclosure with mineral	ea	2

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles	(long): Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
	(short): Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

	wool and plastic fiber, Mounted on base frame, Connection 2" NPT, Capacity 220 L/s at 860 kPa, 100 HP, aircooled		
	Air filter separator, Capacity 220 L/s at 860 kPa, 2" NPT Connections, liquid removal 99% of water, solid particule removal 3 microns, Aluminium and steel construction with epoxy coating	ea	1
	Oil/water separator, Capacity 220 L/s at 860 kPa, material = polyethylene	ea	1
	Vertical Air tank, 2700 liters - dia. 36" x 166" height, Hot Galvanized steel, operating pressure 860 kPa, 2" threaded connections, manhole 12" x 16" with hinges	ea	1
	Strainer 3/4" dia., Stainless steel body and screen, threaded connections, capacity 1 L/s at 860 kPa, Filtration size 0.14 mm	ea	1
96	High pressure air system		
	Piston compressor, 1/2 "NPT connection, capacity 17.3 l/s at 7.6 Mpa, 25 HP, aircooled	ea	2
	Oil/water separator, Capacity 17.3 L/s at 860 kPa, material = polyethylene	ea	2
	Vertical Air tank, 2700 liters - dia. 36" x 166" height, hot Galvanized steel, operating pressure 7.6 Mpa, 1" threaded connections, manhole 12" x 16" with hinges	ea	2
	Vertical Air tank, 2700 liters - dia. 36" x 166" height, Hot galvanized steel, operating pressure 860 kPa, 2" threaded connections, manhole 12" x 16" with hinges	ea	1
	Pressure damper, hot Galvanized steel, 90 liter, reducing pressure from 7.6 Mpa to 860 kPa, 4" flanged connections, class 150	ea	2
	Y-strainer 1" dia., Stainless steel body and screen, Socket weld connections, capacity 1 L/s at 7.6 Mpa, class 600, Filtration size 0.14 mm	ea	6
	Y-strainer 1" dia., Stainless steel body and screen, Socket weld connections, capacity 1 L/s at 860 kPa, class 600, Filtration size 0.14 mm	ea	4
	Strainer 3/4" dia., Stainless steel body and screen, tube connections, capacity 1 L/s at 7.6 MPa, Filtration size 0.14 mm	ea	2
	Strainer 3/4" dia., Stainless steel body and screen, tube connections, capacity 1 L/s at 860 kPa, Filtration size 0.14 mm	ea	1
	Control panel for compressors	ea	1
97	Lubricating/hudraulic oil handling system		
	Mobile oil purifying unit, capacity of treatment = 2.84 L/s, Filtration size = 3 microns absolut, Beta 5(c) =1000 et Beta 3©, 2" NPT inlet and 1-1/2" sae st. thd., Motors 7,5 and 1 HP, Heater capacity = 30 kW, 575/3/60, with control panel on cart	ea	1
	Mobile oil pumping unit, with electric horizontal gear	ea	1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles (long):	Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
(short):	Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

	pump, single suction type, 1 1/2" and 1" NPT connections, cast iron body, capacity 1L/s at 400 kPa, 1.5 HP, with control panel on cart		
	Oil tank, 44000 Liters, epoxy paint carbon steel, atmospheric pressure, 3 m diameter and 6.7 m height, 2 two manhole 24" dia. With hinges	ea	2
	Flame arrestor vent, aluminium body, 3" Flanged connections, class 150, FM approval	ea	2
98	AIR HANDLING UNITS (CUSTOM BUILT)	ea	1
	Horizontal Unit, Supply Fan 11393 L/s, 25 HP, VFD, Electric Heating Coil 140 kW, Filter Section MERV 8, Mixing Section.	ea	1
	Horizontal Unit, Supply Fan 11393 L/s, 25 HP, VFD, Electric Heating Coil 140 kW, Filter Section MERV 8, Mixing Section.	ea	1
	Horizontal Unit, Supply Fan 11393 L/s, 25 HP, VFD, Electric Heating Coil 140 kW, Filter Section MERV 8, Mixing Section.	ea	1
	Horizontal Unit, Supply Fan 11393 L/s, 25 HP, VFD, Electric Heating Coil 140 kW, Filter Section MERV 8, Mixing Section.	ea	1
	Vertical Unit, 2 Supply Fan max.2800 L/s (each), 2 motors 5 HP, VFD, Chilled Water Cooling Coil 80 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Vertical Unit, 2 Supply Fan max.2800 L/s (each), 2 motors 5 HP, VFD, Chilled Water Cooling Coil 80 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Vertical Unit, 2 Supply Fan max.2800 L/s (each), 2 motors 5 HP, VFD, Chilled Water Cooling Coil 80 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Vertical Unit, 2 Supply Fan max.2800 L/s (each), 2 motors 5 HP, VFD, Chilled Water Cooling Coil 80 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Vertical Unit, 2 Supply Fan max.2300 L/s (each), 2 motor 5 HP, VFD, Chilled Water Cooling Coil 64 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Vertical Unit, 2 Supply Fan max.2300 L/s (each), 2 motor 5 HP, VFD, Chilled Water Cooling Coil 64 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Vertical Unit, 2 Supply Fan max.2300 L/s (each), 2 motor 5 HP, VFD, Chilled Water Cooling Coil 64 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles	(long): Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
	(short): Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

	Vertical Unit, 2 Supply Fan max.2300 L/s (each), 2 motor 5 HP, VFD, Chilled Water Cooling Coil 64 kW, Filter Section MERV 6, Supply Grille and Return Grille, 575/3/60	ea	1
	Horizontal Unit, Supply Fan 4535 L/s, motor 20 HP, VFD, D/X Coil 70 kW, Electric Heating Coil, Filter Section MERV 8, Mixing Section, Return Fan 4205 L/s, motor 15 HP, VFD, 575/3/60	ea	1
	Horizontal Unit, Supply Fan 1000 L/s, motor 5 HP, VFD, D/X Coil 35 kW, Electric Heating Coil, Filter Section MERV 8, Mixing Section, Return Fan 800 L/s, motor 3 HP, VFD, 575/3/60	ea	1
	Horizontal Unit, Supply Fan 1000 L/s, motor 5 HP, VFD, D/X Coil 35 kW, Electric Heating Coil, Filter Section MERV 8, Mixing Section, Return Fan 800 L/s, motor 3 HP, VFD, 575/3/60	ea	1
	Horizontal Unit, Supply Fan 3000 L/s, motor 10 HP, VFD, Electric Heating Coil 25 kW, Chilled Water Cooling Coil 34 kW, Filter Section MERV 8, Mixing Section, Return Fan 1120 L/s, motor 5 HP, VFD, 575/3/60	ea	1
	Horizontal Unit,, Supply Fan 1525 L/s, motor 7.5 HP, Electric Heating Coil 40 kW, Filter Section MERV 8, Mixing Section, Return Fan Max. 1000 L/s, motor 3 HP. Included with VFD. 575/3/60	ea	1
	Vertical Unit, 1 Supply Fan 1300 L/s motor 5 HP, Chilled Water Cooling Coil 20 kW, Filter Section MERV 6, Included with VFD, Supply Grille and Return Grille 575/3/60	ea	1
	Horizontal Unit, Supply Fan 685 L/s, motor 3 HP, Electric Heating Coil 25 kW, Filter Section MERV 8, 575/3/60	ea	1
	Horizontal Unit, Supply Fan 2500 L/s, motor 10 HP, Electric Heating Coil 30 kW, Filter Section MERV 8, 575/3/60	ea	1
	Horizontal Unit, Supply Fan 2500 L/s, motor 10 HP, Electric Heating Coil 30 kW, Filter Section MERV 8, 575/3/60	ea	1
99	WATER COOLED CONDENSING UNITS		
	Water Cooled, 2 Stages, 20 Tons, 575/3/60	ea	1
	Water Cooled, 2 Stages, 10 Tons, 575/3/60	ea	1
	Water Cooled, 2 Stages, 10 Tons, 575/3/60	ea	1
100	FANS		
	Transfer Fan, Vane-axial fan by AEROVENT, 1450 L/s, motor 1,5 HP, 575/3/60	ea	1
	Transfer Fan, Vane-axial fan by AEROVENT, 1450 L/s, motor 1,5 HP, 575/3/60	ea	1
	Wall Exhaust fan by PENN FUMEX, 450 L/s, Motor	ea	1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles	(long): Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
	(short): Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

	1/2 HP, 575/3/60		
	Exhaust Fan by GEENHECK, Utility Set, Mod SFD-10-30A, 940 L/s, 3 HP, 575/3/60	ea	1
	Exhaust Fan by GEENHECK, Utility Set, Mod SFD-10-30A, 940 L/s, 3 HP, 575/3/60	ea	1
	Exhaust Fan by AEROVENT mod. B53 size 54, 17000 L/s, Motor 15 HP, 575/3/60	ea	1
	Exhaust Fan by AEROVENT mod. B53 size 54, 17000 L/s, Motor 15 HP, 575/3/60	ea	1
	Exhaust Fan by AEROVENT mod. B53 size 54, 17000 L/s, Motor 15 HP, 575/3/60	ea	1
	Exhaust Fan by AEROVENT mod. B53 size 54, 17000 L/s, Motor 15 HP, 575/3/60	ea	1
	Exhaust Fan by AEROVENT mod. B53 size 36 , 4400 L/s, Motor 5 HP, 575/3/60	ea	1
	Vane axial Fan by AEROVENT mod. VJ 24D6 , 4800 L/s, Motor 7,5 HP, 575/3/60	ea	1
	Exhaust Fan by GEENHECK, Utility Set, Mod SFD-9-15A, 400 L/s, motor 1,5 HP, 575/3/60	ea	1
	Vane axial Fan by AEROVENT mod. VJ 24D6 , 1800 L/s, Motor 2 HP, 575/3/60	ea	1
	Exhaust Fan by GEENHECK, Utility Set, Mod SFD-10-30A, 900 L/s, motor 3 HP, 575/3/60	ea	1
	Vane axial Fan by AEROVENT mod. VJ 18D8 , 1100 L/s, Motor 1 HP, 575/3/60	ea	1
	Exhaust Fan by GEENHECK, Utility Set, Mod SFD-09-4C, 260 L/s, motor 1/4 HP, 120/1/60/60	ea	1
	Wall fan, Penn fumex, mod. FX16, 500 L/s, Motor 1/2 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Mod HD53, Mod. 30L222, 3300 L/s,motor 2 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ21D7, Mod. 2400 L/s motor 2 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ21D7, Mod. 1900 L/s motor 1,5 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ21D7, Mod. 1900 L/s motor 1,5 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ21D7, Mod. 1900 L/s motor 1,5 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ21D7, Mod. 1900 L/s motor 1,5 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Mod HD53, Mod. 30L222, 2900 L/s,motor 2 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ18D8, Mod. 950 L/s motor 1/2 HP, 575/3/60	ea	1
	Supply Fan, Aerovent, Vane axial Mod VJ18D8, Mod. 950 L/s motor 1/2 HP, 575/3/60	ea	1
	Relief Fan, Greenheck model GB-480, 9911 L/s,	ea	1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles (long):	Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
(short):	Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

	motor 5 HP, 575/3/60		
	Relief Fan, Greenheck model GB-480, 9911 L/s, motor 5 HP, 575/3/60	ea	1
	Heat Recovery, Greenheck model 36-TCF 12000 L/s, motor 15 HP, 575/3/60	ea	1
	Heat Recovery, Greenheck model 36-TCF 12000 L/s, motor 15 HP, 575/3/60	ea	1
	Heat Recovery, Greenheck model 36-TCF 12000 L/s, motor 15 HP, 575/3/60	ea	1
	Heat Recovery, Greenheck model 36-TCF 12000 L/s, motor 15 HP, 575/3/60	ea	1
101	WELDING EXTRACTION ARM/FAN		
	Flexible Welding Hood with Fan By PLYMOVENT mod. KUA-3 type Ball bearing jointed extraction arm with fan model FUA-1301, 265 L/s, motor 1/2 HP, 575/360	ea	1
102	HUMIDIFIERS		
	Dry-Steem, model Vapormist, 46.3 Kg/hr, 34 Kw, 575/3/60. Ultra-sorb Duct Distribtuion	ea	1
	Dry-Steem, model Vapormist, 21.8 Kg/hr, 16 Kw, 575/3/60. Ultra-sorb Duct Distribtuion	ea	1
	POWERHOUSE - Architectural Interior Works		
	Concrete masonry unit wall system	m ²	4295
	Gypsum board wall assemblies	m ²	6548
	Suspended ceiling systems	m ²	2200
	Doors and windows		196
	Floor Finishes	m ²	15540
	Wall finishes	m ²	19200
	Miscellaneous specialties, equipment & furnishings		See BOQ

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Supply and installation of heavy mechanical equipment	CH0032
Supply and installation of draft tube gates and gantry crane	CH0046
Supply and installation of powerhouse civil and structure	CH0007
Supply and installation Architectural works related to the envelop of the powerhouse and the intake is included in package CH0007	CH0007
Supply and installation of turbine, generator, excitation system and governor	CH0030
Supply and installation of Powerhouse and Unit Control and Protection	CH0030

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles (long):	Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
(short):	Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

Systems			
Supply and installation of fibre optic and control cables between the Powerhouse and the Switchyard associated with the Powerhouse and Unit Control and Protection Systems	CH0030		
Supply and installation of embedded and buried grounding	CH0007		
Supply and installation of embedded piping	CH0007		
Supply and installation of turbine pit hoist	CH0030		
Supply and installation of draft tube gates, gantry crane and draft tube work platform	CH0046		
Supply and installation of 315 kV overhead lines between powerhouse and switchyard	CT0319		
Supply of generator step-up (GSU) transformers	PH0014		
Supply of isolated phase bus (IPB)	PH0015		
Supply of generator circuit breakers	PH0016		
Supply of 15 kV-600/347 V station service transformers	PH0035		
Supply of level meter system			
Supply of Communication equipment and telephones			
Supply of Access control, intrusion alarm and CCTV systems			
As built drawings, O&M Documents, Commissioning procedures (of non-supplied equipment)	Various		

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Significant Moderate Minor Negligible

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Work Package CH0031 is under Quality Control. All control as specified in the Technical Specification will be done by the Engineer.

The Contractor shall do their own Quality Assurance, but no QA specific requirements are stipulated.

Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles (long):	Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
(short):	Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

Reference Section

The following main documents are used to define the scope:

- 505573-343C-45EC-0001 – Design Criteria - Mechanical Auxiliaries
- 505573-344C-47EC-0001 – Electrical ac Auxiliary System Design Criteria
- 505573-344C-47EC-0001 – Electrical dc Auxiliary System Design Criteria
- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design
- 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
- LCP-PT-ED-0000-EN-PH-0028-01 - Nalcor Energy-Lower Churchill Project-Design Philosophy for Muskrat Falls Plant Layout
- LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project-Operation & Maintenance Philosophy of Design
- LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code

Interface with Other Packages

Description	Package No.
Powerhouse concrete structures, structural steel, architectural walls and ceilings, embedded grounding, embedded parts for supports for mechanical and electrical equipment	CH0007
North Dam, South Dam, Centre Dam and South Transition Dam embedded grounding, embedded parts for supports for mechanical and electrical equipment	CH0009
Turbine/generator control and protection systems and auxiliary equipment and systems, piping	CH0030
Supply of generator step-up transformers	PH0014
Supply of isolated phase bus	PH0015
Supply of generator circuit breakers	PH0016
Supply of station service transformers	PH0035
HV overhead lines	CT0319
Supply of communication equipment, access control, intrusion alarm and CCTV systems	PD0510
Supply and installation of powerhouse heavy mechanical equipment	CH0032
Supply and installation draft tube equipment	CH0046
Supply and installation of trash rack cleaning system	CH0047

Specific Site Conditions

The Construction of structures near or in the Churchill River will require strict safety enforcement.

Specific Schedule Conditions

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0031	Type:	C-Contract
Titles (long):	Supply and install Mechanical and Electrical Auxiliaries (MF)	Revision No.:	01
(short):	Mechanical and Electrical Auxiliaries (MF)	Date:	13-Apr-2012

Specific Environment Conditions	Environmental requirements are provided in the Agreement in several documents.	
Specific Safety Conditions	Safety requirements are provided in the Agreement in several documents. As mentioned in the Specific Site Conditions, safety is a concern when constructing structures close or in the water. Prior to commencement of any work near the river a special security fence will be constructed between the riverside perimeter the work area	
Special Requirements (All)	Not Applicable	
Free Issued Materials	Not Applicable	
Major Equipment List	<p>The Following major equipment is to be installed by CH0031 Contractor:</p> <ul style="list-style-type: none"> • Five (5) 175/230 MVA ONAN/ONAF generator step-up (GSU) transformers • Four (4) sets of 3-phase isolated phase bus assemblies for connection of generators, generator circuit breakers, station service transformers, excitation transformers and generator step-up (GSU) transformers • Four (4) 15 kV, 12,000 A generator circuit breakers • Four (4) 2500 kVA, ANN station service transformers (SST) complete with on-load tap changer (OLTC) and enclosure <p>The CH0031 Contractor will supply and install multiple pieces of mechanical and electrical equipment or components and each piece of equipment with its unique tag number. A detailed list of mechanical and electrical equipment is listed in the LCP Master Equipment List and as listed in Approximate Quantities section in this document.</p>	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0032	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Hydro-Mechanical Equipment	Revision No.:	01
(short):	Powerhouse Hydro-Mechanical	Date:	13-Apr-2012

Discipline:	Heavy Mechanical		
Responsibilities: Area Manager:	Luc Turcotte	Package Engineer:	Réjean Létourneau
QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Chris Woodmass

Scope of Work Summary

Design, supply and installation of powerhouse intake heavy mechanical equipment;

The supply of one trashrack cleaning system at Muskrat Falls Powerhouse Intake.

Work Included:

- This package includes:
- Vertical-lift intake gates with a dedicated hoist systems, embedded components, and controls.
 - Intake bulkhead gates, and embedded components
 - Trashracks, and embedded components
 - Trashrack cleaning system.
 - Installation of secondary concrete for embedded parts

Approximate Quantities (major items only):

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Trashracks; 6 panels per set	sets	12
2	Embedded parts for trashracks	sets	12
3	Lift beam for trashracks	set	1
4	Bulkhead gates; 5 panels per set	set	1
5	Embedded parts for bulkhead gates	sets	12
6	Lift beam for bulkhead gates	set	1
7	Intake emergency closure gates	sets	12
8	Wire rope hoists for intake gates	sets	12
9	Trashrack Cleaning System	lot	1

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0032	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Hydro-Mechanical Equipment	Revision No.:	01
(short):	Powerhouse Hydro-Mechanical	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Temporary construction cofferdams and dewatering pumps	CH0006
Civil contract: powerhouse primary concrete, powerhouse intake deck, and intake hoist building	CH0007
The supply and installation of the crane rails for trash cleaning system.	CH0007
Installation of primary embedded anchors in first phase concrete	CH0007
Electrical power and auxiliaries for hoist houses.	CH0031
Electrical power supply for trash cleaning system	CH0031
Mechanical auxiliaries, including drainage, heating and ventilation systems for intake hoist house, galleries and access areas	CH0031
Supply and installation of draft tube stoplogs and draft tube stoplog overhead crane	CH0046

Quality

Requires Determination of the Equipment Quality Rating	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
Determination of Equipment Criticality based on GP-5600-PR-02-E				
High Significant Moderate	<input type="checkbox"/>	Minor Negligible	<input type="checkbox"/>	<input type="checkbox"/>
Determination of Quality Surveillance level based on GP-5600-PR-03-E				
<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.		
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.		
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.		
<input type="checkbox"/>	1	Final Quality Verification		
<input type="checkbox"/>	0	No quality surveillance, no quality verification		
For Work Package CH0032, Quality Assurance is conducted by the Company.				
<ul style="list-style-type: none"> All quality control as specified in the RFP will be done by the Contractor as per the Contractor's Quality Plan in Order to meet the Engineer's Technical Specifications The Quality Plan will be reviewed and accepted by Engineer and confirmed at Award of contract. The Quality Plan will allow Engineer to witness and reproduce any of the Contractors Quality Control Activities. The Engineer reserves the right to impose Quality control activities to the Contractors and its sub-suppliers 				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0032	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Hydro-Mechanical Equipment	Revision No.:	01
(short):	Powerhouse Hydro-Mechanical	Date:	13-Apr-2012

Reference Section

The following main document was used to define the scope:

- DG3 Capital Cost Estimate – Basis of Estimate
Lower Churchill Project – Basis of Design; LCP-PT-ED-0000-EN-RP-0001-01
- Design Criteria as formulated for the Lower Churchill Project
- Lower Churchill Project – Design Philosophy for Reservoir Trash & Debris Management; LCP-PT-ED-0000-EN-PH-0030-01
- Technical Report 505573-332A-45ER-0001-PC; Powerhouse Intake Trash Cleaning System, as formulated for the Lower Churchill Project.
- Preliminary Design Drawings

Interface with Other Packages

Description	Package No.
Primary concrete structures for the Powerhouse Intake	CH0007
Installation of anchors in primary concrete for embedded components (anchors and base plates)	CH0007
Installation of secondary concrete for embedded parts	CH0007
Installation for crane rails on intake deck for trash cleaning system	CH0007
Electrical Auxiliaries for electric power supply	CH0031
Mechanical Auxiliaries for services in the intake hoist house	CH0031
Control interfaces with the powerhouse control system	CH0030

Specific Site Conditions

The Construction of structures near or in the Churchill River will require strict safety enforcement

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0007 – Installation of anchors in primary concrete during construction of the intake structure

Items that have to be completed before the subject package can proceed:

- CH0007 - Installation of intake deck crane rails

Any other packages that cannot proceed before the subject package has started:

- CH0031 - Installation of mechanical and electrical auxiliaries in the intake hoist and on the intake deck

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0032	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Hydro-Mechanical Equipment	Revision No.:	01
(short):	Powerhouse Hydro-Mechanical	Date:	13-Apr-2012

Specific Environment Conditions	Environmental concerns when constructing structures close to water. Follow site and Contractor's environmental management plans.	
Specific Safety Conditions	Safety concerns when constructing structures close to water. Procedures for dry and wet testing of the gates will be under the control of the Engineer. All testing and inspection of the equipment will be by the Contractor and a coordinated plan involving responsible personnel. Engineer will be reviewing and accepting all work procedures.	
Special Requirements (All)	Environmental and Safety Requirements are provided in the Agreement documentation.	
Free Issued Materials	Not Applicable	
Major Equipment List	See Equipment List	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/>
	Labrador Transmission Assets <input type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: CH0033
 Titles (long): Supply and Install Powerhouse Cranes
 (short): Powerhouse Cranes

Type: C- Contract
 Revision No.: 01
 Date: 13-Apr-2012

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

For Work Package CH0033, Quality Assurance is conducted by the Company.

- All quality control as specified in the RFP will be done by the Contractor as per the Contractor's Quality Plan in Order to meet the Engineer's Technical Specifications
- The Quality Plan will be reviewed and accepted by Engineer and confirmed at Award of contract.
- The Quality Plan will allow Engineer to witness and reproduce any of the Contractors Quality Control Activities.
- The Engineer reserves the right to impose Quality control activities to the Contractors and its sub-suppliers

Reference Section

The following main document was used to define the scope:

- DG3 Capital Cost Estimate – Basis of Estimate
Lower Churchill Project – Basis of Design; LCP-PT-ED-0000-EN-RP-0001-01
- Design Criteria as formulated for the Lower Churchill Project
- Preliminary Design Drawings

Interface with Other Packages

Description	Package No.
Installation of the Rails by the General Civil Contractor.	CH0007
Installation of subsequent unit bays to extend crane bus bars and crane travel	CH0007
Power supply to 600V main disconnect switch to feed the bus bars on which the crane operates.	CH0031

Specific Site Conditions

Powerhouse crane to be designed to lift the largest load for Turbine and Generator installation and removal.

Two cranes with two trolleys each crane, and spreader beams to be supplied to lift all load combinations required.

Crane load testing will certify the crane for the full rated load over the full area of the powerhouse.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0033	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Cranes	Revision No.:	01
(short):	Powerhouse Cranes	Date:	13-Apr-2012

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0007 – Powerhouse structural steel and crane rails to be installed in Service Bay before power bus bars and powerhouse cranes are erected.
- CH0007 – Powerhouse structural steel and crane rails to be extended over the unit’s bays in sequence after which the power bus bars and crane limits will be extended into that bay.

Items that have to be completed before the subject package can proceed:

- Powerhouse crane to be erected in the service bay and load tested to NL OH&S regulations before use.
- Powerhouse crane to be load tested in subsequent unit bays to NL OH&S regulations before use in those areas.
-

Any other packages that cannot proceed before the subject package has started:

- CH0030 - Crane will be turned over to an erection Contractor (CH0030) for powerhouse construction and reconditioned by the manufacturer before turned over to the Company.
- CH0030 – Installation of Turbines & Generators for Pit Free

Specific Environment Conditions

Not Applicable

Specific Safety Conditions

Crane load testing required for the certification of the Cranes heaviest load is required according to Codes and Laws in effect

Special Requirements (All)

Not Applicable

Free Issued Materials

Not Applicable

Major Equipment List

See Equipment List

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.

Budget

TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0033	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Cranes	Revision No.:	01
(short):	Powerhouse Cranes	Date:	13-Apr-2012

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0034	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Elevator	Revision No.:	01
(short):	Powerhouse Elevator	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities: Area Manager:	Luc Turcotte	Package Engineer:	Réjean Létourneau
QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Chris Woodmass

Scope of Work Summary

The supply of one elevator at Muskrat Falls.

The work covers the complete requirements for the design, fabrication, supply, transport and delivery to site, installation and testing, commissioning, warranty and performance guarantee of an elevator as well as accessories.

Work Included:

- Elevator platform, double panel door, car frame and guide rollers;
- Elevator safety system;
- Counterweight;
- Rails, supports and anchors to guide the car and the counterweight, including all additional intermediate supports required for the guide rollers;
- Buffers for the car and the counterweight;
- Hoistway doors and the sills, including the supporting sill angles for the sills;
- Traction machine with braking devices;
- Supply of all the necessary support beams for the machinery and the elevator;
- Supervision of the installation of support beams;
- Installation, levelling and attachment of the beam on the hoist way roof
- Elevator control system; selective collective automatic control;
- Automatic levelling device;
- Position indicators;
- Required speed governors;
- All circuits connecting systems supplied by Contractor to electrical devices shown on drawings.
- Supply and installation of the access ladder(s)

Approximate Quantities (major items only)

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Powerhouse Elevator	lot	1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0034	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Elevator	Revision No.:	01
(short):	Powerhouse Elevator	Date:	13-Apr-2012

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
The construction of the concrete elevator shaft with all landings.	CH0007
All concrete work, cutting and patching of openings through the walls and the roof of the elevator shaft and of the controller room around beams and beam pockets.	CH0007
The supply, installation and connection of the main electric power cables up to the 600 V disconnect switch in the controller room	CH0031
The supply, installation and connection of 120 V AC power cable to the junction box in the controller room.	CH0031
The controller room and hoistway pit lighting.	CH0031
The supply and installation of the heating and ventilation equipment in the controller room.	CH0031
The supply, installation and connection of the telephone line between the telephone junction box and main switchboard.	CD0501

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

For Work Package CH0033, Quality Assurance is conducted by the Company.

- All quality control as specified in the RFP will be done by the Contractor as per the Contractor's Quality Plan in Order to meet the Engineer's Technical Specifications

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0034	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Elevator	Revision No.:	01
(short):	Powerhouse Elevator	Date:	13-Apr-2012

Reference Section	<ul style="list-style-type: none"> The Quality Plan will be reviewed and accepted by Engineer and confirmed at Award of contract. The Quality Plan will allow Engineer to witness and reproduce any of the Contractors Quality Control Activities. The Engineer reserves the right to impose Quality control activities to the Contractors and its sub-suppliers 										
	<p>The following main document was used to define the scope:</p> <p>DG3 Capital Cost Estimate – Basis of Estimate SLI Document Number: 505573-0000-33RA-I-001 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01</p>										
Interface with Other Packages											
	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Primary concrete for elevator shaft, hoist house and elevator landings and doorways</td> <td>CH0007</td> </tr> <tr> <td>Electrical Auxiliaries: connection of the power cables in the elevator machine room</td> <td>CH0031</td> </tr> <tr> <td>Mechanical Auxiliaries: heating and ventilation equipment in the controller room.</td> <td>CH0031</td> </tr> <tr> <td>Supply, installation and connection of the telephone line between the telephone junction box and main switchboard.</td> <td>CD0501</td> </tr> </tbody> </table>	Description	Package No.	Primary concrete for elevator shaft, hoist house and elevator landings and doorways	CH0007	Electrical Auxiliaries: connection of the power cables in the elevator machine room	CH0031	Mechanical Auxiliaries: heating and ventilation equipment in the controller room.	CH0031	Supply, installation and connection of the telephone line between the telephone junction box and main switchboard.	CD0501
	Description	Package No.									
	Primary concrete for elevator shaft, hoist house and elevator landings and doorways	CH0007									
	Electrical Auxiliaries: connection of the power cables in the elevator machine room	CH0031									
	Mechanical Auxiliaries: heating and ventilation equipment in the controller room.	CH0031									
Supply, installation and connection of the telephone line between the telephone junction box and main switchboard.	CD0501										
Specific Site Conditions	Not Applicable										
Specific Schedule Conditions	Any other packages that have to be started before the subject package can proceed: <ul style="list-style-type: none"> None 										
	Any other packages that have to be completed before the subject package can proceed: <ul style="list-style-type: none"> CH0007 – Installation of concrete structure for hoistway, doors and control room 										
	Any other packages that cannot proceed before the subject package has started: <ul style="list-style-type: none"> CH0031 – Connection of power supply and telephone lines 										
Specific Environment Conditions	Not Applicable										
Specific Safety Conditions	Specific work methods for suspended work and Confined spaces will be for various aspects of installation of this package's equipment.										
	Working at heights in the elevator shaft.										
	Use of safety guard rails for at door openings										

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0034	Type:	C- Contract
Titles (long):	Supply and Install Powerhouse Elevator	Revision No.:	01
(short):	Powerhouse Elevator	Date:	13-Apr-2012

Special Requirements (All)	Not Applicable	
Free Issued Materials	Not Applicable	
Major Equipment List	See Equipment List	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD							
Package No.: CH0039	Type: C-contract						
Titles (long): Supply and Install McKenzie River Permanent Bridge	Revision No.: 01						
(short): McKenzie River Bridge	Date: 13-Apr-2012						
Discipline: Civil/Structural							
Responsibilities: Area Manager: Wallace Piercey	Package Engineer: Terry McCarthy						
QA / QC: Ken Morrison	Contract Admin. / Buyer: Ron Adamcyk						
Scope of work Summary:	Construction of permanent bridge on McKenzie River, removal of temporary bridge and site restoration.						
Work Included:	This package includes: <ul style="list-style-type: none"> • Construction of permanent bridge including civil work for approach to bridge structure. • Removal of temporary bridge • Site restoration/rehabilitation. 						
Approximate Quantities (major items only):	TBD						
Contract Basis:	Lump Sum <input type="checkbox"/> Unit Rates <input type="checkbox"/> Combination Lump Sum – Unit Rates <input checked="" type="checkbox"/> Cost Reimbursable <input type="checkbox"/> <u>Remarks:</u>						
Work Excluded:	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:70%;">Description</th> <th style="width:30%;">Package No.</th> </tr> </thead> <tbody> <tr> <td>Construction of Southside Access Road and Installation of temporary bridge</td> <td>CH0004</td> </tr> </tbody> </table>	Description	Package No.	Construction of Southside Access Road and Installation of temporary bridge	CH0004		
Description	Package No.						
Construction of Southside Access Road and Installation of temporary bridge	CH0004						
Quality:	Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.						
Reference Section:	The following main documents are used to define the scope: 505573-311A-41EC-0001 Design Criteria – Main Access Road						
Interface with other Packages:	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:70%;">Description</th> <th style="width:30%;">Package No.</th> </tr> </thead> <tbody> <tr> <td>Security</td> <td>SH0019</td> </tr> <tr> <td>Medical Services</td> <td>SH0020</td> </tr> </tbody> </table>	Description	Package No.	Security	SH0019	Medical Services	SH0020
Description	Package No.						
Security	SH0019						
Medical Services	SH0020						
Specific Site Conditions:	Geotechnical investigation not completed.						

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD											
Package No.: CH0039	Type: C-contract										
Titles (long): Supply and Install McKenzie River Permanent Bridge	Revision No.: 01										
(short): McKenzie River Bridge	Date: 13-Apr-2012										
Specific Schedule Conditions:	<p>Any other packages that have to be started before the subject package can proceed: (Not Applicable)</p> <p>Any other packages that cannot proceed before the subject package has started: (Not Applicable)</p> <p>Note: Complete this work as early as possible. The temporary bridge is restricted to single lane traffic.</p>										
Specific Environment Conditions:	Permit approvals.										
Specific Safety Conditions:	<p>Use of heavy equipment.</p> <p>Use of cranes and slings.</p> <p>Working at heights in excess of 3m and therefore use of safety guards and fall arrest.</p>										
Special Requirements:	The bridge shall be designed to enable transport of the heaviest/largest items to be delivered to the project site.										
Free Issued Materials:	Not Applicable										
Equipment List:	Not Applicable										
Schedule and Milestones:	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: right;">EOI Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">RFP Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Award Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Start Construction:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Construction Complete:</td> <td>TBD</td> </tr> </table> <p>Dates for milestones will be updated once the Project baseline schedule is in place.</p>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Start Construction:	TBD	Construction Complete:	TBD
EOI Date:	TBD										
RFP Date:	TBD										
Award Date:	TBD										
Start Construction:	TBD										
Construction Complete:	TBD										
Budget:	TBD										
Applicable Sub-Project/SPV	<p>Muskkrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/></p> <p>Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/></p>										
IBA Package	<p>YES <input checked="" type="checkbox"/> NO <input type="checkbox"/></p>										

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0046	Type:	C- Contract
Titles (long):	Supply and Install Spillway Hydro-Mechanical Equipment	Revision No.:	01
(short):	Spillway Hydro-Mechanical Equipment	Date:	13-Apr-2012

Discipline:	Heavy Mechanical		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	Réjean Létourneau
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary

This contract includes the design, supply and installation of heavy mechanical components and handling equipment for the Spillway at Muskrat Falls. It also includes the design, supply and installation of heavy mechanical and handling equipment for the Powerhouse Draft Tube Stoplogs.

Work Included:

SPILLWAY:

- Spillway gates with a dedicated hoist systems, rollways, embedded components, and controls
- Hoist support structures, stair towers and hoist houses
- Spillway permanent upstream stoplogs and embedded components
- Spillway temporary stoplogs for installation of rollways and embedded components
- Upstream stoplogs hoist and controls
- Spillway downstream stoplogs and embedded components
- All Mechanical and electrical auxiliaries integrated in the Spillway hoist houses, heating systems for spillway gates and embedded part, air admission / ventilation systems.
- Installation of secondary concrete for embedded components in the primary concrete structures

POWERHOUSE DRAFT TUBE

- Draft tube gates and embedded components
- Draft tube gallery overhead crane, with mechanical and electrical auxiliaries required for the operation,

Approximate Quantities (major items only)

Item	Description	Unit	Quantity
1	Vertical surface gates;	sets	03
2	Embedded components for vertical surface gates with guide heating	set	03
3	Low level outlet gates;	sets	02
4	Embedded components for low level outlet gates with guide heating	sets	02
5	Permanent stoplogs for low level outlet stoplogs	set	01
6	Permanent stoplogs for vertical surface gates for use with permanent low level outlet stoplogs	set	01

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0046	Type:	C- Contract
Titles (long):	Supply and Install Spillway Hydro-Mechanical Equipment	Revision No.:	01
(short):	Spillway Hydro-Mechanical Equipment	Date:	13-Apr-2012

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

For Work Package CH0046, Quality Assurance is conducted by the Company.

- All quality control as specified in the RFP will be done by the Contractor as per the Contractor's Quality Plan in Order to meet the Engineer's Technical Specifications
- The Quality Plan will be reviewed and accepted by Engineer and confirmed at Award of contract.
- The Quality Plan will allow Engineer to witness and reproduce any of the Contractors Quality Control Activities.
- The Engineer reserves the right to impose Quality control activities to the Contractors and its sub-suppliers

Reference Section

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 Lower Churchill Project – Basis of Design; LCP-PT-ED-0000-EN-RP-0001-01
 Design Criteria as formulated for the Lower Churchill Project
 Preliminary Design Drawings

Interface with Other Packages

Description	Package No.
Primary concrete structures for the Spillway and Draft Tube	CH0007
Installation of anchors in primary concrete for embedded components (anchors and base plates)	
Power supply to primary junction boxes in hoist houses.	CH0031
Heating and ventilation of Draft Tube gate gallery	CH0031
Control interfaces with the powerhouse control system	CH0030

Specific Site Conditions

The Construction of structures near or in the Churchill River will require strict safety enforcement.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0046	Type:	C- Contract
Titles (long):	Supply and Install Spillway Hydro-Mechanical Equipment	Revision No.:	01
(short):	Spillway Hydro-Mechanical Equipment	Date:	13-Apr-2012

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0006 - Successful diversion of the Lower Churchill River
- CH0007 – Installation of anchors in primary concrete during construction of the Spillway structure

Items that have to be completed before the subject package can proceed:

- CH0007 - Installation of spillway deck crane rails

Any other packages that cannot proceed before the subject package has started:

- CH0031 - Installation of mechanical and electrical auxiliaries

Specific Environment Conditions

Environmental concerns when constructing structures close to water.

Follow site and Contractor’s environmental management plans.

Specific Safety Conditions

Safety concerns when constructing structures close to water.

Procedures for dry and wet testing of the gates will be under the control of the Engineer. All testing and inspection of the equipment will be by the Contractor and a coordinated plan involving responsible personnel.

Engineer will be reviewing and accepting all work procedures.

Special Requirements (All)

Environmental and Safety Requirements are provided in the Agreement documentation.

Free Issued Materials

The following are free issued materials for package CH0046:

Major Equipment List

See Equipment List

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget

To be provided by estimation:

Applicable Sub-Project/SPV

Muskrat Falls Generation Labrador – Island Transmission Link

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0046	Type:	C- Contract
Titles (long):	Supply and Install Spillway Hydro-Mechanical Equipment	Revision No.:	01
(short):	Spillway Hydro-Mechanical Equipment	Date:	13-Apr-2012

IBA Package

Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>
YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0048	Type:	C-Contract
(Long):	Construction of Site Clearing Access Road and Ancillary Areas	Revision No.:	01
(short):	Site Clearing Access Road and Ancillary Areas	Date:	13-Apr-2012
Discipline:	CIVIL		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	Terry McCarthy
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of work Summary:

This package includes the clearing of Merchantable & Non-Merchantable timber for the following areas:

- South Side Access Road
- Access road to and the area for the Accommodations Complex
- Access Roads to and the areas for Gravel Pits and Quarries
- Access Road to and the Owner's Lay-down Area
- Access road to and the Contractors Lay-down Area
- Access road to and the Spoil Deposit Area
- 25 kV Temporary Transmission Line right of way on the North and South side, including tap station on the North side.
- Main project site including Switchyard area.

Work Included:

- Coordination with Access Road contractor (CH0004).
- Layout of clearing areas.
- Mechanical clearing of Merchantable & Non-Merchantable Timber in the areas outlined above.
- Mulching of non-merchantable timber and shrubs.
- Stockpiling cleared timber along edge of right-of-way.
- Clearing and preparation of timber stockpile areas.

Approximate Quantities (major items only)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	CLEARING	HA	227.3

Contract Basis:

Lump Sum
 Unit Rates
 Combination Lump Sum – Unit Rates
 Cost Reimbursable
Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.:	CH0048
(Long):	Construction of Site Clearing Access Road and Ancillary Areas
(short):	Site Clearing Access Road and Ancillary Areas
Type:	C-Contract
Revision No.:	01
Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Permanent transmission line right of ways	
Culvert installation at stream crossings	CH0004

Quality

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main documents are used to define the scope:
505573-311A-41EC-0001 Design Criteria – Main Access Road

Interface with other Packages:

Description	Package no.
South Side Access Road	CH0004
Accommodation Complex Utilities	CH0005
Bulk Excavation Works	CH0006
Construction Power	CH0512

Specific Site Conditions:

Remote site, rough terrain, several major stream crossings (Caroline Brook 50m³/s, Jacobe's Brook 66m³/s, and McKenzie River 145m³/s)

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:
(Not Applicable)

Any other packages that cannot proceed before the subject package has started:

- CH0004 South Side Access Road
- CH0006 Bulk Excavation

Specific Environment Conditions:

Impact to stream, wetland, and forest environments.
Burning of cleared and mulched material NOT PERMITTED

Specific Safety Conditions:

Use of heavy equipment in remote areas with difficult access.
May involve some manual felling of trees.

Special Requirements:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: CH0048	Type: C-Contract												
(Long): Construction of Site Clearing Access Road and Ancillary Areas	Revision No.: 01												
(short): Site Clearing Access Road and Ancillary Areas	Date: 13-Apr-2012												
Free Issued Materials:	Not Applicable												
Major Equipment List:	Not Applicable												
Schedule and Milestones:	<table border="1"> <tr> <td>EOI Date:</td> <td>25-Nov -2011</td> </tr> <tr> <td>RFP Date:</td> <td>16-Dec-2011</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Start Construction:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>TBD</td> </tr> <tr> <td colspan="2">Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	25-Nov -2011	RFP Date:	16-Dec-2011	Award Date:	TBD	Start Construction:	TBD	Construction Complete:	TBD	Dates for milestones will be updated once the Project baseline schedule is in place.	
EOI Date:	25-Nov -2011												
RFP Date:	16-Dec-2011												
Award Date:	TBD												
Start Construction:	TBD												
Construction Complete:	TBD												
Dates for milestones will be updated once the Project baseline schedule is in place.													
Budget:	TBD												
Applicable Sub-Project/SPV	<table border="1"> <tr> <td>Muskrat Falls Generation</td> <td><input checked="" type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>				
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>										
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>										
IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0049	Type:	C-Contract
Titles (long):	Supply and Install Log Booms	Revision No.:	01
(short):	Log Booms	Date:	13-Apr-2012

Discipline:	Civil and related works		
Responsibilities: Area Manager:	Wallace Piercey	Package Engineer:	Todd Smith
QA / QC:	Ken Morisson	Contract Admin. / Buyer:	Ron Adamcyk

Scope of Work Summary

This contract package includes the design, supply, installation and servicing of the log booms and safety booms/buoys, including the removal of debris during the construction period. It also includes the construction of the access road to the downstream log boom.

Work Included:

- Design of the log booms, and safety booms and buoys;
- Design of the boom foundations/supports/anchors including shoreline and submerged;
- Supply and delivery of the booms/buoys;
- Construction of the foundations/supports/anchors;
- Installation of the booms/buoys;
- Maintenance of the booms/buoys during the construction period including removal during the fall and installation during the spring if it is determined that the booms cannot remain in place during the winter months;
- Removal of debris from the booms and transport to spoil areas during construction;
- Construction of access road to the downstream boom location;
- Delivery of concrete from batch plant if required for foundations, anchors, or other work.

Approximate Quantities (only major items are included)

Item	Description	Unit	Quantity
1	LOG BOOOMS	ea	3
2	SAFETY BOOM AND BUOYS	line	1
3	ACCESS ROAD	km	1

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Construction of access road to the upstream boom location	CH0008
Construction of spoil areas	CH0048
Construction of access roads to the spoil areas	CH0048
Supply of Concrete	CH0050
Main Southside Access Road	CH0004
Maintenance of the booms/buoys and removal of debris during the operation phase	N/A

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0049	Type:	C-Contract
Titles (long):	Supply and Install Log Booms	Revision No.:	01
(short):	Log Booms	Date:	13-Apr-2012

Quality	Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification												
Reference Section	<p>The following main documents were used to define the scope:</p> <p>Design Philosophy for LCP Environmental Mitigation LCP-PT-ED-0000-EN-PH-0007-01</p> <p>Design Philosophy for Reservoir Trash & Debris Management LCP-PT-ED-0000-EN-PH-0030-01</p>												
Interface with Other Packages	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Construction of Southside Access Road</td> <td>CH0004</td> </tr> <tr> <td>Construction of North Spur Stabilization Works</td> <td>CH0008</td> </tr> <tr> <td>Supply of Concrete Including Batch Plant</td> <td>CH0050</td> </tr> <tr> <td>Construction of Intake and Powerhouse, Spillway and Transition Dams</td> <td>CH0007</td> </tr> <tr> <td>Construction of the spoil areas and the access roads to the spoil areas</td> <td>SH0048</td> </tr> </tbody> </table>	Description	Package No.	Construction of Southside Access Road	CH0004	Construction of North Spur Stabilization Works	CH0008	Supply of Concrete Including Batch Plant	CH0050	Construction of Intake and Powerhouse, Spillway and Transition Dams	CH0007	Construction of the spoil areas and the access roads to the spoil areas	SH0048
Description	Package No.												
Construction of Southside Access Road	CH0004												
Construction of North Spur Stabilization Works	CH0008												
Supply of Concrete Including Batch Plant	CH0050												
Construction of Intake and Powerhouse, Spillway and Transition Dams	CH0007												
Construction of the spoil areas and the access roads to the spoil areas	SH0048												
Specific Site Conditions	<ul style="list-style-type: none"> The construction of structures in and near the Churchill River will require strict safety enforcement. Construction of foundations will likely be required in the River. Maintenance and removal of debris will likely require work in the River. Booms and buoys will likely be specified to be permanent, year-round fixtures and will have to resist ice forces. Booms and buoys are to be installed to guide boaters to and permit access to the north portage route. The Churchill River is a navigable river and booms and buoys are to be designed accordingly. 												
Specific Schedule Conditions	<p>Any other packages that have to be started before the subject package can proceed:</p> <ul style="list-style-type: none"> Access road to upstream log boom will be constructed under CH-0008 North Spur Stabilization and should be completed to permit removal of debris following creation of the winter headpond. Spoil areas and associated access roads are to be completed to enable disposal of debris from the log booms. Maintenance and removal of debris is to continue through the construction period until project completion – this may include the spring following first power pending completion of the remaining units. 												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0049	Type:	C-Contract
Titles (long):	Supply and Install Log Booms	Revision No.:	01
(short):	Log Booms	Date:	13-Apr-2012

	Any other packages that cannot proceed before the subject package has started: <ul style="list-style-type: none"> The booms and buoys under CH0049 are to be installed prior to creation of the winter headpond / river diversion. The booms and buoys will require modification prior to impoundment to elevation 39m. 	
Specific Environment Conditions	When constructing the shore based foundations and the access road, or other similar activities requiring earth moving equipment, site runoff will be controlled and sedimentation ponds will be utilized which will filter the water before returning it to the river at the specified suspension levels (less than 30 ppm). Adequate drainage systems shall be provided to take care of natural run-off water and have it returned to the river in a natural way.	
Specific Safety Conditions	Strict safety is required when constructing structures close to or in the water.	
Special Requirements (All)	Environmental and Safety Requirements are provided in the Agreement in several documents.	
Free Issued Materials	Not Applicable	
Major Equipment List	Log Booms Safety Boom and Buoys	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0050	Type:	C-Contract
Titles	(long): Supply of Concrete including Batch Plant (MF)	Revision No.:	01
	(short): Concrete including Batch Plant (MF)	Date:	13-Apr-2012

Discipline:	Civil		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	Hafid Bouzaïene
	QA / QC: Ken Morisson	Contract Admin. / Buyer:	Ron Adamcyk

Scope of Work Summary

This contract package is for the supply of conventional concrete (CVC) for all contractors at site except the Access road and Accommodations Complex contractors, and the majority of Bulk Excavation contractor's requirements.

Work Included:

- The mobilization, installation, operation and dismantlement of a batch plant.
- The fabrication of the aggregates for concrete from blasted rock stockpile and from sand gravel borrows areas.
- Supply and storage of Portland cement for the fabrication of concrete including Fly Ash and additives.
- The production of concrete at the batching plant.
- The quality control at the batch plant.

Approximate Quantities (only major items are included)

Item	Description	Unit	Quantity
1	CONCRETE	m ³	500,000

Contract Basis

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Placement of concrete	Varies
The quality control at the pour site	Varies
Production of blasted rock stockpile	CH0006
Supply of Roller Compacted Concrete (RCC)	CH0009

Quality

Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0050	Type:	C-Contract
Titles	(long): Supply of Concrete including Batch Plant (MF)	Revision No.:	01
	(short): Concrete including Batch Plant (MF)	Date:	13-Apr-2012

Reference Section

The following main documents were used to define the scope:

- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design.
- 723468-40ER-0001-00 - MF 1340 - Review and Confirmation of Muskrat Falls Layout.
- Design Criteria as formulated for the Lower Churchill Project.

Interface with Other Packages

Description	Package No.
Construction of Southside Access Road	CH0004
Bulk Excavation Works	CH0006
Construction of Intake and Powerhouse, Spillway and Transition Dams	CH0007
Construction of North and South Dams	CH0009
Supply And Install Log Booms	CH0049
Supply and Install Converters & Harmonic Filters & Transition Compounds	CD0501
Construction of Switchyard and Synchronous Condenser Facilities	CD0502

Specific Site Conditions

The construction of structures near the Churchill River will require strict safety enforcement. Bedrock at the Muskrat Falls site consists of hard, unweathered gneiss. The supply of concrete is limited to Muskrat Falls site.

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0006 – Bulk Excavation Works shall be completed no later than April 2013
- Concrete Batch Plant shall be ready to produce first concrete no later than April 2013.

Any other packages that cannot proceed (or be completed) before the subject package has started:

- CH0004 – Construction of Southside Access Road
- CH0006 – Bulk Excavation Works
- CH0007 – Construction of Intake and Powerhouse, Spillway and Transition Dams
- CH0009 – Construction of North and South Dams
- CH0049 – Supply And Install Log Booms
- CD0501 – Supply and Install Converters & Harmonic Filters & Transition Compounds

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0050	Type:	C-Contract
Titles (long):	Supply of Concrete including Batch Plant (MF)	Revision No.:	01
(short):	Concrete including Batch Plant (MF)	Date:	13-Apr-2012

	<ul style="list-style-type: none"> CD0502 – Construction of Switchyard and Synchronous Condenser Facilities 													
Specific Environment Conditions	Waste concrete from washing of the mixers and trucks should be disposed in appropriate approved waste disposal areas outside the site. Adequate control of dust at the Aggregate Plant should be provided.													
Specific Safety Conditions	Strict safety is required when constructing structures close to or in the water.													
Special Requirements (All)	Environmental and Safety Requirements are provided in the Agreement in several documents.													
Free Issued Materials	The following are free issued materials for package CH0050:													
	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Blasted rock from bulk excavations will be provided for crushing by the contractor.</td> <td>CH0006</td> </tr> </tbody> </table>	Description	Package No.	Blasted rock from bulk excavations will be provided for crushing by the contractor.	CH0006									
Description	Package No.													
Blasted rock from bulk excavations will be provided for crushing by the contractor.	CH0006													
Major Equipment List	N/A													
Schedule and Milestones	<table border="1"> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>1st Vendor Data Required by:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>TBD</td> </tr> <tr> <td colspan="2"> Dates for milestones will be updated once the Project baseline schedule is in place. </td> </tr> </table>		EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	1 st Vendor Data Required by:	TBD	Construction Complete:	TBD	Dates for milestones will be updated once the Project baseline schedule is in place.	
EOI Date:	TBD													
RFP Date:	TBD													
Award Date:	TBD													
1 st Vendor Data Required by:	TBD													
Construction Complete:	TBD													
Dates for milestones will be updated once the Project baseline schedule is in place.														
Budget	TBD													
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>													
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>													

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CH0052	Type:	C-Contract
Titles (long):	Construction of Habitat Compensation Works	Revision No.:	01
(short):	Habitat Compensation	Date:	13-Apr-2012

Discipline:	Civil	Package Engineer:	Albert Clarke
Responsibilities: Area Manager:	Wallace Piercey	Contract Admin. / Buyer:	Stella Roche
QA / QC:	Ken Morrison		

Scope of work Summary:

This package includes the design, supply and construction of Habitat Compensation Works for the Muskrat Falls Lower Churchill Project to comply with the Habitat Compensation Plan being developed by Nalcor and approved by DFO.

Work Included:

Supply all labor, materials and equipment to construct the areas designated for Habitat Compensation as per the project designs and the requirements of Nalcor and DFO.

- The design and construction of facilities required to provide Fish Habitat at Edwards Brook delta area, Pinus Brook delta area and the Shoals area below Gull Island Area.
- Removal of vegetation and overburden where required
- Re-grade the existing substrate to the design elevations.
- Mobilize to the delta areas in the river downstream of Gull Lake and remove existing vegetation and re-grade the areas to provide fish spawning beds after reservoir inundation.
- Maintain buffer zones between habitat creation activities and existing fish habitat areas.
- Construct Helicopter landing pads for monitoring activities.
- Construct access for construction purposes.
- Rehabilitation of disturbed areas not incorporated into the permanent works.

Approximate Quantities (major items only):

ITEM	DESCRIPTION	UNIT	QUANTITY
1	TBD		

Contract Basis:

To be determined.

Work Excluded:

Description	Package No.
Clearing and Grubbing of areas covered under the Reservoir Clearing works	CH0023/CH0024
Installation of camp facilities	CD0538

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: CH0052	Type: C-Contract
Titles (long): Construction of Habitat Compensation Works	Revision No.: 01
(short): Habitat Compensation	Date: 13-Apr-2012

Quality:	Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.					
Reference Section:	The following main documents are used to define the scope: To be determined.					
Interface with other Packages:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>TBD</td> <td></td> </tr> </tbody> </table>		Description	Package No.	TBD	
Description	Package No.					
TBD						
Specific Site Conditions:	To be determined.					
Specific Schedule Conditions:	Any other packages that have to be started before the subject package can proceed: (Not Applicable) Any other packages that cannot proceed before the subject package has started: (Not Applicable)					
Specific Environment Conditions:	Permit approvals.					
Specific Safety Conditions:	To be determined.					
Special Requirements:	To be determined.					
Free Issued Materials:	Not Applicable					
Major Equipment List:	Not Applicable					
Schedule and Milestones:	EOI Date: TBD RFP Date: TBD Award Date: TBD Start Construction: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CH0052	Type:	C-Contract
Titles (long):	Construction of Habitat Compensation Works	Revision No.:	01
(short):	Habitat Compensation	Date:	13-Apr-2012

Budget:

As per DG3.

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0014	Type:	P-Purchase Order
Titles (long):	Supply of Generator Step-Up Transformer	Revision No.:	01
(short):	GSU Transformer	Date:	13-Apr-2012

Discipline:	Electrical		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	William Caldwell
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

This contract package includes design, fabrication, shop testing, packaging, delivery and warranty of four (4) 175/230 MVA ONAN/ONAF generator step-up (GSU) transformers complete with 315 kV lightning arresters and accessories and one (1) spare generator step-up (GSU) transformer.

Work Included:

- Five (5) three-phase, 315/15 kV, 60 Hz, oil-immersed, 175/230 MVA, natural and forced air cooled (ONAN/ONAF), GSU transformers, complete with conservator tank, off-load tap changer, H.V. bushings, lightning arresters, control panels, all necessary fittings and accessories. Four (4) transformers shall be connected to the generator circuit breakers through Isolated Phase Bus (IPB) ducts, which are covered in a separate Contract. One (1) transformer will be a spare unit, which will not be energized;
- Insulating oil for first filling of the transformers, which are to be delivered in drums;
- HV terminal lugs for ACSR overhead line connections;
- One (1) set of mandatory spare parts;
- One (1) set of special devices, handling tools and testing equipment required for the installation, testing, commissioning and maintenance of the above transformers;
- The transportation of the transformers, materials, equipment and accessories from place of manufacturer to Site;
- Offloading of the transformers on their concrete bases;
- Supervision of the erection for the correct, safe and proper installation of the transformers and accessories at Site;
- O&M Manuals;
- Factory and site test procedures and test reports;
- The commissioning and acceptance testing at Site;

Approximate Quantities (only major items are included)

Item	Description	Unit	Quantity
1	175/230 MVA ONAN/ONAF generator step-up (GSU) transformers.	ea	05

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0014	Type:	P-Purchase Order
Titles	(long): Supply of Generator Step-Up Transformer	Revision No.:	01
	(short): GSU Transformer	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Transformer Installation	CH0031
Transformer foundations and other civil works	CH0007
15 kV isolated phase bus (IPB) between the generator circuit breaker terminals and the GSU transformers	PH0015
Flexible connections to the IPB	PH0015
Transformer protection panels and Powerhouse Control System	CH0030
H.V. cable connections to overhead lines	CT0319
Fire protection system	CH0031
Supply of the anchor bolts	CH0007
600/347 V ac auxiliary power supply	CH0031
125 V dc power supply	CH0031
Storing of material and equipment at Site (if required)	CH0031

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input checked="" type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input checked="" type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

505573-344B-47EC-0001 – Design Criteria Powerhouse Major Electrical Equipment
 LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design
 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
 LCP-PT-ED-0000-EN-PH-0028-01 - Nalcor Energy-Lower Churchill Project-Design Philosophy for Muskrat Falls Plant Layout
 LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project-Operation & Maintenance Philosophy of Design
 LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0014	Type:	P-Purchase Order
Titles (long):	Supply of Generator Step-Up Transformer	Revision No.:	01
(short):	GSU Transformer	Date:	13-Apr-2012

Interface with Other Packages

Description	Package No.
Transformer foundations and anchor bolts	CH0007
Transformer installation, fire protection system, connections to IPB, ac and dc auxiliary power supplies and control systems	CH0031
Turbine/Generator protection and control systems	CH0030
Isolated Phase Bus flexible connectors	PH0015
HV overhead lines	CH0319

Specific Site Conditions

Not Applicable

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0007 – Transformer foundations and anchor bolts;

Any other packages that cannot proceed before the subject package has started:

- CH0030 – Turbine/Generator and Turbine/Generator protection and control systems commissioning;
- PH0015 – Isolated Phase Bus

Specific Environment Conditions

Not Applicable

Specific Safety Conditions

Not Applicable

Special Requirements (All)

Not Applicable

Free Issued Materials

Not Applicable

Major Equipment List

Tag Number	Description
3342-TRF-0001	UNIT 1 GENERATOR STEP-UP TRANSFORMER
3342-TRF-0002	UNIT 2 GENERATOR STEP-UP TRANSFORMER
3342-TRF-0003	UNIT 3 GENERATOR STEP-UP TRANSFORMER
3342-TRF-0004	UNIT 4 GENERATOR STEP-UP TRANSFORMER
3342-TRF-0005	SPARE GENERATOR STEP-UP TRANSFORMER

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD
Dates for milestones will be updated once the	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0014	Type:	P-Purchase Order
Titles	(long): Supply of Generator Step-Up Transformer	Revision No.:	01
	(short): GSU Transformer	Date:	13-Apr-2012

	Project baseline schedule is in place.		
Budget	TBD		
Applicable Sub-Project/SPV	Muskkrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/>
	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>
IBA Package	YES	<input type="checkbox"/>	NO <input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0015	Type:	P-Purchase Order
Titles	(long): Supply of Isolated Phase Bus	Revision No.:	01
	(short): Isolated Phase Bus	Date:	13-Apr-2012

Discipline:	Electrical		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	William Caldwell
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

This contract package includes design, fabrication; shop testing, packaging, delivery and warranty of four (4) sets of 3-phase isolated phase bus assemblies for connection of generators, generator circuit breakers, station service transformers, excitation transformers and generator step-up (GSU) transformers.

Work Included:

- Connection housing and flanges for generator, generator circuit breaker, excitation transformer and GSU transformer terminals;
- Three (3) single-phase main isolated phase bus connections between generator terminals and generator circuit breakers;
- Three (3) single-phase main isolated phase bus connections between generator circuit breakers and GSU transformers;
- Three (3) single-phase isolated phase bus tap connections to the excitation transformer cubicle;
- Three (3) single-phase isolated phase bus tap connections with isolated phase bus removable links to the station auxiliary service transformer cubicle;
- All necessary braided flexible connectors and accessories for the connection of the GSU transformer, excitation transformer, station auxiliary services transformer and generator circuit breaker;
- Support structures for the isolated phase bus;
- Equipment grounding terminations;
- One (1) set of recommended spare parts;
- One (1) set of special devices, handling tools and testing equipment required for the installation, testing, commissioning and maintenance of the above isolated phase bus;
- O & M Manuals;
- Factory and site test procedures and test reports;
- Supervision of the site installation of the isolated phase bus;
- Supervision of site testing and commissioning of the supplied equipment;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0015	Type:	P-Purchase Order
Titles	(long): Supply of Isolated Phase Bus	Revision No.:	01
	(short): Isolated Phase Bus	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

Item	Description	Unit	Quantity
1	12,000 A isolated phase bus	m	4 X 97.1
2	12,000 A isolated phase bus 90° elbow	ea	4 X 15
3	12,000 A isolated phase bus wall seal-off	ea	4 X 3
4	12,000 A isolated phase bus floor seal-off/fire barrier	ea	4 X 3
5	600 A isolated phase bus	m	4 X 62.18
6	600 A isolated phase bus 90° elbow	ea	6 X 3
7	600 A isolated phase bus wall seal-off	ea	4 X 3
8	600 A isolated phase bus floor seal-off/fire barrier	ea	4 X 3

Contract Basis

Lump Sum

Combination Lump Sum – Unit Rates Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Isolated phase bus Installation	CH0031
Wall seal assembly and wall frame installation	CH0007 & CH0031
Floor fire barrier/seal installation	CH0007 & CH0031
Transformer base and other civil works	CH0007
Supply of GSU transformers	PH0014
Supply of generator circuit breakers	PH0016
Supply of station service transformers	PH0035
Supply of excitation transformers	CH0030
Supply of flexible connections to the generator terminals	CH0030
Installation of flexible connections to the generator terminals	CH0031
Installation of flexible connections to the GSU terminals	CH0031
Supply of the anchor bolts	CH0007
600/347 V ac auxiliary power supply	CH0031
125 V dc power supply	CH0031
Storing of material and equipment at Site	CH0031

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0015	Type:	P-Purchase Order
Titles (long):	Supply of Isolated Phase Bus	Revision No.:	01
(short):	Isolated Phase Bus	Date:	13-Apr-2012

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Significant	<input type="checkbox"/>	Minor Negligible	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- 505573-344B-47EC-0001 – Design Criteria Powerhouse Major Electrical Equipment
- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design.
- 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces.
- LCP-PT-ED-0000-EN-PH-0028-01 - Nalcor Energy-Lower Churchill Project-Design Philosophy for Muskrat Falls Plant Layout.
- LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project-Operation & Maintenance Philosophy of Design.
- LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code.

Interface with Other Packages

Description	Package No.
IPB support foundations and anchor bolts, installation of wall frame assemblies, floor fire barrier/seal assemblies, and wall frame assemblies	CH0007
IPB installation, fire protection system, connections to generators, generator circuit breakers, GSU transformers, station auxiliary services transformers, excitation transformers, ac and dc auxiliary power supplies and control systems	CH0031
Turbines and Generators	CH0030
GSU transformers	PH0014
Generator circuit breakers	PH0016
Station service transformers	PH0035

Specific Site Conditions

Not Applicable

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0030 – Turbine/Generator;
- PH0014 – GSU transformers;
- PH0016 – Generator circuit breakers;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0015	Type:	P-Purchase Order
Titles	(long): Supply of Isolated Phase Bus	Revision No.:	01
	(short): Isolated Phase Bus	Date:	13-Apr-2012

	<ul style="list-style-type: none"> PH0035 – Station service transformers CH0007 – Isolated Phase Bus support foundations and anchor bolts; <p>Any other packages that cannot proceed before the subject package has started:</p> <ul style="list-style-type: none"> PH0014 – GSU transformers commissioning; PH0016 – Generator circuit breakers commissioning ; PH0035 – Station service transformers commissioning; CH0030 – Turbine/Generator and Turbine/Generator protection and control systems commissioning; 	
Specific Environment Conditions	Not Applicable	
Specific Safety Conditions	Not Applicable	
Special Requirements (All)	Not Applicable	
Free Issued Materials	Not Applicable	
Major Equipment List	<ul style="list-style-type: none"> 3342-IPB-0001 – Unit 1 Isolated Phase Bus 3342-IPB-0002 – Unit 2 Isolated Phase Bus 3342-IPB-0003 – Unit 3 Isolated Phase Bus 3342-IPB-0004 – Unit 4 Isolated Phase Bus 	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0016	Type:	P-Purchase Order
Titles	(long): Supply of Generator Circuit Breakers	Revision No.:	01
	(short): Generator Circuit Breakers	Date:	13-Apr-2012

Discipline:	Electrical		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	William Caldwell
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

Design, fabrication, shop testing, packaging, delivery and warranty of :
Supply of four (4), 15 kV (Nominal), 12,000 A, 100 kA interrupting capacity generator circuit breakers complete with their control panels for each of the four turbine/generator units.

Work Included:

- Supply of four (4) 15 kV, 12,000 A generator circuit breakers including three individual single pole circuit breakers and a control and operating mechanism cabinet mounted on a common base each made of three identical poles, including:
- One (1) 3-phase SF6 circuit breaker;
- One (1) 3-phase motorized disconnect on the transformer side of the circuit breaker;
- Two (2) 3-phase earthing switches – one (1) on the generator side of the circuit breaker and one (1) on the transformer side of the circuit breaker;
- One (1) set of 3 single phase surge capacitors of 0.25 µF on the generator side of the circuit breaker;
- One (1) set of 3 single phase 12.7 kV MCOV, metal oxide surge arresters on the generator side of the circuit breaker;
- Six (6) sets of 3 single phase 12,000:5 A current transformers – three (3) on the generator side of the circuit breaker and three (3) on the transformer side of the circuit breaker;
- Three (3) sets of 3 single phase voltage transformers – two (2) on the generator side of the circuit breaker and one (1) on the transformer side of the circuit breaker
- One (1) separate enclosure per pole electrically isolated from the support structure;
- One (1) common control cubicle;
- One (1) complete operating mechanism and associated accessories;
- Support structure for the generator circuit breaker;
- One (1) set of recommended spare parts;
- O &M Manuals
- Special tools required for installation and maintenance;
- Factory and site test procedures and test reports.

Approximate Quantities (only major items are included)

Item	Description	Unit	Quantity
1	15 kV, 12,000 A generator circuit breakers	ea	04

Contract Basis

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0016	Type:	P-Purchase Order
Titles	(long): Supply of Generator Circuit Breakers	Revision No.:	01
	(short): Generator Circuit Breakers	Date:	13-Apr-2012

Work Excluded:

Lump Sum <input checked="" type="checkbox"/> Combination Lump Sum – Unit Rates <input type="checkbox"/>	Unit Rates <input type="checkbox"/> Cost Reimbursable <input type="checkbox"/>
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Remarks:

Description	Package No.
Generator circuit breaker installation;	CH0031
Foundations for generator circuit breaker supports and any other civil works;	CH0007
Supply flexible connections from line and load terminals to the isolated phase;	PH0015
Installation of flexible connections from line and load terminals to the isolated phase;	CH0031
The supply and installation of the anchor bolts;	CH0007
600/347 V ac auxiliary power supply;	CH0031
125 V dc power supply;	CH0031
External connections to and from generator circuit breaker to the generator control panel;	CH0031
Monorail for handling of a breaker single pole;	CH0031
Storing of material and equipment at Site.	CH0007

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input checked="" type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

4	Continuous in process quality monitoring and verification and final verification.
X 3	Regular in process quality monitoring and verification and final quality verification.
2	Limited in process quality monitoring and verification and final quality verification.
1	Final Quality Verification
0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0016	Type:	P-Purchase Order
Titles (long):	Supply of Generator Circuit Breakers	Revision No.:	01
(short):	Generator Circuit Breakers	Date:	13-Apr-2012

Reference Section

The following main documents are used to define the scope:

- 505573-344B-47EC-0001 – Design Criteria Powerhouse Major Electrical Equipment
- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design
- 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
- LCP-PT-ED-0000-EN-PH-0028-01 - Nalcor Energy-Lower Churchill Project-Design Philosophy for Muskrat Falls Plant Layout
- LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project-Operation & Maintenance Philosophy of Design
- LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code

Interface with Other Packages

Description	Package No.
Generator circuit breaker support foundations, access platforms and anchor bolts	CH0007
Generator circuit breaker installation, , connections to isolated phase bus, ac and dc auxiliary power supplies and control systems	CH0031
Isolated Phase Bus	PH0015
Turbine Generator Protection and Control System	CH0030

Specific Site Conditions

Indoor installation

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0030 – Turbine/Generator;
- PH0015 – Isolated Phase Bus;
- CH0007 – Powerhouse Turbine floor, circuit breaker foundations, anchor bolts and material handling monorail.

Any other packages that cannot proceed before the subject package has started:

- CH0030 – Turbine/Generator and Turbine/Generator protection and control systems commissioning;

Specific Environment Conditions

Not Applicable

Specific Safety Conditions

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0016	Type:	P-Purchase Order
Titles	(long): Supply of Generator Circuit Breakers	Revision No.:	01
	(short): Generator Circuit Breakers	Date:	13-Apr-2012

Special Requirements (All)	Not Applicable	
Free Issued Materials	The following are free issued materials for Purchase Order PH0016:	
	Description	Package No.
	Not Applicable	Not Applicable
Major Equipment List	<ul style="list-style-type: none"> • 3342-BKR-0001 – Unit 1 Generator Circuit Breaker • 3342- BKR -0002 – Unit 2 Generator Circuit Breaker • 3342- BKR -0003 – Unit 3 Generator Circuit Breaker • 3342- BKR -0004 – Unit 4 Generator Circuit Breaker 	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0035	Type:	P-Purchase Order
Titles (long):	Supply of Station Service Transformers	Revision No.:	01
(short):	Station Service Transformers	Date:	13-Apr-2012

Work Excluded:

The following works or activities are excluded from Purchase Order PH0035:

Description	Package No.
Transformer Installation	CH0031
Transformer foundations and other civil works	CH0007
15 kV isolated phase bus (IPB) between the generator terminals and the SST transformers	PH0015
Flexible connections to the IPB	PH0015
Supply of the anchor bolts	CH0007
600/347 V ac auxiliary power supply	CH0031
125 V dc power supply	CH0031
Storing of material and equipment at Site	CH0031

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

- The following main documents are used to define the scope:
- 505573-344B-47EC-0001 – Design Criteria Powerhouse Major Electrical Equipment
 - LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design
 - 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
 - LCP-PT-ED-0000-EN-PH-0028-01 - Nalcor Energy-Lower Churchill Project-Design Philosophy for Muskrat Falls Plant Layout
 - LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project-Operation & Maintenance Philosophy of Design
 - LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0035	Type:	P-Purchase Order
Titles	(long): Supply of Station Service Transformers	Revision No.:	01
	(short): Station Service Transformers	Date:	13-Apr-2012

Interface with Other Packages

Description	Package No.
Intake and Powerhouse, Spillway and Transition Dams	CH0007
Mechanical and Electrical Auxiliaries (MF)	CH0031
Isolated Phase Bus	PH0015
Turbines and Generators	CH0030

Specific Site Conditions

Indoor installation

Specific Schedule Conditions

Any other packages that have to be started before the subject package can proceed:

- CH0007 – Powerhouse Turbine floor, circuit breaker foundations, anchor bolts and material handling monorail.

Any other packages that cannot proceed before the subject package has started:

- CH0030 – Turbine/Generator protection and control systems commissioning;
- PH0015 – Isolated Phase Bus;

Specific Environment Conditions

Not Applicable

Specific Safety Conditions

Not Applicable

Special Requirements (All)

Not Applicable

Free Issued Materials

Not Applicable

Major Equipment List

- 3342-TRF-0011 – Unit 1 Station Service Transformer
- 3342-TRF-0012 – Unit 2 Station Service Transformer
- 3342-TRF-0013 – Unit 3 Station Service Transformer
- 3342-TRF-0014 – Unit 4 Station Service Transformer

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD
Dates for milestones will be updated once the Project baseline schedule is in place.	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0035	Type:	P-Purchase Order
Titles	(long): Supply of Station Service Transformers	Revision No.:	01
	(short): Station Service Transformers	Date:	13-Apr-2012

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0036	Type:	P-Purchase Order
Titles (long):	Supply of Auxiliary Transformers	Revision No.:	01
(short):	Auxiliary Transformers	Date:	13-Apr-2012

Discipline:	Generation		
Responsibilities:	Area Manager: Luc Turcotte	Package Engineer:	Victor Jaremko
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

Design, fabrication, shop testing, packaging, delivery and warranty of transformers which includes the following:

Two (2) oil immersed, pad-mounted distribution transformers;

Three (3) oil immersed, power transformers;

Nineteen (19) oil immersed, pole-mounted distribution transformers.

Work Included:

The package includes the design, fabrication, shop testing, packaging, delivery and warranty of transformers which includes the following:

- Supply of one (1) three-phase, 500 kVA, 25 kV-600Y/347 V, oil-immersed, pad-mounted transformer;
- Supply of one (1) three-phase, 2000 kVA, 25 kV-600Y/347 V, oil-immersed, pad-mounted transformer;
- Supply of two (2) three-phase, 3,000 kVA, 25 kV-600Y/347, oil-immersed, power transformers;
- Supply of one (1) three-phase, 3,750 kVA, 25 kV-600Y/347, oil-immersed, power transformers;
- Supply of one (1) single-phase, 25 kVA, 14.4 kV-347 V, oil-immersed, pole mount transformer;
- Supply of six (6) single-phase, 50 kVA, 14.4 kV-347 V, oil-immersed, pole mount transformers;
- Supply of one (1) single-phase, 10 kVA, 14.4 kV-240/120 V, oil-immersed, pole mount transformer;
- Two (2) single-phase, 50 kVA, 14.4 kV-240/120 V, oil-immersed, pole mount transformer;
- Three (3) single-phase, 75 kVA, 14.4 kV-240/120 V, oil-immersed, pole mount transformer;
- Six (6) single-phase, 100 kVA, 14.4 kV-240/120 V, oil-immersed, pole mount transformer;
- Supply of lightning arresters for all pole-mounted transformers;
- Supply of all necessary fittings and accessories;
- Supply of one (1) set of special devices, handling tools and testing equipment required for the installation, testing, commissioning and maintenance of the above auxiliary transformers;
- Transportation of the transformers, materials, equipment and accessories from place of manufacturer to Site.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: PH0036
 Titles (long): Supply of Auxiliary Transformers
 (short): Auxiliary Transformers

Type: P-Purchase Order
 Revision No.: 01
 Date: 13-Apr-2012

**Approximate Quantities
 (only major items are
 included)**

Item	Description	Unit	Quantity
1	500 kVA pad-mounted transformer	ea	01
2	2000 kVA pad-mounted transformer	ea	01
3	3000 kVA power transformer	ea	02
4	3750 kVA power transformer	ea	01
5	10 kVA pole-mounted transformer	ea	01
6	25 kVA pole-mounted transformer	ea	01
7	50 kVA pole-mounted transformer	ea	08
8	75 kVA pole-mounted transformer	ea	03
9	100 kVA pole-mounted transformer	ea	06

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Transformer Installation	CH0005
Transformer foundations and other civil works	CH0005
Flexible connections between 3750 kVA power transformer and the 600 V synchronizing switchboard	PH0038
H.V. connections to overhead lines	CH0005
Supply of the anchor bolts	CH0005
208/120 V ac auxiliary power supply	PH0037/CH0005
125 V dc power supply for 3750 kVA power transformer	PH0037/CH0005
25 kV fused cutouts and overhead distribution lines	CD0512
Storing of material and equipment at Site	CH0005

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0036	Type:	P-Purchase Order
Titles (long):	Supply of Auxiliary Transformers	Revision No.:	01
(short):	Auxiliary Transformers	Date:	13-Apr-2012

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Significant	<input type="checkbox"/>	Minor Negligible	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification

Reference Section

The following main document was used to define the scope:

- 505573-315A-47EC-0001 – Accommodation and Construction Site - Distribution System Design Criteria;
- 505573-315A-47EB-0002 – Design Brief - Dimensioning 25 kV:600 V Main Distribution Transformers
- 505573-480A-47ER-0013 – Construction Power System Study
- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design
- LCP- PT-ED-0000-EN-PH-0029-01 – Nalcor Energy-Design Philosophy for Muskrat Falls Construction Power
- 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
- LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project- Operation & Maintenance Philosophy of Design
- LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code

Interface with Other Packages

Description	Package No.
Transformer foundations and anchor bolts	CH0005
Transformer installation and connection to 25 kV distribution line	CH0005
Connections to 600 V synchronising switchgear, ac and dc auxiliary power supplies and control systems	CH0005
Supply of 208/120 V auxiliary power	PH0037
Supply of diesel generator sets	PH0038
Connections between transformer secondary terminals and Accommodation Complex buildings electrical services	CH0002

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0036	Type:	P-Purchase Order
Titles (long):	Supply of Auxiliary Transformers	Revision No.:	01
(short):	Auxiliary Transformers	Date:	13-Apr-2012

	Connections between transformer secondary terminals and Administrative buildings electrical services	CH0003
	25 kV overhead distribution lines and 25 kV fused cut-outs	CD0512
Specific Site Conditions	Not Applicable	
Specific Schedule Conditions	<ul style="list-style-type: none"> Not Applicable 	
Specific Environment Conditions	Environmental Requirements are provided in the Agreement in several documents.	
Specific Safety Conditions	Safety Requirements are provided in the Agreement in several documents.	
Special Requirements (All)	Not Applicable	
Free Issued Materials	The following are free issued materials for Purchase Order PH0036:	
	Description	Package No.
	Not Applicable	Not Applicable
Major Equipment List	<ul style="list-style-type: none"> 1570-TRF-0001 – 500 kVA, 25kV-600/347 V, pad-mounted transformer; 1570-TRF-0002 – 2000 kVA, 25kV-600/347 V, pad-mounted transformer; 1570-TRF-0003 - 3000 kVA, 25kV-600/347 V, power transformer; 1570-TRF-0004 - 3000 kVA, 25kV-600/347 V, power transformer; 1570-TRF-0005 - 3750 kVA, 25kV-600/347 V, power transformer; 1570-TRF-0006 - 50 kVA, 14,400-347 V, pole-mounted transformer; 1570-TRF-0007 – 50 kVA, 14,400-347 V, pole-mounted transformer; 1570-TRF-0008 – 50 kVA, 14,400-347 V, pole-mounted transformer; 1570-TRF-0009 – 50 kVA, 14,400-347 V, pole-mounted transformer; 1570-TRF-0010 – 50 kVA, 14,400-347 V, pole-mounted transformer; 1570-TRF-0011 – 50 kVA, 14,400-347 V, pole-mounted transformer; 1570-TRF-0012 – 50 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0013 – 10 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0014 – 75 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0015 – 75 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0016 – 75 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0017 – 100 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0018 – 100 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0019 – 100 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0020 – 100 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0021 – 100 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0022 – 100 kVA, 14,400-240/120 V, pole-mounted transformer; 1570-TRF-0023 - 50 kVA, 14,400-240/120 V, pole-mounted transformer; 	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0036	Type:	P-Purchase Order
Titles (long):	Supply of Auxiliary Transformers	Revision No.:	01
(short):	Auxiliary Transformers	Date:	13-Apr-2012

Schedule and Milestones

<ul style="list-style-type: none"> 1570-TRF-0024 – 25 kVA, 14,400-347 V, pole-mounted transformer. 	
EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0037	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Switchgear	Revision No.:	01
(short):	25 kV Switchgear	Date:	13-Apr-2012

Control connections to to 600 V diesel generator synchronizing switchgear	CH0005
LV power cables from 25 kV Switchgear assembly 208/120 V ac panel board to 3750 kVA power transformer and diesel gensets	CH0005
H.V. connections to overhead lines	CH0005
Supply of the anchor bolts	CH0005
25 kV gang operated switches and overhead distribution lines	CD0512
Storing of material and equipment at Site	CH0005

Quality

Requires Determination of the Equipment Quality Rating YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Significant Moderate Minor Negligible

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification

Reference Section

The following main document was used to define the scope:

- 505573-315A-47EC-0001 – Accommodation and Construction Site - Distribution System Design Criteria;
- 505573-315A-47EB-0002 – Design Brief - Dimensioning 25 kV:600 V Main Distribution Transformers
- 505573-480A-47ER-0013 – Construction Power System Study
- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design
- LCP- PT-ED-0000-EN-PH-0029-01 – Nalcor Energy-Design Philosophy for Muskrat Falls Construction Power
- 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
- LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project- Operation & Maintenance Philosophy of Design
- LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0037	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Switchgear	Revision No.:	01
	(short): 25 kV Switchgear	Date:	13-Apr-2012

Interface with Other Packages

Description	Package No.
Transformer foundations and anchor bolts	CH0005
Transformer installation and connection to 25 kV distribution line	CH0005
Connections to 600 V synchronising switchgear, ac and dc auxiliary power supplies and control systems	CH0005
Connections between transformer secondary terminals and Accommodation Complex buildings electrical services	CH0002
Connections between transformer secondary terminals and Administrative buildings electrical services	CH0003
25 kV overhead distribution lines and 25 kV fused cut-outs	CD0512

Specific Site Conditions

Not Applicable

Specific Schedule Conditions

Not Applicable

Specific Environment Conditions

Environmental requirements are provided in the Agreement in several documents.

Specific Safety Conditions

Safety requirements are provided in the Agreement in several documents.

Special Requirements (All)

Not Applicable

Free Issued Materials

Not Applicable

Major Equipment List

- 1570-SWG-0002 – Accommodation Camp 25 kV Switchgear
- 1570-SWG-0003 – Construction Site 25 kV Switchgear

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD
Dates for milestones will be updated once the Project baseline schedule is in place.	

Budget

TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0037	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Switchgear	Revision No.:	01
	(short): 25 kV Switchgear	Date:	13-Apr-2012

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0038	Type:	P-Purchase Order
Titles (long):	Supply of Emergency Diesel Generators	Revision No.:	01
(short):	Emergency Diesel Generators	Date:	13-Apr-2012

Work Excluded:

The following works or activities are excluded from Purchase Order PH0038:

Description	Package No.
Diesel genset, 600 V switchgear and central fuel storage tank installation	CH0005
Equipment foundations and other civil works	CH0005
Main ground grid and ground connections to gensets and 600 V switchgear	CH0005
Supply of L.V. flexible connectors or busway for connections to 25/14.4 kV-600 V diesel generator step-up transformer	PH0036
Installation of L.V. flexible connectors or busway for connections to 25/14.4 kV-600 V diesel generator step-up transformer	CH0005
Control connections to 600 V diesel gensets	CH0005
Control connections to 600 V diesel generator synchronizing switchgear	CH0005
LV power cables from 25 kV Switchgear assembly 208/120 V ac panel board to diesel gensets	CH0005
Supply of the anchor bolts	CH0005
Storing of material and equipment at Site	CH0005

Quality

Requires Determination of the Equipment Quality Rating

YES NO

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Quality requirements are defined in document 505573-0000-38RA-I-0003 Contractor Quality Requirements Specification

Reference Section

The following main document was used to define the scope:

- 505573-315A-47EC-0001 – Accommodation and Construction Site - Distribution System Design Criteria;
- 505573-315A-47EB-0001 – Construction Site Distribution System - Diesel Generator Sizing Calculation;
- 505573-315A-47EB-0002 – Design Brief - Dimensioning 25 kV:600 V Main Distribution Transformers
- 505573-480A-47ER-0013 – Construction Power System Study
- LCP-PT-ED-0000-EN-RP-0001-01 - Nalcor Energy-Lower Churchill Project – Basis of Design

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0038	Type:	P-Purchase Order
Titles (long):	Supply of Emergency Diesel Generators	Revision No.:	01
(short):	Emergency Diesel Generators	Date:	13-Apr-2012

Interface with Other Packages

- LCP- PT-ED-0000-EN-PH-0029-01 – Nalcor Energy-Design Philosophy for Muskrat Falls Construction Power
- 723468-40ER-0001-00 - MF 1340 Review and Confirmation of Muskrat Falls Layout, Structures and Interfaces
- LCP-PT-ED-0000-EN-PH-0005-01 - Nalcor Energy-Lower Churchill Project- Operation & Maintenance Philosophy of Design
- LCP No. 200-120145-00025 - Nalcor Energy-Work Protection Code.

Description	Package No.
Foundations and anchor bolts for Diesel gensets, 600 V synchronizing switchgear and central fuel storage tank	CH0005
Installation and interconnections of for Diesel gensets, 600 V synchronizing switchgear and central fuel storage tank	CH0005
Connections to 600 V synchronising switchgear, ac and dc auxiliary power supplies and control systems	CH0005
Supply of diesel generators step-up transformer	PH0036

Specific Site Conditions

Not Applicable

Specific Schedule Conditions

Not Applicable

Specific Environment Conditions

Environmental requirements are provided in the Agreement in several documents.

Specific Safety Conditions

Safety requirements are provided in the Agreement in several documents.

Special Requirements (All)

Not Applicable

Free Issued Materials

Not Applicable

Major Equipment List

- 1570-GEN-0001 – 500 kW Diesel Generator Set
- 1570-GEN-0002 – 500 kW Diesel Generator Set
- 1570-GEN-0003 – 1000 kW Diesel Generator Set
- 1570-GEN-0004 – 1000 kW Diesel Generator Set
- 1570-TNK-0001 - Main Fuel Storage Tank for DG Sets

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD
Dates for milestones will be updated once the Project baseline schedule is in place.	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PH0038	Type:	P-Purchase Order
Titles (long):	Supply of Emergency Diesel Generators	Revision No.:	01
(short):	Emergency Diesel Generators	Date:	13-Apr-2012

Budget

Applicable Sub-Project/SPV

IBA Package

TBD.			
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>
YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0001	Type:	S- Contract
Titles	(long): Physical Hydraulic Model	Revision No.:	01
	(short): Physical Hydraulic Model	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Luc Turcotte	Package Engineer:	Maeyens	Daniel Damov
		Michel Maeyens			
	QA / QC:	Ken Morrison	Contract Admin. / Buyer::		Chris Woodmass

Scope of work Summary

Construct a physical hydraulic model to predefined scale (1:70) and carry out tests in order to:

- To verify the overall adequacy of the proposed layout;
- If required, to optimize the layout to improve the hydraulic conditions and/or reduce the construction costs;
- To perform river closure tests to optimize the sequence of closure and the size of the rocks;
- To evaluate the hydraulic conditions during the different construction phases; and
- To evaluate the rating curves of the hydraulic structures.

Work Included:

- Preparation of model construction drawings;
- Construction of the model;
- Execution of the tests;
- Documentation of the progress;
- Documentation of the tests and test results.

Approximate Quantities (only major items are included)

Not Applicable

Contract Basis:

Lump Sum	<input checked="" type="checkbox"/>	Unit Rates	<input type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Remarks:

Work Excluded:

Description	Package No.
Design of structures	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0001	Type:	S- Contract
Titles	(long): Physical Hydraulic Model	Revision No.:	01
	(short): Physical Hydraulic Model	Date:	13-Apr-2012

Quality	<p>Work Package SH0001 is under Quality Control. All control as specified in the Technical Specification will be done by the Engineer.</p> <p>The Contractor shall do its own Quality Assurance, but no specific QA requirements are stipulated.</p>
Reference Section	<p>The following main documents are used to define the scope:</p> <ul style="list-style-type: none"> • SNC-Lavalin, Muskrat Falls Hydroelectric Project, MF1250, Numerical Modeling of Muskrat Falls Structures, May 2008, 722850-MF1250-40ER-0001-00. • SNC-Lavalin, Muskrat Falls Hydroelectric Project, MF1360, Review and Update of Numerical Modeling of Muskrat Falls Structures, May 2011, 723468-MF1360-4HER-0001-00. • SNC-Lavalin, Muskrat Falls Hydroelectric Project, MF1340, Review and Confirmation of Muskrat Falls Structure Layouts and Interfaces, March 2011, 723468-MF1340-40ER-0001-PA
Interface with Other Packages	Not Applicable
Specific Site Conditions	Not Applicable
Specific Schedule Conditions	Study to provide results for the critical components by December 2011. Study to complete by first quarter of 2012.
Specific Environment Conditions	Follow the supplier's normal procedure for environmental management
Specific Safety Conditions	As specified by Supplier and accepted by the Owner
Special Requirements(All)	Environmental and Safety Requirements are provided in the Agreement in several documents.
Equipment List	Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0001	Type:	S- Contract
Titles	(long): Physical Hydraulic Model	Revision No.:	01
	(short): Physical Hydraulic Model	Date:	13-Apr-2012

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD
Dates for milestones will be updated once the Project baseline schedule is in place.	

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0018	Type:	S- Service Contract
Titles (long):	Provision of Catering, Housekeeping and Janitorial Services (MF)	Revision No.:	01
(short):	Catering, Housekeeping and Janitorial.	Date:	13-Apr-2012

Discipline:	Hydro	Package Engineer:	Peter M. Clarke
Responsibilities: Area Managers:	Wallace Piercey	Contract Admin. / Buyer::	Stella Roche
QA / QC:	Kenneth Morrison		

Scope of work Summary

This contract package includes the provision of catering services for the occupants of the Accommodations Complex, housekeeping services for the Accommodations complex and Janitorial services for all the Accommodations Complex and Administrative buildings. Janitorial services extend to other SLI buildings at the MF Construction site, Lay down areas and other locations as required. Includes complete operation of the Accommodations complex excluding building maintenance.

Work Included:

- Catering Services from the Temporary Kitchen in the Starter Camp and from the Main Complex kitchen including operation of the Innu Kitchen.
- Housekeeping Services for the Starter Camp dormitories and the permanent main complex dormitories.
- Janitorial Services for the Starter camp, Accommodations complex buildings, Administrative buildings and the offsite buildings (concrete lab, field personnel trailers, field lavatory buildings)

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Person Days to feed	Person/days	TBD
2	Room Days Housekeeping	Room/Days	TBD
3	Janitorial Area	M2	TBD

Contract Basis

This is a unit price service type contract (function of camp population).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0018	Type:	S- Service Contract
Titles (long):	Provision of Catering, Housekeeping and Janitorial Services (MF)	Revision No.:	01
(short):	Catering, Housekeeping and Janitorial.	Date:	13-Apr-2012

Work Excluded:

The following works or activities are excluded from package SH0022:

Description	Package No.
Building Maintenance	SH0051
Garbage Removal	SH0040
Snow Clearing and Sanding around buildings	SH0051

Quality

Contractor shall comply with 'Contractor Quality Requirement Specification' Number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Basis of Design LCP-PT-ED-0000-EN-RP-0001-01.
- Specification 505573-0000-68RA-I-0015 General Environmental Requirements
- 505573-0000-68RA-I-0005 Project-Wide Environmental Protection Plan-Component 1 and 4b

Interface with Other Packages

Description	Package No.
Provision of Garbage Removal and Disposal Services (MF)	SH0040
Provision of Buildings Maintenance Services (MF)	SH0051

Specific Site Conditions

Not Applicable

Specific Schedule Conditions

Completion of the starter camp.

Specific Environment Conditions

Contractor must have an approved C-SEPP.

Specific Safety Conditions

Cleaning Agents – MSDS Sheets to be consulted.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0018	Type:	S- Service Contract
Titles (long):	Provision of Catering, Housekeeping and Janitorial Services (MF)	Revision No.:	01
(short):	Catering, Housekeeping and Janitorial.	Date:	13-Apr-2012

Special Requirements (All)	Not Applicable	
Free Issued Materials	Not Applicable	
Major Equipment List	Not Applicable	
Schedule and Milestones	EOI Date:	TBD
	RFP Date:	TBD
	Award Date:	TBD
	Receive Initial Vendor Drawings:	TBD
	Forecast at Site:	TBD
	Construction Complete:	TBD
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/>
	Labrador Transmission Assets <input type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>
IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0019	Type:	C- Contract
Titles (long):	Provision of Security Services	Revision No.:	01
(short):	Security Services	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Sean Lee	Package Engineer:	Randy Walker
	QA / QC: Kenneth Morrison	Contract Admin. :	Stella Roche

Scope of work Summary

Package SH0019 includes:

Provision of security and other services required for the control, protection and security of the Lower Churchill Project, during construction of the Hydroelectric Plant, Substation and Reservoir Clearing operations located in Labrador, Canada.

Work Included:

- Security services for the Muskrat Falls Accommodation Complex, lay down areas, project construction sites and reservoir clearing operations.
- Development of a Site Security Execution Plan.
- Provide site surveillance.
- Provide site access control including personnel and vehicle searches.
- Staff the Muskrat Falls Security offices and main access gate on a 24/7 basis.
- Provide emergency assistance to site medical and fire personnel including operating the emergency transport vehicles where necessary.
- Enforcement of site rules and regulations.

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Total man-months for security personnel	ea	TBD

Work Excluded:

The following works or activities are excluded from package SH0020:

Description	Package No.
Medical Services	SH0020
Camp Catering, Housekeeping and Janitorial Services	SH0018

Quality

Work Package SH0019 is not under Quality Control.

The Contractor shall do its own Quality Control, but no QA specific requirements are stipulated by the Engineer.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0019	Type:	C- Contract
Titles (long):	Provision of Security Services	Revision No.:	01
(short):	Security Services	Date:	13-Apr-2012

Reference Section	<p>The following main documents are used to define the scope:</p> <ul style="list-style-type: none"> • Scope of Work Specifications Security Services 505573-0000-68EW-0001-00 • The Province of Newfoundland and Labrador Occupational Health and Safety Act and Regulations, 2009 • 505573-0000-68RA-1-0001-00 Health and Safety Management Plan • 505573-0000-68RA-1-0001-00 Environmental Protection Plan 													
Interface with Other Packages	Not Applicable													
Specific Site Conditions	The scope of work for this package will increase as the scope of work on and around the Muskrat Falls site progresses from early works through to the full construction of the Hydroelectric Plant and Reservoir Clearing operations.													
Specific Schedule Conditions	Security Services must be in place prior to the start of work on the South Side Access Road clearing and construction.													
Specific Environment Conditions	The security services provider must adhere to the Project Environmental Protection Plan.													
Specific Safety Conditions	The security services provider's personnel must comply with the requirements of the Project Health and Safety Plan.													
Special Requirements (All)	Not Applicable													
Equipment List	<ul style="list-style-type: none"> • TBD - 4/all wheel drive vehicles • Miscellaneous security-related equipment including vehicle speed-monitoring devices. 													
Schedule and Milestones	<table border="1"> <thead> <tr> <th>Item</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>EOI</td> <td>TBD</td> </tr> <tr> <td>Issue RFP</td> <td>TBD</td> </tr> <tr> <td>Award</td> <td>TBD</td> </tr> <tr> <td>Mobilize</td> <td>TBD</td> </tr> <tr> <td>Contract Complete</td> <td>TBD</td> </tr> </tbody> </table>	Item	Date	EOI	TBD	Issue RFP	TBD	Award	TBD	Mobilize	TBD	Contract Complete	TBD	
Item	Date													
EOI	TBD													
Issue RFP	TBD													
Award	TBD													
Mobilize	TBD													
Contract Complete	TBD													
Budget	TBD													
Applicable Sub-														

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0019	Type:	C- Contract
Titles (long):	Provision of Security Services	Revision No.:	01
(short):	Security Services	Date:	13-Apr-2012

Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0020	Type:	C- Contract
Titles (long):	Provision of Medical Services	Revision No.:	01
(short):	Medical Services	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Sean Lee	Package Engineer: Randy Walker
	QA / QC: Kenneth Morrison	Contract Admin. : Stella Roche

Scope of work Summary

Package SH0020 includes:

Supply and management of medical and health services in support of construction at the Lower Churchill Project, during construction of the Hydroelectric Plant, Substations and Reservoir Clearing Operations located in Labrador, Canada.

Work Included:

- Operation of the Muskrat Falls site medical center, including emergency transportation vehicle.
- Provision of qualified medical personnel for the Muskrat Falls site medical center and medical personnel on the Reservoir Clearing sites.
- Assistance in the planning, development and operation of sites' medical emergency response.
- Assist the Engineer in performing audits of construction contractor's first aid facilities and equipment.
- Inspect and monitor the accommodation facilities and kitchen hygiene.
- Provision of a 24-hour on-call physician to provide consultation advice to site medical personnel.
- Administer site drug and alcohol testing program.
- Assist the Engineer in developing a medical services program for the transmission line and substation construction activities.

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Total man-months for medical personnel	ea	TBD

Work Excluded:

The following works or activities are excluded from package SH0020:

Description	Package No.
Security Services	SH0019
Camp Catering, Housekeeping and Janitorial Services	SH0018

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0020	Type:	C- Contract
Titles (long):	Provision of Medical Services	Revision No.:	01
(short):	Medical Services	Date:	13-Apr-2012

Quality

Work Package SH0020 is not under Quality Control.

The Contractor shall do its own Quality Control, but no QA specific requirements are stipulated by the Engineer.

Reference Section

The following main documents are used to define the scope:

- Scope of Work Specifications Construction Medical and Health Services 505573-0000-68EW-0002-00
- The Province of Newfoundland and Labrador Occupational Health and Safety Act and Regulations, 2009
- Canadian Model for Providing a Safe Workplace Alcohol and Drug Guidelines and Work Rule October 2005 – Version 2 – Effective October 1, 2010
- 505573-0000-68RA-1-0001-00 Health and Safety Management Plan
- 505573-0000-68RA-1-0008-00 Waste Management Plan

Interface with Other Packages

Description	Package No.
Not Applicable	N/A

Specific Site Conditions

The scope of work for this package will increase as the scope of work on and around the Muskrat Falls site progresses from early works through to the full construction of the Hydroelectric Plant and Reservoir Clearing operations.

Specific Schedule Conditions

Medical Services must be in place prior to the start of work on the South Side Access Road clearing and construction.

Specific Environment Conditions

The medical services provider must adhere to the Project Waste Management Plan in regards to disposal of bio-hazardous medical waste.

Specific Safety Conditions

The medical services provider's personnel must comply with the requirements of the Project Health and Safety Plan.

Special Requirements (All)

Not Applicable

Equipment List

- Fully equipped 4 wheel drive mobile treatment centres
- 1 emergency transport vehicle
- Medical supplies for the Muskrat Falls medical center.

Schedule and Milestones

Item	Date
EOI	TBD
Issue RFP	TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0020	Type:	C- Contract
Titles (long):	Provision of Medical Services	Revision No.:	01
(short):	Medical Services	Date:	13-Apr-2012

Award	TBD
Mobilize	TBD
Contract Complete	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0021	Type:	S- Service Contract
Titles (long):	Provision of Road Maintenance and Snow Clearing Services (MF)	Revision No.:	01
(short):	Road Maintenance and Snow Clearing Services (MF)	Date:	13-Apr-2012

Discipline:	Hydro		
Responsibilities: Area Managers:	Wallace Piercey	Package Engineer:	Peter M. Clarke
QA / QC:	Kenneth Morrison	Contract Admin. / Buyer::	Sylvain Marsan

Scope of work Summary

This contract package includes the maintenance, dust control, snow clearing and emergency repairs to various roads and parking areas which are associated with the Muskrat Falls Project Site and the Accommodations Complex Site. More particularly, this includes the Southside Access Road from the Trans Labrador Highway to the main project site, the access road to and the various areas included in the Accommodation Complex Site, the access roads to a number of rock and gravel quarries and other roads and areas indicated in the documents.

Work Included:

- Maintenance, dust control and snow clearing of the existing forest access road from Sta. 0+000 to 5+150 km;
- Maintenance, dust control and snow clearing of the new RLU70 access road from Sta. 5+150 to 22+040 km including access to the Accommodation Complex,
- Maintenance, dust control and snow clearing of areas at the Accommodation Complex Site, which includes the general parking lot, bus depot, parking areas and roads.
- Maintenance, dust control and snow clearing of owner and contractor lay down areas near the dam site and of access (haul) roads to rock quarries and gravel and till deposits;
- Supply of winter sand and flake calcium chloride.
- Ditching, watercourse and culvert maintenance,
- Emergency repairs to washouts, settlements etc. in order to have continuous use of the roads and associated areas.
- All of the above will be carried out as per the contract specific environmental protection plan (C-SEPP).

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Maintenance Grade 3	t	11,500
2	Winter Sand	t	4,600
3	Calcium Chloride flake	t	250
4	Rock Fill	t	500

The above quantities of materials will be supplied to the contractor by the Company.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0021	Type:	S- Service Contract
Titles (long):	Provision of Road Maintenance and Snow Clearing Services (MF)	Revision No.:	01
(short):	Road Maintenance and Snow Clearing Services (MF)	Date:	13-Apr-2012

Contract Basis

This is a unit price contract.

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded from package SH0022:

Description	Package No.
5000t of Maintenance Grade 3 is available from road contractor	CH0004
Remaining Maintenance Grade 3 and rock fill is to be received from the Contractor for ' Supply of concrete including batch plant (MF)'	CH0050
Sanding and salting for pedestrian areas at the accommodations Complex	SH0051

Quality

Contractor shall comply with 'Contractor Quality Requirement Specification' Number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- 505573-311A-41ES-0001 00 South Side Access Road - General Specification
- Basis of Design LCP-PT-ED-0000-EN-RP-0001-01.
- 505573-311A-41EC-0001 PB Design Criteria – Main Access Road
- Specification 505573-0000-68RA-I-0015 General Environmental Requirements
- 505573-0000-68RA-I-0005 Project-Wide Environmental Protection Plan-Component 1 and 4b

Interface with Other Packages

Description	Package No.
Construction of Southside Access Road	CH0004

- All contractors and personnel using the access road for work in the Muskrat Falls Site.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0021	Type:	S- Service Contract
Titles (long):	Provision of Road Maintenance and Snow Clearing Services (MF)	Revision No.:	01
(short):	Road Maintenance and Snow Clearing Services (MF)	Date:	13-Apr-2012

Specific Site Conditions	Not Applicable													
Specific Schedule Conditions	Completion of the access roads, accommodation complex and lay down areas.													
Specific Environment Conditions	Storage and use of calcium chloride. Contractor must have an approved C-SEPP.													
Specific Safety Conditions	The use of heavy equipment during stormy weather in winter and interaction with traffic during snow clearing.													
Special Requirements (All)	This package will have certain restrictions imposed on the use and stockpiling of calcium chloride for use on the access roads by the environmental regulations. Permits will be obtained from the proper agencies by the contractor in a timely manner.													
Free Issued Materials	The following are free issued materials for package SH0021:													
	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>5000 t. Maintenance Grade 3 Granulars</td> <td>CH0004</td> </tr> <tr> <td>Remainder of Maintenance Grade 3 Granulars</td> <td>CH0050</td> </tr> <tr> <td>500 t. Rock Fill</td> <td>CH0050</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>	Description	Package No.	5000 t. Maintenance Grade 3 Granulars	CH0004	Remainder of Maintenance Grade 3 Granulars	CH0050	500 t. Rock Fill	CH0050					
Description	Package No.													
5000 t. Maintenance Grade 3 Granulars	CH0004													
Remainder of Maintenance Grade 3 Granulars	CH0050													
500 t. Rock Fill	CH0050													
Major Equipment List	Not Applicable													
Schedule and Milestones	<table border="1"> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>TBD</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
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Construction Complete:	TBD													
Budget	TBD													
Applicable Sub-Project/SPV	<table border="0"> <tr> <td>Muskrat Falls Generation</td> <td><input checked="" type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>		Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>				
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Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>											
IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>													

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	SH0022	Type:	S- Service Contract
Titles	(long): Provision of Fuel Supply and Dispensing Services (MF)	Revision No.:	01
	(short): Fuel Supply and Dispensing Services (MF)	Date:	13-Apr-2012
Discipline:	Hydro		
Responsibilities:	Area Managers: Wallace Piercey	Package Engineer:	Peter M. Clarke
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer::	Steve Mullen

Scope of work Summary

Design, supply, installation, commissioning, maintenance and operation of fuel storage and dispensing facilities at the Company's lay down area.

Design, supply, installation, commissioning, maintenance and operation of a waste oil facility at the Company's lay down area.

Supply and management of gasoline, Arctic and #2 Diesel to the fuel dispensing facility.

Work Included:

Design, supply, install, operate, maintain and remove the following work scope:

- Design of fuel storage and dispensing facilities;
- Supply and installation of fuel storage and dispensing facilities;
- Provision of required fuels (gasoline, Arctic Diesel & No. 2 Diesel);
- The operation and maintenance of the fuel storage and dispensing facilities;
- Provision of trucking to supply fuel to the storage tanks on site, trucking to fuel contractors equipment at the work locations, and trucking to supply fuel for the emergency generators at the accommodations complex site;
- Fuel consumption record keeping and reporting;
- Design of a waste oil storage facility;
- The operation and maintenance of the waste oil storage facility including the transport of used oil and other hydrocarbons to processing facilities in Goose Bay; and
- To provide experienced and skilled employees to operate and oversee the contract.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0022	Type:	S- Service Contract
Titles (long):	Provision of Fuel Supply and Dispensing Services (MF)	Revision No.:	01
(short):	Fuel Supply and Dispensing Services (MF)	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Gasoline		
2	Arctic Diesel		
3	#2 Diesel (summer)		

Contractor will supply and install 3 each above ground dyked fuel tanks of 50,000 liters Capacity each and a 30,000 liter capacity waste oil tank.
Company will supply power, communications, and civil works associated with these installations.

Contract Basis

This contract has two parts: The supply of the fuel dispensing tanks and equipment will be lump sum, and the operational section (supply and dispense fuels) will be a unit price contract.

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded from package SH0022:

Description	Package No.
Fuel Supply for the Access Road contractor.	CH0004
Civil Works (foundations, slabs, oil/water separators, etc)	CH0005
Power Supply at Lay Down area	Not allocated
Communications hook up at Lay Down area	Not Allocated

Quality

Contractor shall comply with 'Contractors Quality Requirement Specification' Document Number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Basis of Design LCP-PT-ED-0000-EN-RP-0001-01.
- Waste Management Plan 505573-0000-68RA-1-0008
- Specification 505573-0000-68RA-I-0015 General Environmental Requirements

Interface with Other Packages

Description	Package No.
Construction of South Side Access Road	CH0004
Construction of Site Clearing Access Road and Ancillary Areas	CH0048
Construction of foundations, oil/water separator, concrete slabs, u/g piping, supply of power and communications is by others	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0022	Type:	S- Service Contract
Titles (long):	Provision of Fuel Supply and Dispensing Services (MF)	Revision No.:	01
(short):	Fuel Supply and Dispensing Services (MF)	Date:	13-Apr-2012

Specific Site Conditions	Civil preparation work (foundations, oily water separator, etc.) must be complete as well as the provision of a power supply and a communications connections.		
Specific Schedule Conditions	Access road must be passable for the contractor to deliver tanks to site.		
Specific Environment Conditions	Spills of volatile liquids. Contractor must have an approved C-SEPP.		
Specific Safety Conditions	Safety connected with the storage and handling of gasoline and diesel (NFPA 30 – Gasoline is a Class 1B Flammable liquid. Diesel is a class 11 combustible liquid) Electrical safety associated with hazardous locations (Class and Division) for equipment. Specific training is required for personnel fuelling tanks and trucks.		
Special Requirements (All)	This package will have certain restrictions imposed on used oil, heating oil, storage and handling of gasoline and gasoline volatility by Newfoundland and Labrador provincial regulations. Permits will be obtained from the proper agencies by the contractor in a timely manner.		
Free Issued Materials	Not Applicable		
Major Equipment List	3 each 50,000 l. Above ground fuel storage tanks with dykes.		
Schedule and Milestones	EOI Date:	TBD	
	RFP Date:	TBD	
	Award Date:	TBD	
	Receive Initial Vendor Drawings:	TBD	
	Forecast at Site:	TBD	
	Construction Complete:	TBD	
	Dates for milestones will be updated once the Project baseline schedule is in place.		
Budget	TBD		
Applicable Sub-Project/SPV	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/>
	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>
IBA Package	YES	<input type="checkbox"/>	NO <input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	SH0040	Type:	S-Service Contract
Titles (long):	Provision of Garbage Removal and Disposal Services (MF)	Revision No.:	01
(short):	Garbage Removal and Disposal Services	Date:	13-Apr-2012
Discipline:	Environmental		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	Peter Clarke
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of work Summary:	<p>This service contract includes waste and garbage removal and disposal at the Muskrat Falls project site including the accommodation complex and other laydown area sites.</p> <p>This contract commences post early works.</p>																						
Work Included:	<p>The scope of this package includes:</p> <ul style="list-style-type: none"> • Collection and disposal of domestic waste from the Accommodations Complex site. • Collection and disposal of domestic waste from the Powerhouse area site. • Collection and disposal of domestic waste from the Owner and Contractor laydown area sites. • Sewage effluent disposal form site holding tanks. • Sewage sludge disposal from sewage treatment plant. • Transporting waste materials to the Happy Valley-Goose Bay landfill site. • Implementation of segregation of waste stream (liquid, solid, recyclable, hazardous, etc.) in accordance with local disposal requirements. All waste categories shall be analyzed and the principals of reduction/reuse/recycling followed. 																						
Approximate Quantities (major items only):	<table border="1"> <thead> <tr> <th>ITEM</th> <th>DESCRIPTION (Base Case)</th> <th>UNIT</th> <th>QUANTITY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Estimated Waste Volume (Year 1 to Year 6 – after the first 6 months)</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Domestic waste</td> <td>t</td> <td>1900</td> </tr> <tr> <td>3</td> <td>Sewage waste Generated to Treatment Plant</td> <td>liters</td> <td>525,000</td> </tr> <tr> <td>4</td> <td>Sewage sludge removed from Treatment Plant</td> <td>liters</td> <td>50,000</td> </tr> </tbody> </table>			ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY	1	Estimated Waste Volume (Year 1 to Year 6 – after the first 6 months)			2	Domestic waste	t	1900	3	Sewage waste Generated to Treatment Plant	liters	525,000	4	Sewage sludge removed from Treatment Plant	liters	50,000
ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY																				
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2	Domestic waste	t	1900																				
3	Sewage waste Generated to Treatment Plant	liters	525,000																				
4	Sewage sludge removed from Treatment Plant	liters	50,000																				
Contract Basis:	<p>Lump Sum <input type="checkbox"/></p> <p>Unit Rates <input checked="" type="checkbox"/></p> <p>Combination Lump Sum – Unit Rates <input type="checkbox"/></p> <p>Cost Reimbursable <input type="checkbox"/></p> <p><u>Remarks:</u></p>																						
Work Excluded:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Construction waste and demolition material (responsibility of each contractor)</td> <td></td> </tr> <tr> <td>Janitorial and housekeeping Services</td> <td>SH0018</td> </tr> </tbody> </table>			Description	Package No.	Construction waste and demolition material (responsibility of each contractor)		Janitorial and housekeeping Services	SH0018														
Description	Package No.																						
Construction waste and demolition material (responsibility of each contractor)																							
Janitorial and housekeeping Services	SH0018																						

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0040	Type:	S-Service Contract
Titles	(long): Provision of Garbage Removal and Disposal Services (MF)	Revision No.:	01
	(short): Garbage Removal and Disposal Services	Date:	13-Apr-2012

	Provision of domestic waste collection services or sewage sludge removal services for Contractors operating during the early works phase (before June 2012) and those operating in remote locations											
	Hazardous waste (responsibility of each contractor).											
	Biomedical waste	SH0020										
Quality:	Contractor shall comply with 'Contractor's Quality Requirement Specification' Document Number 505573-0000-38RA-0003.											
Reference Section:	The following main documents are used to define the scope: 505573-0000-68RA-I-0008 Waste Management Plan											
Interface with other Packages:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Provision of Catering, Housekeeping, and Janitorial Services (MF)</td> <td>SH0018</td> </tr> <tr> <td>Provision of Security Services (MF)</td> <td>SH0019</td> </tr> <tr> <td>Provision of Buildings Maintenance Services (MF).</td> <td>SH0051</td> </tr> <tr> <td>Supply and Install and Commission Package STP</td> <td></td> </tr> </tbody> </table>		Description	Package No.	Provision of Catering, Housekeeping, and Janitorial Services (MF)	SH0018	Provision of Security Services (MF)	SH0019	Provision of Buildings Maintenance Services (MF).	SH0051	Supply and Install and Commission Package STP	
Description	Package No.											
Provision of Catering, Housekeeping, and Janitorial Services (MF)	SH0018											
Provision of Security Services (MF)	SH0019											
Provision of Buildings Maintenance Services (MF).	SH0051											
Supply and Install and Commission Package STP												
Specific Site Conditions:	Not Applicable											
Specific Schedule Conditions:	Any other packages that have to be started before the subject package can proceed: (Not Applicable) Any other packages that cannot proceed before the subject package has started: (Not Applicable)											
Specific Environment Conditions:	Compliance with the Environmental Assessment (EA) release. Commitments of the Environmental Impact Statement.											

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD															
Package No.: SH0040	Type: S-Service Contract														
Titles (long): Provision of Garbage Removal and Disposal Services (MF)	Revision No.: 01														
(short): Garbage Removal and Disposal Services	Date: 13-Apr-2012														
Specific Safety Conditions:	Handling of substances classes as hazardous, flammable, toxic.														
Special Requirements:															
Free Issued Materials:	Not Applicable														
Equipment List:	Not Applicable														
Schedule and Milestones:	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;"></td> <td style="width:50%;">EOI Date: TBD</td> </tr> <tr> <td></td> <td>RFP Date: TBD</td> </tr> <tr> <td></td> <td>Award Date: TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>TBD</td> </tr> <tr> <td colspan="2" style="text-align: right;">Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>		EOI Date: TBD		RFP Date: TBD		Award Date: TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	TBD	Dates for milestones will be updated once the Project baseline schedule is in place.	
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Budget:	TBD														
Applicable Sub-Project/SPV	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:40%;">Muskrat Falls Generation</td> <td style="width:10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width:40%;">Labrador – Island Transmission Link</td> <td style="width:10%; text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>						
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IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>														

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0041	Type:	S- Service Contract
Titles (long):	Provision of Ground Transportation Services (HVGB to MF)	Revision No.:	01
(short):	Personnel Transport	Date:	13-Apr-2012

Discipline:	Hydro		
Responsibilities:	Area Managers: Wallace Piercey	Package Engineer:	Peter M. Clarke
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer::	Sylvain Marsan

Scope of work Summary

This contract package includes the transportation of personnel to/from Happy Valley – Goose Bay airport to the Accommodations complex and transportation of personnel to and from Happy Valley Goose Bay. This includes the supply of transportation equipment and the supply of qualified personnel for control and operation.

Work Included:

- Personnel transportation to and from the airport at Happy Valley – Goose bay to the Accommodations Camp reception and departure office.
- Transport of local workers to & from Happy Valley Goose Bay Area including Northwest River and Sheshatshiu.
- Personnel Transport for visitors to site and any tours of the project.
- Maintenance of Equipment

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION (Base Case)	UNIT	QUANTITY
1	Trips to/from Airport	Trips	TBD
2	Trips HVGB to Accoms	Trips	TBD
3	Trips Sheshatshui to Accoms	Trips	TBD

Contract Basis

This is a unit price service type contract (function of camp population).

Work Excluded:

The following works or activities are excluded from package SH0022:

Description	Package No.
Supply of Project Vehicles	SM0706
Fuel	SH0022
On-Site Transportation – By Contractor	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0041	Type:	S- Service Contract
Titles (long):	Provision of Ground Transportation Services (HVGB to MF)	Revision No.:	01
(short):	Personnel Transport	Date:	13-Apr-2012

Quality

Contractor shall comply with 'Contractor Quality Requirement Specification' Number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Basis of Design LCP-PT-ED-0000-EN-RP-0001-01.
- Specification 505573-0000-68RA-I-0015 General Environmental Requirements
- 505573-0000-68RA-I-0005 Project-Wide Environmental Protection Plan-Component 1 and 4b

Interface with Other Packages

Description	Package No.
The Provision of Fuel Supply and Dispensing Services	SH0022
Provision of Building Maintenance Services	SH0051
Supply of Project Vehicles	SM0706
Communications System	CD0510

Specific Site Conditions

Driving on unpaved RLU 70 roads.

Specific Schedule Conditions

Completion of the South Access Road to passable condition.

Specific Environment Conditions

Contractor must have an approved C-SEPP.

Specific Safety Conditions

Driving on unpaved RLU 70 roads. Radio contact at all times. Backup audible warning on vehicles.

Special Requirements (All)

Not Applicable

Free Issued Materials

Radio Communications Equipment

Major Equipment List

Coach type 40 passenger vehicles.
Coach Type 20 passenger vehicles.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0041	Type:	S- Service Contract
Titles (long):	Provision of Ground Transportation Services (HVGB to MF)	Revision No.:	01
(short):	Personnel Transport	Date:	13-Apr-2012

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0051	Type:	S- Service Contract
Titles	(long): Provision of Building Maintenance Services (MF)	Revision No.:	01
	(short): Building Maintenance Services (MF)	Date:	13-Apr-2012

Discipline: Hydro
 Responsibilities: Area Manager: Luc Turcotte/ Michel Maeyens Package Engineer: Peter M. Clarke

QA / QC: Kenneth Morrison Contract Admin. / Buyer:: Lisa Cullihall

Scope of work Summary

Maintenance of all buildings and facilities at the Accommodation Complex Site. The main systems are Water supply from a well system and chlorination, Fire water supply, sewage collection and treatment plant, electrical generation and distribution, and lighting.

Maintenance within the buildings includes the mechanical, HVAC, controls, and plumbing systems, electrical and lighting systems, fire alarm system, architectural systems, equipment and furniture.

Snow clearing and ice control to walkways and stairs for the Accommodations Complex Site including the Security kiosk.

Work Included:

Description	Package No.
Maintenance of artesian wells: 2 wells are required initially for the starter camp phase and 4 additional wells will be drilled for the main camp operation	CH0048
Maintenance of and operation of the Water Treatment system for the Starter Camp	CH0005
Maintenance of and operation of the pumphouse / chlorination building and pumping station including all mechanical and electrical components and connections	CH0003
Maintenance of the Water Storage Tank sized to accommodate fire flow requirements including all mechanical and electrical components and connections	SH0018 / SH0051
Maintenance of the buried water distribution system including service lines, gate valves, air release chambers, curb stops, fire hydrants and thrust blocks	
Maintenance of the septic tank, sewage disposal field, grease traps, etc. for the Starter Camp phase to service the kitchen and dormitories	
Maintenance of the septic tank and sewage disposal field for the security building	
Maintenance and operation of the packaged Sewage Treatment Plant	
Maintenance of the gravity flow sewage collection system including manholes	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0051	Type:	S- Service Contract
Titles	(long): Provision of Building Maintenance Services (MF)	Revision No.:	01
	(short): Building Maintenance Services (MF)	Date:	13-Apr-2012

Maintenance and operation of the Diesel Generators (4) at the campsite	
Maintenance of the 25 kV power distribution grid around the accommodations complex site	
Maintenance of the 25 kV Switchgear and Synchronizing equipment	
Maintenance of the service drops to Accommodation Complex Buildings	
Maintenance and operation of the diesel generators which are installed to provide primary power for the starter camp	
Maintenance of the 600 V synchronizing switchgear	
Maintenance of the Fuel tanks for the generator units	
Maintenance of site lighting, ball field lighting and parking area power outlets (vehicle block heater outlets) including all cabling, wiring and equipment for a fully functional system	
Maintenance of pole mounted transformers including lighting arrestors, pad mounted transformers and the diesel generator step-up transformer	
Maintenance of the high voltage cables from the 25 kV overhead distribution lines to the pole and pad mounted transformers, to the 25 kV switchgear, and to the diesel generator step-up transformer	
Maintain the 600 V, 4000 A busway from the diesel generator step-up to the diesel generator synchronizing switchgear	
Maintain the power and control cables from each diesel generator synchronizing switchgear	
Maintain the low voltage power cables from the 25 kV switchgear distribution panel to each diesel generator and to the diesel generator step-up transformer	
Maintain the control cables from the 25 kV switchgear to the diesel generator step-up transformer	
Maintain lighting arrestors as indicated on drawings	
Maintain the low voltage overhead line from the pumphouse / chlorination building termination pole to the water storage tank	
Maintain the electrical service from a termination pole to the sewage treatment plant and the water treatment plant (pump house / chlorination building)	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0051	Type:	S- Service Contract
Titles (long):	Provision of Building Maintenance Services (MF)	Revision No.:	01
(short):	Building Maintenance Services (MF)	Date:	13-Apr-2012

Maintain the power cables from the water treatment plant to the well chambers	
Coordination and management of specialist services required to site for certain equipment such as the STP and chlorination equipment	
Maintenance of the accommodation complex starter kitchen, dormitories, kitchen/dining/recreation centre, and administrative buildings (Administration, Maintenance Workshops, Fire and Ambulance, Security, Communications, Safety/Induction buildings)	
Maintenance within the buildings includes the plumbing systems, electrical and lighting systems, fire alarm system, architectural systems and furniture repair	
Maintenance of the equipment contained in the accommodations buildings	
Kitchen Equipment: For a more detailed list of the kitchen equipment refer to Document 'Muskrat Falls Accommodations Complex Functional Specification' 505573-315B-44EG-0002. See section 5.3.5.7 Equipment and furnishings' and section 5.4.5.7 Equipment and furnishings	
Mechanical Equipment: For a more detailed list of the mechanical equipment refer to the document 'Muskrat Falls Accommodations Complex Functional Specification' 505573-315B-44EG-0002. See section 5.5.8 Mechanical Systems	
Maintenance of the equipment contained in the Administration buildings	
Maintenance of the equipment contained in the Administration buildings: General Equipment: For a more detailed list of the general equipment refer to Document 'Muskrat Falls Accommodations Complex Functional Specification' Design, Supply and Construction of Administrative Buildings at Muskrat Falls. 505573-315B-44EG-0001. Refer to the sections on each building	
Maintenance of offsite buildings including the security building (included in the administrative buildings), the concrete laboratory building (at the Company's lay down area), field personnel trailers and lavatories (at the MF worksite) and the administrative office in Goose bay	
Maintenance of buildings includes snow clearing and ice control for personnel. This includes entrances to buildings, exits and emergency exits, stairs and paths from one building to another	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0051	Type:	S- Service Contract
Titles (long):	Provision of Building Maintenance Services (MF)	Revision No.:	01
(short):	Building Maintenance Services (MF)	Date:	13-Apr-2012

Provision of Road Maintenance and Snow Clearing Services (MF)	SH0021
Provision of Catering, Housekeeping and Janitorial Services (MF)	SH0018
Provision of Garbage Removal and Disposal Services (MF)	SH0040
Provision of Security Services	SH0019
Provision of Ground Transportation Service (HVGB to MF)	SH0041
Supply and Maintenance of Various IT Equipment	SM0710

Quality

Contractor shall comply with 'Contractor Quality Requirement Specification' Number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Basis of Design LCP-PT-ED-0000-EN-RP-0001-01.
- Specification 505573-315A-40ES-0001 Accommodations Complex Site Utilities Technical Specification
- Specification 505573-0000-68RA-I-0015 General Environmental Requirements
- 505573-0000-68RA-I-0008 Waste Management Plan Component 1

Interface with Other Packages

Description	Package No.
Accommodations Complex Buildings	CH0002
Administrative Buildings	CH0003
Construction of Southside Access Road	CH0004
Accommodations Complex Site Utilities	CH0005
Catering, Housekeeping and Janitorial Services	SH0018
Security	SH0019
Supply and Install STP	
Supply of Auxiliary Transformers	PH0036
Supply of 25 KV Switchgear	PH0037
Supply of Emergency Diesel Generators	PH0038

The maintenance contractor should be involved when the above supply and install contracts are in the commissioning and training phases. The contractor will have the appropriate commissioning documentation to assist in performing maintenance on the various systems.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SH0051	Type:	S- Service Contract
Titles (long):	Provision of Building Maintenance Services (MF)	Revision No.:	01
(short):	Building Maintenance Services (MF)	Date:	13-Apr-2012

Specific Site Conditions	Not Applicable	
Specific Schedule Conditions	Not Applicable	
Specific Environment Conditions	DOE will supply a 'Permit to Operate' which will require certain qualifications for the operators of the STP, Chlorination Plant and the water & Sewer distribution system. A monthly report will also be required.	
Specific Safety Conditions	Electrical safety. Specific work methods for confined space entry to the manholes and pumping chambers. Working at heights on the utility poles. Working with chlorine and other chemicals associated with the operation of the STP. All aspects of the Workplace OH&S.	
Special Requirements (All)	This package will have limits on water quality and limits on effluent quality set by the appropriate environmental regulations. Permits will be obtained from the proper agencies by the contractor in a timely manner	
Free Issued Materials	Not Applicable	
Major Equipment List	Not Applicable	
Schedule and Milestones	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
Budget	TBD	
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
IBA Package	YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	

LCP
PACKAGES DICTIONARIES –
COMPONENT 3

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0501	Type:	C-Contract
Titles (long):	Supply and Install Converters and Cable Transition Compounds	Revision No.:	01
(short):	Converters and Cable Transition Compounds	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: Stuart Connacher	Package Engineer:	Jacques Drouin
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

For converter stations at Muskrat Falls and Soldiers Pond, all turnkey (EPC) engineering design, supply and install civil, building and electromechanical works for HVdc bipole operation; with the Muskrat Falls rectifier rating per pole of 450 MW at 350 kV, and Soldiers Pond inverter rating per pole of 425 MW at 350 kV including all testing, commissioning and warranty.

For transition compounds at Forteau Point, Labrador and Shoal Cove, Newfoundland, all turnkey (EPC) engineering design, supply and install civil, building and electromechanical works.

Final paving gravel (crush gravel and finishing gravel).

Work Included:

This package includes:

- For converter stations, work includes thyristor valves and valve cooling systems; converter transformers; smoothing reactors; surge arresters; AC filters; DC filters; measuring devices; control and protection system; DC switching devices; AC breakers and switching devices; buswork and insulators; AC/DC station auxiliary power supply; smoke detection in valve hall; fire detection and suppression; cables; and steel structures; including mechanical workshop and handling equipment.
- For cable transition compounds, work includes a 350 kV dc switchyard with all switchgear; gantries and steel structures; auxiliary power supplies; LV and telecommunication cabling; and control and protection equipment.
- Provide potable water and sanitary services from converter building to converter compound fence line at Muskrat Falls and Soldiers Pond.
- Provide untreated water supply from well and sanitary sewer services and septic field at Forteau Point and Shoal Cove transition compounds.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor.
- Agreement of schedule milestones with Contractor.
- Submission by Contractor of all Document Requirements on a timely basis.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0501	Type:	C-Contract
Titles (long):	Supply and Install Converters and Cable Transition Compounds	Revision No.:	01
(short):	Converters and Cable Transition Compounds	Date:	13-Apr-2012

Reference Section

The following main documents are used to define the scope:

- Specification of the Converter Stations and Transition compounds.

Interface with Other Packages

Description	Package No.
Interface with ac switchyard at Muskrat Falls and Soldiers Pond	CD0502
Interface with Electrode Sites at L'Anse Au Diable and Dowden's Point	CD0508
Interface with ±350kV HVdc transmission line	CT0327 & CT0346
Interface with telecommunications	CD0510
Interface with submarine cable at Forteau Point and Shoal Cove	
Interface with the Powerhouse (MFA)	CH0006 & CH0031
Interface with Integrated Commissioning	SD0536

Specific Site Conditions

As per specification

Specific Schedule Conditions

Specific Environment Conditions

As per specification.

Specific Safety Conditions

Working around mobile equipment and limits of approach respecting energized equipment.

Special Requirements (All)

Free Issued Materials

- TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0501	Type:	C-Contract
Titles (long):	Supply and Install Converters and Cable Transition Compounds	Revision No.:	01
(short):	Converters and Cable Transition Compounds	Date:	13-Apr-2012

Schedule and Milestones

EOI Date: TBD
 RFP Date: TBD
 Award Date: TBD
 Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0502	Type:	C-Contract
Titles (long):	Construction of AC Substations and Synchronous Condensers Facilities	Revision No.:	01
(short):	AC Substations and Synchronous Condensers Facilities	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ovidio Juan Ascencio
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

All civil works encompassing final grading including materials, concrete foundations and material supply and erection of building; all bulk material supply as specified; and installation of all electromechanical equipment (both Contractor procured and switchgear and power transformers, supplied by others), as specified including mechanical completion and static commissioning; for Churchill Falls ac substation extension, for Muskrat Falls 315-138-25 kV south side ac substation, for Soldiers Pond 230 kV ac substation, for Soldiers Pond synchronous condenser buildings and foundations.

All utilities (purchase and install) such as insulation, HVAC, power supply, lighting, interior and exterior finishing works, water, sewer, piping for Soldiers Pond synchronous condenser building(s). Provide water and sewer piping from supply source and septic field to converter compound fence line at Soldiers Pond.

Supply and install of control room buildings with all utilities, as specified, for Churchill Falls, Muskrat Falls and Soldiers Pond, ac switchyards and synchronous condenser.

Installation of control, metering and relaying panels in new control buildings at Churchill Falls, Muskrat Falls and Soldiers Pond for ac substations.

Supply and installation of grounding system.

Dismantling of Construction Power facilities at Muskrat Falls 138/25 kV Tap substation and Churchill Falls 230/138 kV.

Work Included:

This package includes:

- .Telecommunications services by Contractors for their own use at construction sites, except at Muskrat Falls where the basic infrastructure will be in place.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor
- Agreement of schedule milestones with Contractor.
- Submission by Contractor of all Document Requirements on a timely basis.
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0502	Type:	C-Contract
Titles (long):	Construction of AC Substations and Synchronous Condensers Facilities	Revision No.:	01
(short):	AC Substations and Synchronous Condensers Facilities	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	TBD		

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

- Contract Form is Combination Lump Sum and Unit Rates on individual station basis.
- Project Payment Terms include progress payments and completion of works.

Work Excluded:

Installation of control, metering and relaying panels in existing ac substations at Western Avalon, Holyrood, Oxen Pond and Hardwoods.

Description	Package No.
Muskrat Falls Site Earthworks and Access	CH0006
Muskrat Falls provision of sewer and water lines to converter compound fence line	CD0031
Supply and Install Synchronous Condensers	CD0534
Construction of Earthworks	CD0503
Integrated Commissioning	SD0536
Supply of Hardware	PD0505

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Specification for Construction

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0502	Type:	C-Contract
Titles (long):	Construction of AC Substations and Synchronous Condensers Facilities	Revision No.:	01
(short):	AC Substations and Synchronous Condensers Facilities	Date:	13-Apr-2012

	Description	Package No.
Interface with Other Packages	Interface with 315 kV ac and 230 kV ac transmission lines	CT0319/CT0342
	Interface with converter stations at Muskrat Falls and Soldiers pond and at transition compounds at Forteau Point and Shoal Cove	CD0501
	Interface with telecommunications	CD0510
	Interface with Telecommunications	CD0535
Specific Site Conditions	TBD	
Specific Schedule Conditions	TBD	
Specific Environment Conditions	As per specification.	
Specific Safety Conditions	Working around mobile equipment and limits of approach respecting energized equipment.	
Special Requirements (All)	TBD	
Free Issued Materials	Supply of Power Transformers	PD0537
	Supply of Switchgear equipment, power and control cables and aerial conductors-AC Substations at Churchill Falls, Muskrat Falls, Soldiers Pond	PD0505
Major Equipment List		
Schedule and Milestones	Item	Date
	Issue RFQ	TBD
	Award	TBD
	Mobilize	TBD
	Completion (Churchill Falls)	TBD
	Completion (Muskrat Falls)	TBD
	Completion (Soldiers Pond)	TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0502	Type:	C-Contract
Titles (long):	Construction of AC Substations and Synchronous Condensers Facilities	Revision No.:	01
(short):	AC Substations and Synchronous Condensers Facilities	Date:	13-Apr-2012

Completion (Existing AC Substation Panels)	TBD								
Budget	TBD								
Applicable Sub-Project/SPV	<table> <tr> <td>Muskrat Falls Generation</td> <td><input type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input checked="" type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>	Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>
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IBA Package	<table> <tr> <td>YES</td> <td><input type="checkbox"/></td> <td>NO</td> <td><input checked="" type="checkbox"/></td> </tr> </table>	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>				
YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>						

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0503	Type:	C-Contract
Titles (long):	Construction of Earthworks at Various Power Distribution Sites	Revision No.:	01
(short):	Earthworks at Various Power Distribution Sites	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Tony Villaraza
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

All earthworks required for ac substations at Churchill Falls and Soldiers Pond; for dc converter station and ac synchronous condenser station at Soldiers Pond; and for transition compounds at Forteau Point, Labrador and Shoal Cove, Newfoundland.

Work covers the clearing, grubbing, and earthworks cut and fill (excavation, backfilling, removal of material and slope protection), rough grading and site access roads.

Work covers construction of 25kV line to Churchill Falls, Forteau Point, Shoal Cove, and Soldiers Pond from the existing distribution system.

Work Included:

This package includes:

- Contractor is responsible for providing accommodations, site office, labour, supervision and construction consumables.
- Contractor to provide site office for SLI and Nalcor
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor.
- Supply and installation of the fence, gate, posts and barrier
- Agreement of schedule milestones with Contractor.
- Submission by Contractor of all Document Requirements on a timely basis.
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Earthworks		

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0503	Type:	C-Contract
Titles (long):	Construction of Earthworks at Various Power Distribution Sites	Revision No.:	01
(short):	Earthworks at Various Power Distribution Sites	Date:	13-Apr-2012

Work Excluded:

- Contract Form is Combination Lump Sum and Unit Rates
- Project Payment Terms include progress payments and completion of works.

Description	Package No.
Muskrat Falls Site Earthworks	CH0006
Muskrat Falls AC Substation Civil Works (Site Preparation, Foundations)	CD0502
Muskrat Falls and Soldiers Pond DC Converter Station Civil Works (Site Preparation, Foundations) by Converter EPC Contractor	CD0501

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Specification

Interface with Other Packages

Description	Package No.
AC Substation Civil Works (Site Preparation, Foundations)	CD0502
Muskrat Falls and Soldiers Pond DC Converter Station Civil Works (Site Preparation, Foundations) by Converter EPC Contractor	CD0501

Specific Site Conditions

Specific Schedule Conditions

Specific Environment Conditions

Specific Safety Conditions

Working around mobile equipment.

Special Requirements (All)

Free Issued Materials

TBD

Major Equipment List

TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0503	Type:	C-Contract
Titles (long):	Construction of Earthworks at Various Power Distribution Sites	Revision No.:	01
(short):	Earthworks at Various Power Distribution Sites	Date:	13-Apr-2012

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Completion (Churchill Falls)	TBD
Completion (Soldiers Pond)	TBD
Completion (Forteau Point)	TBD
Completion (Shoal Cove)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0508	Type:	C-Contract
Titles (long):	Supply and Install of Electrodes Sites	Revision No.:	01
(short):	Electrodes Sites	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Stuart Connacher	Package Engineer:	Daljit Dev
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

Package includes, for electrode sites at L'Anse-Au-Diable, Labrador and Dowden's Point, Newfoundland

The manufacture, testing and delivery to site of electrode elements and electrode lead conductors for the pond electrodes

Supply will include a building for telecommunication and protection equipment including all utilities; metering sensors; and distribution line materials including pole mounted transformers

Installation of electrodes including all civil works and site preparation; roads; breakwaters; fences; permits; remediation; mechanical completion and static commissioning

Work covers construction of 25kV line to L'Anse au Diable and Dowden's Point from the existing distribution system

Work Included:

- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor
- Contractor to provide site office for SLI and Nalcor
- Agreement of schedule milestones with Contractor
- Submission by Contractor of all Document Requirements on a timely basis
- Progress reporting by Contractor on a monthly basis (or ad hoc basis, if required)
- Contractor is responsible for providing accommodations, labour, supervision and construction consumables

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Supply, Install Electrodes	2

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0508	Type:	C-Contract
Titles (long):	Supply and Install of Electrodes Sites	Revision No.:	01
(short):	Electrodes Sites	Date:	13-Apr-2012

Contract Basis	<p>High silicon cast iron electrode Anotec 90 for each site. Number 4884H equipped with 30 m of 6 AWG copper conductor cable with insulation and jacket</p> <p style="text-align: right;">Lump Sum <input type="checkbox"/> Unit Rates <input type="checkbox"/> Combination Lump Sum – Unit Rates <input checked="" type="checkbox"/> Cost Reimbursable <input type="checkbox"/></p> <p><u>Remarks:</u></p> <ul style="list-style-type: none"> Contract Form is combination lump sum and unit rates. Project Payment Terms include engineering submittals, delivery ex-works, site installation, and commissioning at take over. 						
Work Excluded:	<p>The following works or activities are excluded:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Description</th> <th style="text-align: left;">Package No.</th> </tr> </thead> <tbody> <tr> <td>Electrode line Protection</td> <td>CD0501</td> </tr> <tr> <td>Install telecommunication equipment and racks</td> <td>CD0510</td> </tr> </tbody> </table>	Description	Package No.	Electrode line Protection	CD0501	Install telecommunication equipment and racks	CD0510
Description	Package No.						
Electrode line Protection	CD0501						
Install telecommunication equipment and racks	CD0510						
Quality	<p>Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.</p>						
Reference Section	<p>The following main documents are used to define the scope:</p> <ul style="list-style-type: none"> Specification 						
Interface with Other Packages	<ul style="list-style-type: none"> Interface with Converter Stations and Transition Compounds (CD0501) Interface with Electrode Lines (CT0327 & CT0342) Interface with Telecommunication (CD0510) 						
Specific Site Conditions							
Specific Schedule Conditions							
Specific Environment Conditions							

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0508	Type:	C-Contract
Titles (long):	Supply and Install of Electrodes Sites	Revision No.:	01
(short):	Electrodes Sites	Date:	13-Apr-2012

Specific Safety Conditions	Working around mobile equipment and limits of approach respecting energized equipment.																	
Special Requirements (All)																		
Free Issued Materials																		
Major Equipment List	TBD																	
Schedule and Milestones	<table border="1"> <thead> <tr> <th>Item</th> <th colspan="2">Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFQ</td> <td colspan="2">TBD</td> </tr> <tr> <td>Award</td> <td colspan="2">TBD</td> </tr> <tr> <td>Mobilize</td> <td colspan="2">TBD</td> </tr> <tr> <td>Completion</td> <td colspan="2">TBD</td> </tr> </tbody> </table>			Item	Date		Issue RFQ	TBD		Award	TBD		Mobilize	TBD		Completion	TBD	
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IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>																	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0509	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2	Revision No.:	01
(short):	Telecommunication Services - Phase 2	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: William Diaz	Package Engineer:	Claude-Olivier Pitt
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	TBD

Scope of work Summary

Supply of material, deployment, installation, commissioning and maintenance of the telecommunication infrastructure and services for the Muskrat Falls and surrounding areas (Accommodation Complex, Owner's Laydown Area, Contractors' Laydown Area, Hydro Plant, Construction Power Tap Station) during the Main Construction Phase.

Work Included:

- * Telecom infrastructure for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase.
 - Telecom rooms fitting
 - Telecom emergency power
 - Vertical Structured Cabling System
- * Owner corporate data service for the Lower Churchill Project at Muskrat Falls and surrounding areas for the Main Construction Phase.
 - Provision and installation of the Internet link
- * Engineer corporate data service for the Lower Churchill Project at Muskrat Falls and surrounding areas for the Main Construction Phase.
 - Provision and installation of the Internet link
- * Entertainment and Contractors data service for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase.
 - Provision and installation of the Internet link
 - Installation of the infrastructure to provide this service
 - Installation of the Network Management System (NMS)
 - Commissioning of the infrastructure/service (including NMS)
 - Maintenance of the infrastructure/service (including NMS)
- * Corporate telephony service for the Lower Churchill Project at Muskrat Falls and

Lower Churchill Project

PACKAGE DICTIONARY

 Project Base Currency: CAD

Package No.:	CD0509	Type:	C- Contract
Titles	(long): Construction Telecommunication Services - Phase 2	Revision No.:	01
	(short): Telecommunication Services - Phase 2	Date:	13-Apr-2012

surrounding areas during the Main Construction Phase.

- Provision and installation of the PSTN link
- Installation of the infrastructure to provide this service
- Commissioning of the infrastructure/service
- Maintenance of the infrastructure/service

* Entertainment telephony service for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase.

- Installation of the infrastructure to provide this service
- Commissioning of the infrastructure/service
- Maintenance of the infrastructure/service

* Owner corporate data service, Engineer corporate data service, Entertainment and contractors' data service, Corporate telephony service and Entertainment telephony service will be fully available when the fibre between the Accommodation Complex at Muskrat Falls and Happy Valley – Goose Bay and the fibre between Happy Valley – Goose Bay and Labrador City are installed and commissioned.

* Television service for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase.

- Installation of the infrastructure to provide this service
- Commissioning of the infrastructure/service
- Maintenance of the infrastructure/service

* Closed Circuit Television (CCTV) service for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase.

- Installation of the infrastructure to provide this service
- Commissioning of the infrastructure/service
- Maintenance of the infrastructure/service

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0509	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2	Revision No.:	01
(short):	Telecommunication Services - Phase 2	Date:	13-Apr-2012

* Security Access Control System (SACS) service for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase. Dormitory modules and all doors of the main kitchen module are excluded, except the telecommunication rooms. Excluded doors will be covered by another SACS provided by the accommodation complex contractor.

- Installation of the infrastructure to provide this service
- Commissioning of the infrastructure/service
- Maintenance of the infrastructure/service

* Electrical protection and control services for the Lower Churchill Project at Muskrat Falls and surrounding areas during the Main Construction Phase.

- Installation of the infrastructure to provide this service
- Commissioning of the infrastructure/service
- Maintenance of the infrastructure/service

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Muskrat Falls Telecommunication	lot	1

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

A unique fixed cost for engineering, equipment provisioning and Installation plus a fee for the telecommunication services and management.(EPCM)

Work Excluded:

Description	Package No.
Telecommunication services in Phase 1 and Starter Camp	SD0560
Supply and install Early works construction Telecom devices Phase 1	PD0533
All telecommunication system in remote camps along transmission lines	CD0535

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0509	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2	Revision No.:	01
(short):	Telecommunication Services - Phase 2	Date:	13-Apr-2012

Telecommunication Services for Permanent Network	CD0510
All horizontal cabling	CH0002, CH0003, CH0007
SACS system inside the main kitchen module and dormitory, except the telecommunication room doors	CH0002
The installation of the fibre backbone at Muskrat Falls on the 25 kV poles	CD0512
The fibre backbone between Muskrat Falls and the fibre along the Trans-Labrador Highway	TBD
The fibre from Happy Valley – Goose Bay to Labrador City	Others (not in the current project)
The Bell network upgrade to increase the bandwidth at Happy Valley – Goose Bay after the fibre between Happy Valley – Goose Bay to Labrador City is ready	Others (not in the current project)

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Design Basis 505573-480A-47ER-0009 as formulated for the Lower Churchill Project.

Interface with Other Packages

Description	Package No.
Supply and Install Accommodation Complex Buildings CH0002: the accommodation buildings will have to be in place for the communication services and systems to be installed	CH0002
Supply and Install Administrative Buildings CH0003: the administrative buildings will have to be in place for the communication services and systems to be installed there	CH0003
Construction Power facilities (CD0512). Installation of the ADSS fibre at Muskrat Falls.	CD0512
ADSS Fiber Optic Cable supplying (PT0377)	PT0377

Specific Site Conditions

As established in document 505573-480B-47EM-0001

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0509	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2	Revision No.:	01
(short):	Telecommunication Services - Phase 2	Date:	13-Apr-2012

Specific Schedule Conditions											
Specific Environment Conditions	Specific work methods for suspended work and Confined spaces will be for some aspects of installation of this package's equipment.										
Specific Safety Conditions											
Special Requirements (All)											
Free Issued Materials											
Schedule and Milestones	<table border="1"> <thead> <tr> <th>Item</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFQ</td> <td>TBD</td> </tr> <tr> <td>Award</td> <td>TBD</td> </tr> <tr> <td>Mobilize</td> <td>TBD</td> </tr> <tr> <td>Installation Complete</td> <td>TBD</td> </tr> </tbody> </table>	Item	Date	Issue RFQ	TBD	Award	TBD	Mobilize	TBD	Installation Complete	TBD
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Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>								
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>										

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0510	Type:	C- Contract
Titles (long):	Supply and install Permanent Communication Systems	Revision No.:	01
(short):	Permanent Communication Systems	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	William Diaz	Package Engineer:	Claude-Olivier Pitt
	QA / QC:	Ken Morrison	Contract Admin. / Buyer:	TBD

Scope of work Summary

Deploy, install and optimize the telecommunications infrastructure and services for the Permanent Phase for the permanent facilities of the Lower Churchill Project.

Work Included:

- Optical transport network for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- SONET network for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- Telecommunications infrastructure for the Permanent Phase of the Lower Churchill Project
 - Telecommunications rooms fitting
 - Batteries rooms fitting
 - Vertical Structured Cabling System in all area
 - Horizontal Structured Cabling System in all areas
- Corporate data system for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- Corporate telephony system for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- Corporate video conference system for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- CCTV system for the Permanent Phase of the Lower Churchill Project - Installation of the infrastructure
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0510	Type:	C- Contract
Titles (long):	Supply and install Permanent Communication Systems	Revision No.:	01
(short):	Permanent Communication Systems	Date:	13-Apr-2012

- SACS system for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- Network Management service for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the infrastructure
 - Commissioning of the infrastructure
- Electrical protection and control System for the Permanent Phase of the Lower Churchill Project
 - Supply and Install the telecommunications infrastructure
 - Commissioning of the telecommunications infrastructure

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Microwave Radio Link	lot	2
2	Optical Transmission Node	lot	12
3	All-Raman Amplifier	lot	10
4	SONET Multiplexer	lot	12
5	Data System	lot	12
6	Telephony System	lot	12
7	Voice Conference System	lot	2
8	Network Management System	lot	2
9	Closed Circuit Television System	Lot	2
10	Security Access Control System	Lot	2
11	Data Distribution	lot	12
12	Telephony Distribution	lot	12
13	SACS Distribution	lot	12
14	CCTV Distribution	lot	12
15	Public Announcement System	lot	10

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0510	Type:	C- Contract
Titles (long):	Supply and install Permanent Communication Systems	Revision No.:	01
(short):	Permanent Communication Systems	Date:	13-Apr-2012

16	Public Announcement Distribution	lot	10
17	Teleconference Distribution	lot	4
18	Telecommunication Room Layout	lot	12
19	Electrical Protection and Control Equipment	lot	20

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Protection and control system	CD0501, CD0502, CD0534
OPGW installation and commissioning	CT0319, CT0327, CT0342, CT0346
Earthworks at Various Power Distribution Sites	CD0503
Provision of Construction Telecommunication Services – Phase 2	CD0509
Provision of Construction Telecommunication Services - Phase 2 Transmission lines	CD0535

Quality

- The Contractor shall comply with Quality Requirements Specification Number 505573-0000-38RA-0003

Reference Section

- The following main documents are used to define the scope:
- Design Brief 505573-480A-47ER-0016 Permanent Telecommunications Network

Interface with Other Packages

- Construction of transmission lines (Packages CT0319, CT0342, CT0346)
- Supply of the OPGW (Packages PT0304, PT0353)
- Construction of facilities in all electrical sites (Packages CD0502, CD0503, SD0536)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0510	Type:	C- Contract
Titles (long):	Supply and install Permanent Communication Systems	Revision No.:	01
(short):	Permanent Communication Systems	Date:	13-Apr-2012

Specific Site Conditions	<ul style="list-style-type: none"> • Protection and control system (Packages CD0502, CD0503, SD0536) • Powerhouse (Package CH0007) • Supply and install mechanical and electrical auxiliaries at Muskrat Falls (Package CH0031) • Supply and install converters, harmonic filters and transition compounds (Package CD0501) • Supply and install synchronous condensers (Package CD0534) • Maritime project (Nalcor – MCT Maritime Crossing Team) 										
Specific Schedule Conditions	The end to end dynamic commissioning will be done after the OPGW is installed.										
Specific Environment Conditions											
Specific Safety Conditions	<ul style="list-style-type: none"> • Specific work methods for suspended work and confined spaces will be for some aspects of installation of this package's equipment. • Working at heights (towers, roofs, etc.). 										
Special Requirements (All)											
Equipment List	Not Applicable										
Schedule and Milestones	<table border="1" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Item</th> <th style="text-align: left;">Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFQ</td> <td>TBD</td> </tr> <tr> <td>Award</td> <td>TBD</td> </tr> <tr> <td>Mobilize</td> <td>TBD</td> </tr> <tr> <td>Installation Complete</td> <td>TBD</td> </tr> </tbody> </table>	Item	Date	Issue RFQ	TBD	Award	TBD	Mobilize	TBD	Installation Complete	TBD
Item	Date										
Issue RFQ	TBD										
Award	TBD										
Mobilize	TBD										
Installation Complete	TBD										

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0510	Type:	C- Contract
Titles (long):	Supply and install Permanent Communication Systems	Revision No.:	01
(short):	Permanent Communication Systems	Date:	13-Apr-2012

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0512	Type:	C-Contract
Titles (long):	Construction of Construction Power Facilities	Revision No.:	01
(short):	Construction Power Facilities	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

All civil works encompassing final grading, concrete foundations and material supply and placement of prefabricated building; all bulk material supply as specified; and installation of all electromechanical equipment (both Contractor procured and switchgear and power transformers, supplied by others, as specified); for Churchill Falls ac substation 230-138 kV extension, and for new Muskrat Falls 138-25 kV north side ac substation; for construction power delivery to Muskrat Falls from the existing 138 kV transmission line (TL240). All testing and commissioning as specified.

All construction and commissioning of approximately 18 km of 25 kV wood pole transmission line from the new 138-25 kV ac substation at Muskrat Falls on the north bank; thence across the Churchill river to the south side near the hydro development and on east by approximately 10 km following the new access road and terminating at the accommodation camp to be constructed. Work includes the construction of the tapping arrangement at Muskrat Falls and Churchill Falls to connect to the existing 138 kV at both locations.

Installation of control and protection devices in existing panels at Churchill Falls 230-138 kV ac substations control building.

Work Included:

- Supply and delivery of low voltage power cables, control cables, hardware, and station post insulators and suspension insulators. Lighting fixtures and junction boxes, wood pole and steel supports for post insulators.
- Accommodations for Contractor workers at both construction sites.
- Installation of access roads and their maintenance at both locations.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor.
- Agreement of schedule milestones with Contractor.
- Submission by Contractor of all Document Requirements on a timely basis.
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: CD0512
 Titles (long): Construction of Construction Power Facilities
 (short): Construction Power Facilities

Type: C-Contract
 Revision No.: 01
 Date: 13-Apr-2012

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Construct ac substations-construction power		

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

- Contract Form is Combination Lump Sum and Unit Rates on individual items, as specified.
- Project Payment Terms include progress payments and completion of works.

Work Excluded:

Description	Package No.
N/A	N/A

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Scope Specification 505573-313A-47EW-0001

Interface with Other Packages

Description	Package No.
Construction of North Spur Stabilization Works	CH0008
Construction of Southside Access Road	CH0004
Construction of Site Clearing Access Road & Ancillary Areas	CH0048
Construction of Bulk Excavation Works and Associated Civil Works	CH0006
Supply and Install Accommodations Complex Buildings	CH0002
Supply and Install Administrative Buildings	CH0003
Supply and Install Accommodations Complex Site Utilities	CH0005

Specific Site Conditions

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0512	Type:	C-Contract
Titles (long):	Construction of Construction Power Facilities	Revision No.:	01
(short):	Construction Power Facilities	Date:	13-Apr-2012

Specific Schedule Conditions

--

Specific Environment Conditions

--

Specific Safety Conditions

Working around mobile equipment and limits of approach respecting energized equipment.

Special Requirements (All)

--

Free Issued Materials

Description	Package No.
Supply Power Transformers	PD0513
Supply 138 & 25 kV Circuit Breakers	PD0514
Supply 230,138, 25 kV Disconnects	PD0515
Supply 138 kV Capacitive Voltage Transformers	PD0518
Supply 25 kV Vacuum Interrupters	PD0519
Supply 25 kV Capacitor Banks	PD0520
Supply Prefabricated Control Building	PD0522
Supply Station Service Transformers	PD0523
Supply 25 kV Reclosers, Bypass Switches and Fused Cut-outs	PD0529
Supply 138 kV and 25 kV Surge Arresters	PD0530
Supply MV Instrument Transformer	PD0531
Supply RTU Cabinet	PD0561
Supply Specific Relays and Test Switches	PD0562
Supply 138 kV Circuit Switcher	PD0563

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0512	Type:	C-Contract
Titles (long):	Construction of Construction Power Facilities	Revision No.:	01
(short):	Construction Power Facilities	Date:	13-Apr-2012

	25 kV Line Materials	PT0336												
	Supply of 25KV Distribution Line ADSS Fibre Optic Cable	PT0337												
	Supply of 25KV Distribution Line Conductor	PT0338												
	Supply of 25KV Distribution Line Insulators	PT0339												
	Supply of Wood Poles for 138/25 KV Distribution Line	PT0340												
Major Equipment List	<ul style="list-style-type: none"> TBD 													
Schedule and Milestones	<table border="1"> <thead> <tr> <th>Item</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFQ</td> <td>TBD</td> </tr> <tr> <td>Award</td> <td>TBD</td> </tr> <tr> <td>Mobilize</td> <td>TBD</td> </tr> <tr> <td>Completion (Muskrat Falls)</td> <td>TBD</td> </tr> <tr> <td>Completion (Muskrat Falls)</td> <td>TBD</td> </tr> </tbody> </table>	Item	Date	Issue RFQ	TBD	Award	TBD	Mobilize	TBD	Completion (Muskrat Falls)	TBD	Completion (Muskrat Falls)	TBD	
Item	Date													
Issue RFQ	TBD													
Award	TBD													
Mobilize	TBD													
Completion (Muskrat Falls)	TBD													
Completion (Muskrat Falls)	TBD													
Budget	TBD													
Applicable Sub-Project/SPV	<table border="0"> <tr> <td>Muskrat Falls Generation</td> <td><input checked="" type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>		Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>				
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>											
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>											
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>													

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0534	Type:	C-Contract
Titles (long):	Supply and install Soldiers Pond Synchronous Condensers	Revision No.:	01
(short):	Soldiers Pond Synchronous Condensers	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	TBD	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

Three (3) synchronous condensers, each rated 150 MVA_r, for Soldiers Pond, as a turnkey (EPC) engineering design, supply and install from the low voltage terminals of step-up transformer to the ground point of each condenser neutral.

Work Included:

- Design Engineering manufacturing, factory acceptance testing, transportation to site, installation/site acceptance test, commissioning of 3x150 MVA_r synchronous condensers and associated systems and equipment.
- Associated systems and equipment include all electromechanical auxiliaries, excitation system and control, protection system, along with scada system, static frequency converter (SFC) system, isolated phase bus ducts for main and starting circuit, generator circuit breakers and isolator system, medium and low voltage switchgear, crane rail support, overhead crane, and foundation design details.
- Installation of rail, electrical supply and crane.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor.
- Agreement of schedule milestones with Contractor.
- Submission by Contractor of all Document Requirements on a timely basis.
- Progress reporting by Contractor on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	Soldiers Pond Synchronous Condensers	ea	3 x 150 MVA _r

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

- Contract Form is EPC Lump Sum.
- Project Payment Terms include engineering submittals, delivery ex-works, site

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0534	Type:	C-Contract
Titles (long):	Supply and install Soldiers Pond Synchronous Condensers	Revision No.:	01
(short):	Soldiers Pond Synchronous Condensers	Date:	13-Apr-2012

installation, and commissioning at take over, performance guarantee.

Work Excluded:

Description	Package No.
Construct Earthworks (Soldiers Pond)	CD0503
Civil Works (Soldiers Pond) including building and concrete foundations (including structural support for crane rails)	CD0502
Step up Transformer	PD0537

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Functional Specification TBD

Interface with Other Packages

Description	Package No.
Construct Earthworks (Soldiers Pond)	CD0503
Civil Works (Soldiers Pond) including building and concrete foundations	CD0502
Step up Transformer	PD0537

Specific Site Conditions

Access road must allow for widest/heaviest load.

Specific Schedule Conditions

Foundations & Structural Steel work (CD0502) are required for crane and Synchronous Condenser installation, including embedded parts.

Specific Environment Conditions

Specific Safety Conditions

Working around mobile equipment and limits of approach respecting energized equipment.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0534	Type:	C-Contract
Titles (long):	Supply and install Soldiers Pond Synchronous Condensers	Revision No.:	01
(short):	Soldiers Pond Synchronous Condensers	Date:	13-Apr-2012

Special Requirements (All)

--

Free Issued Materials

- Buildings for Synchronous condensers (CD0502)

Major Equipment List

--

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Completion	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0535	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2 Remote Camps	Revision No.:	01
(short):	Const. Tele. Services - Phase 2 Remote Camps	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: William Diaz	Package Engineer:	Claude-Olivier Pitt
	QA / QC: Ken Morrison	Contract Admin. / Buyer:	TBD

Scope of work Summary

Supply, install, commission and maintain the telecommunication services and infrastructure for the Construction Phase of the Lower Churchill project for the Owner and Engineer workers in the remotes camps, the work sites offices external to Muskrat Falls (Converter Stations, Transition Compound sites, Electrode sites, Switchyard, etc.), the marshalling yard offices and for the workers along the transmission lines in Labrador and Newfoundland.

Work Included:

In Labrador

* Data service for the Owner and Engineer work site offices external to Muskrat Falls (Converter, Transition Compound, Electrode, Switchyard, etc.) during the Construction Phase of the Lower Churchill Project.

- Supply and install the service
- Maintenance of the service

* Data service for the Owner and Engineer marshalling yard office during the Construction Phase of the Lower Churchill Project.

- Supply and install the service
- Maintenance of the service

* Satellite telephony service for the Owner and Engineer workers along the transmission lines during the Construction Phase of the Lower Churchill Project.

- Supply and configure devices and accessories
- Rent service
- Maintenance of the devices

In Newfoundland

* Data service for the Owner and Engineer work sites offices external to Muskrat Falls (Converter, Transition Compound, Electrode, Switchyard, etc.) during the Construction Phase of the Lower Churchill Project.

- Supply and install the service
- Maintenance of the service

* Data service for the Owner and Engineer marshalling yard office during the Construction Phase of the Lower Churchill Project.

- Supply and install the service
- Maintenance of the service

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0535	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2 Remote Camps	Revision No.:	01
(short):	Const. Tele. Services - Phase 2 Remote Camps	Date:	13-Apr-2012

* Satellite telephony service for the Owner and Engineer workers along the transmission lines during the Construction Phase of the Lower Churchill Project.

- Supply and configure devices and accessories
- Rent service
- Maintenance of the devices

* Cellular Telephony Service and Mobile Internet Service for the Owner and Engineer workers along the transmission lines during the Construction Phase of the Lower Churchill Project.

- Supply and configure devices and accessories
- Rent service
- Maintenance of the devices

* Land Mobile Radio System for the Owner and Engineer workers along the transmission lines during the Construction Phase of the Lower Churchill Project.

- Supply, install and configure devices and accessories
- Rent service
- Maintenance of the devices

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Remote Camps Telecommunication	TBD

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

Provision, install and commission equipments, supply service. (EPCM)

Work Excluded:

The following works or activities are excluded from package CD0535:

Description	Package No.
All telecommunication system at Muskrat Falls.	CD0509
Permanent Telecommunication System	CD0510
The telecommunications services of the remote camps along the transmission lines during the tree clearing and the line construction phases: <ul style="list-style-type: none"> • Internet and telephone lines for the offices • Recreational services: <ul style="list-style-type: none"> ○ Internet (wired and Wifi) 	CT0319, CT0327, CT0341, CT0342, CT0343, CT0345, CT0436

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0535	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2 Remote Camps	Revision No.:	01
(short):	Const. Tele. Services - Phase 2 Remote Camps	Date:	13-Apr-2012

	<ul style="list-style-type: none"> o Telephony o Television 								
Quality	The contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.								
Reference Section	The following main documents are used to define the scope: Design Basis 505573-480A-47ER-0009 as formulated for the Lower Churchill Project.								
Interface with Other Packages	<p>Packages that included the remotes camps, the work sites external to Muskrat Falls (Converter, Transition Compound, Electrode, Switchyard, etc.), the marshalling yard and the transmission lines in Labrador and in Newfoundland:</p> <ul style="list-style-type: none"> • the buildings/offices will have to be in place for the telecommunication services to be provided • the transmission lines clearing and construction will have to begin for the telecommunication devices to be provided to the Owner and Engineer workers <p>List of interfaced packages:</p> <ul style="list-style-type: none"> • C1: CH0023, CH0024 • C3: CD0501, CD0502, CD0503, CD0508, CD0534, CD0538, SD0536 • C4: CT0319, CT0327, CT0341, CT0342, CT0343, CT0345, CT0346, ST0309, ST0310, ST0311, ST0312 <p>Other: SM0701, SM0704, SM0710</p>								
Specific Site Conditions									
Specific Schedule Conditions									
Specific Environment Conditions	<ul style="list-style-type: none"> • Specific work methods for suspended work will be for some aspects of installation of this package's equipment. • Working at heights (towers, roofs, etc.). 								
Specific Safety Conditions									
Special Requirements (All)									
Equipment List	TBD								
Schedule and Milestones	<table border="1"> <thead> <tr> <th>Item</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFQ</td> <td>TBD</td> </tr> <tr> <td>Award</td> <td>TBD</td> </tr> <tr> <td>Mobilize</td> <td>TBD</td> </tr> </tbody> </table>	Item	Date	Issue RFQ	TBD	Award	TBD	Mobilize	TBD
Item	Date								
Issue RFQ	TBD								
Award	TBD								
Mobilize	TBD								

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0535	Type:	C- Contract
Titles (long):	Construction Telecommunication Services - Phase 2 Remote Camps	Revision No.:	01
(short):	Const. Tele. Services - Phase 2 Remote Camps	Date:	13-Apr-2012

Budget
Applicable Sub-Project/SPV

IBA Package

Installation Complete	TBD
TBD	
Muskrat Falls Generation <input type="checkbox"/>	Labrador – Island Transmission Link <input checked="" type="checkbox"/>
Labrador Transmission Assets <input checked="" type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>
YES <input type="checkbox"/>	NO <input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0538	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Camp (CF)	Revision No.:	01
(short):	Accommodations Camp (CF)	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Line Tremblay

Scope of Work Summary

Supply and installation of a 150 person camp as construction accommodations at Churchill Falls, Labrador for the 735/315 kV ac substation extension.

The scope will include catering; janitorial; camp and building maintenance; dormitories; administration building; reception centre; cafeteria and kitchens; laundry; security; medical services; site services such as snow removal, potable water; fuel supply and dispensing; waste disposal; and sewage treatment (if required).

Work Included:

This package includes:

- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Contractor.
- Agreement of schedule milestones with Contractor.
- Submission by Contractor of all Document Requirements on a timely basis.
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity
Earthworks	
<ul style="list-style-type: none"> • Contract Form is Combination Lump Sum and Unit Rates 	

Contract Basis

Lump Sum	<input checked="" type="checkbox"/>	Unit Rates	<input type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Remarks:

Work Excluded:

Description	Package No.
Construction of ac substation. The camp is for the accommodations of workers constructing the ac substation	CD0502

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0538	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Camp (CF)	Revision No.:	01
(short):	Accommodations Camp (CF)	Date:	13-Apr-2012

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003

Reference Section

The following main documents are used to define the scope:

- N/A

Interface with Other Packages

Description	Package No.
Construction of ac substation. The camp is for the accommodations of workers constructing the ac substation	CD0502

Specific Site Conditions

Specific Schedule Conditions

Specific Environment Conditions

Specific Safety Conditions

Special Requirements (All)

Equipment List

- TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CD0538	Type:	C-Contract
Titles (long):	Supply and Install Accommodations Camp (CF)	Revision No.:	01
(short):	Accommodations Camp (CF)	Date:	13-Apr-2012

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Completion (Churchill Falls) Ready for Occupancy	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskkrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0505	Type:	P-Purchase Order
Titles (long):	Supply Switchyard Equipment-AC Substations at CF, MF and SP	Revision No.:	01
(short):	Switchyard Equipment-AC Substations at CF, MF and SP	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ovidio Juan Ascencio
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier-Raynal

Scope of Work Summary

Supply of all ac switchgear equipment at each substation including but not limited to circuit breakers; disconnects; ground switches; current transformers; voltage transformers; lightning arresters; station service transformers (where applicable); station post insulators; all support structures for switchgear; all control, metering and relay panels; all in accordance with single line diagrams.

Work covers the complete requirements for the design engineering; fabrication; factory acceptance testing; transport and delivery to site (fob concrete pad); supervision of installation, testing, commissioning; spare parts; warranty and performance guarantees; operations and maintenance manual; all Supplier Document Requirements.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing witnessed by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Circuit Breakers 735 kV - CB, 800KV, 2100 KV BIL	06
Circuit Breakers 315 kV - CB, 800KV, 2100 KV BIL	22
Circuit Breakers 230 kV - CB, 800KV, 2100 KV BIL	21
Circuit Breakers 138 kV - CB, 800KV, 2100 KV BIL	02
Disconnects 735 kV - 800 KV Disconnect Switch 2100 KV BIL	16
Disconnects 315 kV- 362KV Disconnect Switch 1175 KV BIL	60
Disconnects 230 kV- 245 KV Disconnect Switch 1050 KV BIL	58
Disconnects 138 kV- 145 KV Disconnect Switch 550 KV BIL	07

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0505	Type:	P-Purchase Order
Titles (long):	Supply Switchyard Equipment-AC Substations at CF, MF and SP	Revision No.:	01
(short):	Switchyard Equipment-AC Substations at CF, MF and SP	Date:	13-Apr-2012

Ground Switches - Switch w/ Ground Blades	71
Current Transformers - Porcelain Current Transformers	318
Voltage Transformers - Capacitive Voltage Transformers	133
Lightning Arresters - Porcelain Surge Arrestors	78
Station Service Transformers - Pad-Mounted Transformers	14
Station Post Insulators - Porcelain HV Post Insulator	2200
Switchgear Support Structures - Galvanized steel supports and gantries	2900
Control, Metering, Relaying Panels - Protection and Control Panels	210
Supply of all Power and Control Cables - Various AWG Cables	350,000
Supply of all Aerial Conductors - A1 Strain bus Conductor	75,000
Termination Hardware - Cable Connector	21,000

Contract Basis

Lump Sum	<input checked="" type="checkbox"/>	Unit Rates	<input type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>
<u>Remarks:</u>			

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Grounding cable and connectors	CD0502
Power transformers	PD0537

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO	
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0505	Type:	P-Purchase Order
Titles (long):	Supply Switchyard Equipment-AC Substations at CF, MF and SP	Revision No.:	01
(short):	Switchyard Equipment-AC Substations at CF, MF and SP	Date:	13-Apr-2012

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Specifications

Interface with Other Packages

Construction Contract CD0502 will provide all labour, tools and equipment for installation of the contents of this package PD0505 as well as pre-commissioning.

Specific Site Conditions

Specific Schedule Conditions

Specific Environment Conditions

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0505	Type:	P-Purchase Order
Titles (long):	Supply Switchyard Equipment-AC Substations at CF, MF and SP	Revision No.:	01
(short):	Switchyard Equipment-AC Substations at CF, MF and SP	Date:	13-Apr-2012

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS (Churchill Falls)	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Delivery ROS Pad (Soldiers Pond)	TBD
Installation Complete (Churchill Falls)	TBD
Installation Complete (Muskrat Falls)	TBD
Installation Complete (Soldiers Pond)	TBD

Budget

TDB

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0513	Type:	P-Purchase Order
Titles (long):	Supply of 138/25 kV Transformers	Revision No.:	01
(short):	138/25 kV Transformers	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

Supply of two (2) power transformers for construction power delivery to Muskrat Falls; one (1) 138-25 kV, 30/40/50 MVA unit for new substation at Muskrat Falls; and one (1) 230-138 kV, 75/100/125 MVA unit for substation extension at Churchill Falls, Labrador.

Work covers the complete requirements for the design engineering; fabrication; factory acceptance testing; transport and delivery to site (fob concrete pad); supervision of installation, testing, commissioning; spare parts; warranty and performance guarantees; operations and maintenance manual; all Supplier Document Requirements; and insulating oil; for two (2) power class transformers.

Work Included:

- This package includes:
- Design review acceptance by Consultant/Company.
 - Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
 - Agreement of schedule milestones with Supplier.
 - Approval of inspection and test plan by Consultant/Company.
 - Submission by Supplier of all Document Requirements on a timely basis.
 - Factory acceptance testing witnessed by Consultant/Company.
 - Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
 - Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Power Transformers	2

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0513	Type:	P-Purchase Order
Titles (long):	Supply of 138/25 kV Transformers	Revision No.:	01
(short):	138/25 kV Transformers	Date:	13-Apr-2012

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
The first filling of oil; oil handling; and provision of pumping/filtering equipment. PD0513 does supervision only.	CD0512
The dressing of the transformers, e.g. installation of bushings, lightning arresters; relays. PD0513 does supervision only.	CD0512
The supply and installation of all power and control cables.	CD0512
The interconnection to the aerial conductors.	CD0512
Labour and tools to assist in the testing, calibration and operation of power transformers controls and relaying.	CD0512
Labour and tools for energization. PD0513 to witness.	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO
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Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0513	Type:	P-Purchase Order
Titles (long):	Supply of 138/25 kV Transformers	Revision No.:	01
(short):	138/25 kV Transformers	Date:	13-Apr-2012

Reference Section

The following main documents are used to define the scope:

- Newfoundland Labrador Hydro – Specification for the Supply of Outdoor Transformers for Lower Churchill Project, NL., Canada.

Specification PT-10-506

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the transformer foundations (concrete pads) and works excluded as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of both transformer units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag # T1 138-25 kV, 30/40/50 MVA Power Transformer Muskrat Falls Construction Power Substation
- Tag# T33 230-138 kV, 75/100/125 MVA Power Transformer Churchill Falls 230-138 kV Substation Extension

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery FOB Pad (Muskrat Falls)	TBD
Delivery FOB Pad (Churchill Falls)	TBD
Installation Complete (Muskrat Falls)	TBD
Installation Complete (Churchill Falls)	TBD

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0513	Type:	P-Purchase Order
Titles (long):	Supply of 138/25 kV Transformers	Revision No.:	01
(short):	138/25 kV Transformers	Date:	13-Apr-2012

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0514	Type:	P-Purchase Order
Titles	(long): Supply of 138 kV and 25 kV Circuit Breakers	Revision No.:	01
	(short): 138 kV and 25 kV Circuit Breakers	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Shauna Crosbie

Scope of Work Summary

Supply of two (2) 138 kV and one (1) 25 kV circuit breakers for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation

Work covers the complete requirements for the design engineering; fabrication; factory acceptance testing; transport and delivery to site; supervision of site testing and commissioning; spare parts; warranty and performance guarantees; operations and maintenance manuals; and all Supplier Document Requirements for dead tank SF6 type suitable for outdoor use in accordance with +40, -40 degree Celsius ambient temperature range.

138 kV units to be rated 1200 A, 20 kA for 1 second, 650 kV BIL.

25 kV unit to be rated 1200 A, 16 kA for 1 second, 125 kV BIL.

Work Included:

This package includes:

- Support structures.
- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0514	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV and 25 kV Circuit Breakers	Revision No.:	01
(short):	138 kV and 25 kV Circuit Breakers	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Circuit Breakers	2-138 kV and 1-25 kV

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Placement on concrete foundation and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO
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Determination of Equipment Criticality based on GP-5600-PR-02-E

High Significant Moderate	<input type="checkbox"/>	Minor Negligible	<input checked="" type="checkbox"/>
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Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Specification – 505573-313A-47ES-0001

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the circuit breaker foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0514	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV and 25 kV Circuit Breakers	Revision No.:	01
(short):	138 kV and 25 kV Circuit Breakers	Date:	13-Apr-2012

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag # B1L1302 138 kV Circuit Breaker Muskrat Falls Construction Power Substation
- Tag# B1T1 138 kV Circuit Breaker Muskrat Falls Construction Power Substation
- Tag # B2B3 25 kV Circuit Breaker Muskrat Falls Construction Power Substation

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0515	Type:	P-Purchase Order
Titles	(long): Supply of 230 kV,138 kV and 25 kV Disconnect Switches	Revision No.:	01
	(short): 230 kV,138 kV and 25 kV Disconnect Switches	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

Supply of one (1) 230 kV disconnect switch for construction power delivery to Muskrat Falls through extension of 230-138 kV substation at Churchill Falls.

Supply three (3) 138 kV and two (2) 25 kV disconnect switches for new Muskrat Falls construction power substation.

Work covers the complete requirements for the design engineering; fabrication; factory acceptance testing; transport and delivery to site; supervision of site testing and commissioning; spare parts; warranty and performance guarantees; operations and maintenance manuals; and all Supplier Document Requirements for disconnect switches suitable for outdoor use in accordance with +40, -40 degree Celsius ambient temperature range.

230 kV unit rated 1200 A, 40 kA for 1 second, 650 kV BIL, 3 pole, vertical break, without ground switch, manual and motor operated mechanisms.

138 kV unit rated 1200 A, 20 kA for 1 second, 650 kV BIL, 3 pole, vertical break, without ground switch, manual and motor operated mechanisms.

138 kV units (quantity-2) rated 1200 A, 20 kA for 1 second, 650 kV BIL, 3 pole, vertical break, with ground switch, manual and motor operated mechanisms.

25 kV units rated 1200 A, 20 kA for 1 second, 150 kV BIL, 3 pole, vertical break, manual operating mechanism.

Work Included:

- Support structures.
- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0515	Type:	P-Purchase Order
Titles (long):	Supply of 230 kV, 138 kV and 25 kV Disconnect Switches	Revision No.:	01
(short):	230 kV, 138 kV and 25 kV Disconnect Switches	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Description	Estimated Quantity (Gate 3 Estimate)
Disconnect switches	1-230 kV disconnect switch w/o ground switch; 1-138 kV disconnect switch w/o ground switch; 2-138 kV with ground switch; and 1-25 kV disconnect switch.

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
 Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Placement on concrete foundation and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO
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Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0515	Type:	P-Purchase Order
Titles (long):	Supply of 230 kV, 138 kV and 25 kV Disconnect Switches	Revision No.:	01
(short):	230 kV, 138 kV and 25 kV Disconnect Switches	Date:	13-Apr-2012

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0002

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the disconnect switches foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag # B1-T33 230 kV Disconnect Switch without ground switch. Churchill Falls 230-138 kV Substation Extension
- Tag# B1L1301-1_L1301G 138 kV Disconnect Switch with Ground switch. Muskrat Falls Construction Power Substation
- Tag# B1L1302-2_L1301G 138 kV Disconnect Switch with Ground switch. Muskrat Falls Construction Power Substation
- Tag# B1L1302 138 kV Disconnect Switch without ground switch. Muskrat Falls Construction Power Substation
- Tag#s B2B3-1 and B2T1-1 25 kV disconnect switches. Muskrat Falls Construction Power Substation.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0515	Type:	P-Purchase Order
Titles (long):	Supply of 230 kV, 138 kV and 25 kV Disconnect Switches	Revision No.:	01
(short):	230 kV, 138 kV and 25 kV Disconnect Switches	Date:	13-Apr-2012

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls and Churchill Falls)	TBD
Installation Complete (Muskrat Falls)	TBD
Installation Complete (Churchill Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0518	Type:	P-Purchase Order
Titles	(long): Supply of 138 kV Capacitor Voltage Transformers	Revision No.:	01
	(short): 138 kV Capacitor Voltage Transformers	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Shauna Crosbie

Scope of Work Summary

Package includes:

- Supply of three (1) 138 kV capacitor voltage transformers for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation.
- Units will be single phase with primary voltage of 138/1.732 kV with secondary voltages of 120-69 V; 650 kV BIL; 60 Hz. Designs will include metering and relaying accuracies, as per technical specification

Work Included:

- Support structures.
- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Capacitor Voltage Transformers	3 at 138 kV nominal system voltage

Contract Basis

	Lump Sum	<input type="checkbox"/>	Unit Rates	<input checked="" type="checkbox"/>
	Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>
<u>Remarks:</u>				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0518	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV Capacitor Voltage Transformers	Revision No.:	01
(short):	138 kV Capacitor Voltage Transformers	Date:	13-Apr-2012

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Placement on concrete foundation and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>															
Determination of Equipment Criticality based on GP-5600-PR-02-E High Significant Moderate <input type="checkbox"/> Minor Negligible <input checked="" type="checkbox"/>																			
Determination of Quality Surveillance level based on GP-5600-PR-03-E <table border="1"> <tr><td><input type="checkbox"/></td><td>4</td><td>Continuous in process quality monitoring and verification and final verification.</td></tr> <tr><td><input type="checkbox"/></td><td>3</td><td>Regular in process quality monitoring and verification and final quality verification.</td></tr> <tr><td><input type="checkbox"/></td><td>2</td><td>Limited in process quality monitoring and verification and final quality verification.</td></tr> <tr><td><input checked="" type="checkbox"/></td><td>1</td><td>Final Quality Verification</td></tr> <tr><td><input type="checkbox"/></td><td>0</td><td>No quality surveillance, no quality verification</td></tr> </table>					<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.	<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.	<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.	<input checked="" type="checkbox"/>	1	Final Quality Verification	<input type="checkbox"/>	0	No quality surveillance, no quality verification
<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.																	
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.																	
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.																	
<input checked="" type="checkbox"/>	1	Final Quality Verification																	
<input type="checkbox"/>	0	No quality surveillance, no quality verification																	

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0003

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the capacitor voltage transformers foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0518	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV Capacitor Voltage Transformers	Revision No.:	01
(short):	138 kV Capacitor Voltage Transformers	Date:	13-Apr-2012

Special Requirements (All)

Equipment List

- Tag#s CVT L1301-1, L1301-2, L1301-3 Capacitor Voltage Transformers. Muskrat Falls Construction Power Substation.

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0519	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Vacuum Interrupters	Revision No.:	01
(short):	25 kV Vacuum Interrupters	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Shauna Crosbie

Scope of Work Summary

Package includes:

- Supply of six (6) 25 kV vacuum interrupters plus one (1) spare unit for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation.
- Units will be nominal system voltage of 25 kV; maximum continuous voltage of 27 kV; 400 A; 60 Hz; 150 kV BIL; interrupting rating of 12.5 kA; 3 pole.

Work Included:

- Support structures, galvanized steel.
- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Vacuum Interrupters	7 at 25 kV nominal system voltage; 1 is full spare.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0519	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Vacuum Interrupters	Revision No.:	01
(short):	25 kV Vacuum Interrupters	Date:	13-Apr-2012

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Placement on concrete foundation and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO																												
Determination of Equipment Criticality based on GP-5600-PR-02-E <table border="0" style="width: 100%;"> <tr> <td style="width: 20%;">High</td> <td style="width: 10%;"><input type="checkbox"/></td> <td style="width: 20%;">Minor</td> <td style="width: 10%;"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Significant</td> <td><input type="checkbox"/></td> <td>Negligible</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Moderate</td> <td><input type="checkbox"/></td> <td></td> <td></td> </tr> </table> Determination of Quality Surveillance level based on GP-5600-PR-03-E <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"></td> <td style="width: 5%; text-align: center;">4</td> <td>Continuous in process quality monitoring and verification and final verification.</td> </tr> <tr> <td></td> <td style="text-align: center;">3</td> <td>Regular in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td></td> <td style="text-align: center;">2</td> <td>Limited in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td style="text-align: center;">x</td> <td style="text-align: center;">1</td> <td>Final Quality Verification</td> </tr> <tr> <td></td> <td style="text-align: center;">0</td> <td>No quality surveillance, no quality verification</td> </tr> </table>					High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>	Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>	Moderate	<input type="checkbox"/>				4	Continuous in process quality monitoring and verification and final verification.		3	Regular in process quality monitoring and verification and final quality verification.		2	Limited in process quality monitoring and verification and final quality verification.	x	1	Final Quality Verification		0	No quality surveillance, no quality verification
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	2	Limited in process quality monitoring and verification and final quality verification.																													
x	1	Final Quality Verification																													
	0	No quality surveillance, no quality verification																													

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0010

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the vacuum interrupter foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0519	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Vacuum Interrupters	Revision No.:	01
(short):	25 kV Vacuum Interrupters	Date:	13-Apr-2012

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag #s B3-C1, B3C-2, B3-C3, B3-C4, B3-C5, B3-C6, B3-C7. Muskrat Falls Construction Power Substation.

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0520	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV 6 x 3.6 MVAR Capacitor Banks	Revision No.:	01
(short):	25 kV 6 x 3.6 MVAR Capacitor Banks	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Shauna Crosbie

Scope of Work Summary

Package includes:

- Supply of six (6) 25 kV, 3.6 MVAR capacitor banks for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation.
- Units will be nominal system voltage of 25 kV; maximum continuous voltage of 27 kV; rated output (3 phase) of 3.6 MVAR; 60 Hz; 150 kV BIL; with rating of 200 kVAR/phase/unit; I (short circuit) of 12.5 kA; complete with post insulators, series reactors, grounding switches, surge arresters, voltage transformers, and specified spare parts.

Work Included:

- Support structures, metallic galvanized steel.
- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Capacitor Banks	6 at 25 kV nominal system voltage.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0520	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV 6 x 3.6 MVAR Capacitor Banks	Revision No.:	01
(short):	25 kV 6 x 3.6 MVAR Capacitor Banks	Date:	13-Apr-2012

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Placement on concrete foundation and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO															
Determination of Equipment Criticality based on GP-5600-PR-02-E High Significant Moderate <input type="checkbox"/> Minor Negligible <input checked="" type="checkbox"/>																		
Determination of Quality Surveillance level based on GP-5600-PR-03-E <table border="1"> <tr> <td><input type="checkbox"/></td> <td>4</td> <td>Continuous in process quality monitoring and verification and final verification.</td> </tr> <tr> <td><input type="checkbox"/></td> <td>3</td> <td>Regular in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2</td> <td>Limited in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>1</td> <td>Final Quality Verification</td> </tr> <tr> <td><input type="checkbox"/></td> <td>0</td> <td>No quality surveillance, no quality verification</td> </tr> </table>				<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.	<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.	<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.	<input checked="" type="checkbox"/>	1	Final Quality Verification	<input type="checkbox"/>	0	No quality surveillance, no quality verification
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<input type="checkbox"/>	0	No quality surveillance, no quality verification																

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0004

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the capacitor bank foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0520	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV 6 x 3.6 MVAR Capacitor Banks	Revision No.:	01
(short):	25 kV 6 x 3.6 MVAR Capacitor Banks	Date:	13-Apr-2012

Specific Environment Conditions	As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.																				
Specific Safety Conditions	Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.																				
Special Requirements (All)																					
Equipment List	<ul style="list-style-type: none"> Tag #s C1, C2, C3, C4, C5, C6. Muskrat Falls Construction Power Substation. 																				
Schedule and Milestones	<table border="1"> <thead> <tr> <th>Item</th> <th colspan="2">Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFQ</td> <td colspan="2">TBD</td> </tr> <tr> <td>Award</td> <td colspan="2">TBD</td> </tr> <tr> <td>Mobilize</td> <td colspan="2">TBD</td> </tr> <tr> <td>Delivery ROS Pad (Muskrat Falls)</td> <td colspan="2">TBD</td> </tr> <tr> <td>Installation Complete (Muskrat Falls)</td> <td colspan="2">TBD</td> </tr> </tbody> </table>			Item	Date		Issue RFQ	TBD		Award	TBD		Mobilize	TBD		Delivery ROS Pad (Muskrat Falls)	TBD		Installation Complete (Muskrat Falls)	TBD	
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Installation Complete (Muskrat Falls)	TBD																				
Budget	TBD																				
Applicable Sub-Project/SPV	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/>																		
	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>																		
IBA Package	YES <input type="checkbox"/> NO <input type="checkbox"/>																				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0522	Type:	P-Purchase Order
Titles (long):	Supply of Pre-fabricated Control Room Building	Revision No.:	01
(short):	Pre-fabricated Control Room Building	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ricardo Quijada
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Ken O'Keefe

Scope of Work Summary

Package includes:

- Design, manufacture, testing, supply and delivery at site of Prefabricated Substation Protection and Control Building.
- The Prefabricated Substation Protection and Control Building shall be delivered at site assembled with a marshalling cabinet to which all the outdoor equipment will be connected, minimizing and simplifying the installation works at site.
- All equipment installed shall be prewired, tested at factory and terminated at the marshalling cabinet and ready for cabling to outdoor equipment.
- The building shall be installed in the 138/25 kV Muskrat Falls Terminal Substation for Construction Power.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).
- Participation in on site testing and commissioning of hardware and pre-checks leading up to energization of substation.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0522	Type:	P-Purchase Order
Titles (long):	Supply of Pre-fabricated Control Room Building	Revision No.:	01
(short):	Pre-fabricated Control Room Building	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Prefabricated Control Building	1 unit

Contract Basis

Lump Sum	<input checked="" type="checkbox"/>	Unit Rates	<input type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>
<u>Remarks:</u>			

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Wiring and cable terminations from switchyard to prefabricated building.	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO															
Determination of Equipment Criticality based on GP-5600-PR-02-E High <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Significant <input type="checkbox"/> Negligible <input type="checkbox"/> Moderate <input type="checkbox"/>																		
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<input checked="" type="checkbox"/>	1	Final Quality Verification																
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Reference Section

The following main documents are used to define the scope:

- Scope Specification 505573-313A-47ES-0015
- TS1 505573-313A-47ES-0005
- TS2 505573-313A-47ES-0012
- TS3 505573-313A-47ES-0011
- TS4 505573-313A-47ES-0014

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0522	Type:	P-Purchase Order
Titles (long):	Supply of Pre-fabricated Control Room Building	Revision No.:	01
(short):	Pre-fabricated Control Room Building	Date:	13-Apr-2012

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the prefabricated control building foundations (concrete pad) and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag # PFB1 Prefabricated Control Building. Muskrat Falls Construction Power Substation.

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0523	Type:	P-Purchase Order
Titles (long):	Supply of Substation Service Transformer	Revision No.:	01
(short):	Substation Service Transformer	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary

Package includes:

- Supply of four (4) pole mounted, single phase, distribution type transformers for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation. One will be spare.
- Units will be single phase rated 25 kVA; 14.4 kV-120/240 V; 60 Hz; 150 BIL; ONAN.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Substation Service Transformers	4 units; includes 1 unit as spare.

Contract Basis

Lump Sum	<input type="checkbox"/>	Unit Rates	<input checked="" type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0523	Type:	P-Purchase Order
Titles (long):	Supply of Substation Service Transformer	Revision No.:	01
(short):	Substation Service Transformer	Date:	13-Apr-2012

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Pole mounting and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	<input checked="" type="checkbox"/>	NO	<input type="checkbox"/>															
Determination of Equipment Criticality based on GP-5600-PR-02-E High <input type="checkbox"/> Significant <input type="checkbox"/> Moderate <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Negligible <input type="checkbox"/>																			
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<input checked="" type="checkbox"/>	1	Final Quality Verification																	
<input type="checkbox"/>	0	No quality surveillance, no quality verification																	

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0006

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the capacitor voltage transformers foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0523	Type:	P-Purchase Order
Titles (long):	Supply of Substation Service Transformer	Revision No.:	01
(short):	Substation Service Transformer	Date:	13-Apr-2012

Special Requirements (All)

Equipment List

- Tag#s SAT-1, SAT-2, SAT-3, SAT-4 Substation Service Transformers. Muskrat Falls Construction Power Substation.

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

- | | | | |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Muskrat Falls Generation | <input checked="" type="checkbox"/> | Labrador – Island Transmission Link | <input type="checkbox"/> |
| Labrador Transmission Assets | <input type="checkbox"/> | Lower Churchill Project – General | <input type="checkbox"/> |

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0529	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Reclosers	Revision No.:	01
	(short): 25 kV Reclosers	Date:	13-Apr-2012

Discipline:				
Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary

Package includes:

- Supply of three (3) 25 kV reclosers for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation.
- Reclosers to be 25 kV, 560 A, 150 kV BIL, 12.5 kA for 1 second; to include sensing CTs, operating mechanisms and steel support structures.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Reclosers	3

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0529	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Reclosers	Revision No.:	01
	(short): 25 kV Reclosers	Date:	13-Apr-2012

Contract Basis

Lump Sum	<input type="checkbox"/>	Unit Rates	<input type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>
<u>Remarks:</u>			

Work Excluded:

The following works or activities are excluded:

Description	Package No.
For reclosers: Placement on concrete foundation and erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO
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Determination of Equipment Criticality based on GP-5600-PR-02-E

High Significant	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Moderate	<input type="checkbox"/>	Negligible	<input type="checkbox"/>

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0009

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of the recloser foundations (concrete pads) and works excluded, as outlined above.

Specific Site Conditions

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0529	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Reclosers	Revision No.:	01
(short):	25 kV Reclosers	Date:	13-Apr-2012

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag #s. Muskrat Falls Construction Power Substation.
- 25 kV Reclosers: L1-R1, L2-R1 and L3-R1.

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0530	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV and 25 kV Surge Arresters	Revision No.:	01
(short):	138 kV and 25 kV Surge Arresters	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary

Package includes:

- Engineering design, manufacture, testing, supply and delivery of 138 kV and 25 kV surge arresters for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
138 kV surge arresters: MCOV=98 kV; Ur=120 kV; 650 kV BIL; 0 kA; 7 kJ/kV; station class with galvanized steel structures and discharge counter.	6
25 kV surge arresters: MCOV=19.5 kV; Ur=24 kV; 150 kV BIL; 10 kA; 7 kJ/kV; station class, with discharge counter	27

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0530	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV and 25 kV Surge Arresters	Revision No.:	01
(short):	138 kV and 25 kV Surge Arresters	Date:	13-Apr-2012

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Foundations and Erection.	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO											
Determination of Equipment Criticality based on GP-5600-PR-02-E High <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Significant <input type="checkbox"/> Negligible <input type="checkbox"/> Moderate <input type="checkbox"/>														
Determination of Quality Surveillance level based on GP-5600-PR-03-E <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">4</td> <td>Continuous in process quality monitoring and verification and final verification.</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Regular in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Limited in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td style="text-align: center;">x 1</td> <td>Final Quality Verification</td> </tr> <tr> <td style="text-align: center;">0</td> <td>No quality surveillance, no quality verification</td> </tr> </table>					4	Continuous in process quality monitoring and verification and final verification.	3	Regular in process quality monitoring and verification and final quality verification.	2	Limited in process quality monitoring and verification and final quality verification.	x 1	Final Quality Verification	0	No quality surveillance, no quality verification
4	Continuous in process quality monitoring and verification and final verification.													
3	Regular in process quality monitoring and verification and final quality verification.													
2	Limited in process quality monitoring and verification and final quality verification.													
x 1	Final Quality Verification													
0	No quality surveillance, no quality verification													

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0008

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of foundations and works excluded, as outlined above.

Specific Site Conditions

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0530	Type:	P-Purchase Order
Titles (long):	Supply of 138 kV and 25 kV Surge Arresters	Revision No.:	01
(short):	138 kV and 25 kV Surge Arresters	Date:	13-Apr-2012

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag #s. Muskrat Falls Construction Power Substation.
- SAL1301-1 to 6 inclusive for 138 kV class
- SA25-1 to 27 inclusive for 25 kV class

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0531	Type:	P-Purchase Order
Titles (long):	Supply of MV Instrument Transformer	Revision No.:	01
(short):	MV Instrument Transformer	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ashok Vyas
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary

Package includes:

- Engineering design, manufacture, testing, supply and delivery of a medium voltage (MV) instrument transformer (combined CT and PT units) for construction power delivery to Muskrat Falls; for new Muskrat Falls construction power substation.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
25 kV voltage transformers: 16100:115-67; 150 kV BIL; 60 Hz; accuracy of 0.6wxyz (winding 1) and 0.3wxyz (winding 2); 1 phase; outdoor installation.	3
25 kV current transformers: ratio of 600/5 A; 27 kV; 150 kv BIL; 60 Hz; single core; outdoor installation.	12

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0531	Type:	P-Purchase Order
Titles (long):	Supply of MV Instrument Transformer	Revision No.:	01
(short):	MV Instrument Transformer	Date:	13-Apr-2012

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Foundations and Erection.	CD0512

Quality

Requires Determination of the Equipment Quality Rating		YES	x	NO
Determination of Equipment Criticality based on GP-5600-PR-02-E				
High Significant	<input type="checkbox"/>	Minor Negligible	<input checked="" type="checkbox"/>	
Moderate	<input type="checkbox"/>			
Determination of Quality Surveillance level based on GP-5600-PR-03-E				
<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.		
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.		
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.		
x	1	Final Quality Verification		
<input type="checkbox"/>	0	No quality surveillance, no quality verification		

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0007

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of foundations and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0531	Type:	P-Purchase Order
Titles (long):	Supply of MV Instrument Transformer	Revision No.:	01
(short):	MV Instrument Transformer	Date:	13-Apr-2012

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag #s. Muskrat Falls Construction Power Substation.
- CT-1 to 12 inclusive.
- VT-B2-1 to 3 inclusive.

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS Pad (Muskrat Falls)	TBD
Installation Complete (Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0533	Type:	P- Purchase Order
Titles	(long): Supply and Install Early Works Telecom Devices	Revision No.:	01
	(short): Early Works Telecom Devices	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	William Diaz	Package Engineer:	Claude-Olivier Pitt
	QA / QC:	Ken Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of work Summary

Supply and install the telecommunication devices for the Lower Churchill Project for the Early Works Construction Phase and the Starter Camp Phase at Muskrat Falls and surrounding areas.

Work Included:

Land Mobile Radio Service devices (Portables and Mobile) for the Lower Churchill Project at Muskrat Falls for the Early Works Construction Phase and the Starter Camp Phase

=> The supply/renting of the SLI and NALCOR radio devices

- Portable: Motorola XPR 6550 or equivalent
 - Whip antenna
 - Leather case with swivel belt clip
 - Noise Cancelling Remote Speaker Microphone
 - High capacity batteries
 - Impres intelligent single charger
 - Car charger
 - Impres intelligent multi unit charger
- Mobile: Motorola XPR 4550 or equivalent
 - Installation of vehicles/mobile radio kits
 - Each kit contains:
 - Roof mounted antenna
 - Cables and connectors
 - Mounting brackets and clamps
 - 24 to 12 volts, 12A converter when required
 - Remote mountable control heads when required

Cellular network data and voice devices for the Lower Churchill Project at Muskrat Falls for the Early Construction Work Phase

=> The supply of the SLI and NALCOR data and voice devices

- Voice devices: Motorola M800 Bag Phone and accessories
 - Car roof mounted antenna
- Data devices: Netgear MBR1210 Turbo Hub with and accessories
 - Car roof mounted antenna or Yagi roof/pole mounted antenna
 - Car inverter (battery voltage to 120Vac)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0533	Type:	P- Purchase Order
Titles	(long): Supply and Install Early Works Telecom Devices	Revision No.:	01
	(short): Early Works Telecom Devices	Date:	13-Apr-2012

Notes:

1. It shall be possible for the contractors and subcontractors work on the Lower Churchill Project to use the same contract (terms and conditions) for the supply/rental and the installation of the LMRS and cellular devices.

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
Radio devices (only for the Early Works Construction Phase)	
Portable device and accessories	40
Mobile device and accessories	30
Mobile hardware (vehicle)	30
Installation (vehicle)	30
Cellular devices (only for the Early Works Construction Phase)	
Bag Kit	29
Bag kit external antenna	29
Turbo hub	12
Turbo hub external antenna	12
Turbo hub inverter	12

Work Excluded:

The following works or activities are excluded from package CD0533:

Description	Package No.
Providing the SLI, NALCOR and contractors' LMRS and cellular services.	SD0560
The supply of the contractors' radio and cellular devices.	Contractors

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0533	Type:	P- Purchase Order
Titles (long):	Supply and Install Early Works Telecom Devices	Revision No.:	01
(short):	Early Works Telecom Devices	Date:	13-Apr-2012

Contract Basis

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Unit Price

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO
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Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
x	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Design Basis 505573-480A-47ER-0015 as formulated for the Lower Churchill Project.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0533	Type:	P- Purchase Order
Titles (long):	Supply and Install Early Works Telecom Devices	Revision No.:	01
(short):	Early Works Telecom Devices	Date:	13-Apr-2012

Interface with Other Packages	Early Works Construction Phase Contract for Telecommunication services SD0560: it will be required to test the devices (LMRS portables and mobiles and CTS and MIS devices) by package SD0560.		SD0560
Specific Site Conditions			
Specific Schedule Conditions	LMRS mobile devices installation in the vehicles must be done after the construction vehicles are bought.		
Specific Environment Conditions			
Specific Safety Conditions			
Special Requirements (All)			
Equipment List	Not Applicable		
Schedule and Milestones	EOI Date:	TBD	
	RFP Date:	TBD	
	Award Date:	TBD	
	Receive Initial Vendor Drawings:	TBD	
	Forecast at Site:	TBD	
	Construction Complete:	TBD	
	Dates for milestones will be updated once the Project baseline schedule is in place.		
Budget	TBD		

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0533	Type:	P- Purchase Order
Titles (long):	Supply and Install Early Works Telecom Devices	Revision No.:	01
(short):	Early Works Telecom Devices	Date:	13-Apr-2012

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0537	Type:	P-Purchase Order
Titles	(long): Supply Power Transformers, AC Substations at CF, MF and SP	Revision No.:	01
	(short): Power Transformers, AC Substations at CF, MF and SP	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer:	Ovidio Juan Ascencio
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Shauna Crosbie

Scope of Work Summary

Package includes:

Supply of the following power transformers:

- Churchill Falls: two (2) autotransformers rated 735-315-13.8 kV; 500/667/833 MVA, ONAN/ONAF/ONAF. Units will be single phase.
- Muskrat Falls: two (2) autotransformers rated 315-138-25 kV; 75/100/125 MVA, ONAN/ONAF/ONAF.
- Soldiers Pond: three (3) power transformers (for synchronous condensers) rated 230-13.8-25 kV, 112.5/150 MVA, ONAN/ONAF.
- Work covers the complete requirements for the design engineering; fabrication; factory acceptance testing; transport and delivery to site (fob concrete pad); supervision of installation, testing, commissioning; spare parts; warranty and performance guarantees; operations and maintenance manual; all Supplier Document Requirements; and insulating oil.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and Expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing witnessed by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0537	Type:	P-Purchase Order
Titles (long):	Supply Power Transformers, AC Substations at CF, MF and SP	Revision No.:	01
(short):	Power Transformers, AC Substations at CF, MF and SP	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
<u>Power Transformers</u>	
Churchill Falls - Single Phase 168/224/280MVA 735/√3/315/√3KV	6
Muskrat Falls - Three Phase 75/100/125 MVA 315/138/25 KV	2
Soldiers Pond - Three Phase 112/150 MVA 15/25/230 KV	3

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable
Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
The first filling of oil; oil handling; and provision of pumping/filtering equipment. PD0537 does supervision only.	CD0502
The dressing of the transformers, e.g. installation of bushings, lightning arresters; relays. PD0537 does supervision only.	CD0502
The supply and installation of all power and control cables.	CD0502
The interconnection to the aerial conductors.	CD0502
Labour and tools to assist in the testing, calibration and operation of power transformers controls and relaying.	CD0502
Labour and tools for energization. PD0537 to witness.	CD0502

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO	
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0537	Type:	P-Purchase Order
Titles (long):	Supply Power Transformers, AC Substations at CF, MF and SP	Revision No.:	01
(short):	Power Transformers, AC Substations at CF, MF and SP	Date:	13-Apr-2012

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Technical Report 505573-480B-47ER-0001
- Single Line diagram 505573-480B-47DD-0063 PB
- Specification of power transformers (TBD)

Interface with Other Packages

Construction Contract CD0502 will provide all labour, tools and equipment for preparation of the transformer foundations (concrete pads) and works excluded as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Specific Environment Conditions

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0537	Type:	P-Purchase Order
Titles (long):	Supply Power Transformers, AC Substations at CF, MF and SP	Revision No.:	01
(short):	Power Transformers, AC Substations at CF, MF and SP	Date:	13-Apr-2012

Equipment List

- TBD

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery FOB Pad (Churchill Falls)	TBD
Delivery FOB Pad (Muskrat Falls)	TBD
Delivery FOB Pad (Soldiers Pond)	TBD
Installation Complete (Churchill Falls)	TBD
Installation Complete (Muskrat Falls)	TBD
Installation Complete (Soldiers Pond)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0561	Type:	P-Purchase Order
Titles (long):	Supply D20 RTU & Cabinet (CF) -Construction Power	Revision No.:	01
(short):	D20 RTU & Cabinet (CF) -Construction Power	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer: Ricardo Quijada
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer: Shauna Crosbie

Scope of Work Summary

This package is part of the extension of the Churchill Falls 230-138 kV AC substation required for the construction power delivery to Muskrat Falls.

Package includes:

- Engineering design, manufacturing, testing, supply and delivery of a remote terminal unit (RTU) and cabinet to Churchill Falls.
- Unit to be delivered to site with D20 gateway configured.
- Cabinet to be designed to house the D20 and related devices as specified.

Work Included:

- Design review acceptance.
- Quality, Surveillance and Inspection and expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).
- On-site testing and commissioning by the supplier.

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
D20 RTU and cabinet .	1

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0561	Type:	P-Purchase Order
Titles (long):	Supply D20 RTU & Cabinet (CF) -Construction Power	Revision No.:	01
(short):	D20 RTU & Cabinet (CF) -Construction Power	Date:	13-Apr-2012

Contract Basis

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Installation.	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO															
Determination of Equipment Criticality based on GP-5600-PR-02-E High <input type="checkbox"/> Minor <input checked="" type="checkbox"/> Significant <input type="checkbox"/> Negligible <input type="checkbox"/> Moderate <input type="checkbox"/>																		
Determination of Quality Surveillance level based on GP-5600-PR-03-E <table border="1"> <tr> <td><input type="checkbox"/></td> <td>4</td> <td>Continuous in process quality monitoring and verification and final verification.</td> </tr> <tr> <td><input type="checkbox"/></td> <td>3</td> <td>Regular in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td><input type="checkbox"/></td> <td>2</td> <td>Limited in process quality monitoring and verification and final quality verification.</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>1</td> <td>Final Quality Verification</td> </tr> <tr> <td><input type="checkbox"/></td> <td>0</td> <td>No quality surveillance, no quality verification</td> </tr> </table>				<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.	<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.	<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.	<input checked="" type="checkbox"/>	1	Final Quality Verification	<input type="checkbox"/>	0	No quality surveillance, no quality verification
<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.																
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.																
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.																
<input checked="" type="checkbox"/>	1	Final Quality Verification																
<input type="checkbox"/>	0	No quality surveillance, no quality verification																

Reference Section

The following documents are used to define the scope:

- Engineering specifications defining the RTU and associated cabinet requirements.

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of foundations and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0561	Type:	P-Purchase Order
Titles (long):	Supply D20 RTU & Cabinet (CF) -Construction Power	Revision No.:	01
(short):	D20 RTU & Cabinet (CF) -Construction Power	Date:	13-Apr-2012

Specific Environment Conditions	Units shall be rated for +40, -40 degrees Celsius ambient temperature range.		
Specific Safety Conditions	Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.		
Special Requirements (All)			
Equipment List	<ul style="list-style-type: none"> Tag #s. For Churchill Falls 230-138 kV ac substation extension for Muskrat Falls Construction Power. Tag # TBD 		
Schedule and Milestones	Item	Date	
	RFP	TBD	
	Delivery ROS (Churchill Falls)	TBD	
	In-service (Churchill Falls)	TBD	
Budget	TBD		
Applicable Sub-Project/SPV	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input type="checkbox"/>
	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General <input type="checkbox"/>
IBA Package	YES	<input type="checkbox"/>	NO <input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0562	Type:	P-Purchase Order
Titles (long):	Supply of Protection Front Panels and Protection Relays (CF) – Construction Power	Revision No.:	01
(short):	Protection Front Panels (CF)	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer: Ricardo Quijada
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:: Shauna Crosbie

Scope of Work Summary

This package is part of the extension of the Churchill Falls 230-138 kV AC substation required for the construction power delivery to Muskrat Falls.

Package includes:

- Manufacturing, testing, supply and delivery of two (2) Protection Front Panels.
- Manufacturing, testing, supply and delivery of protection relays, self trip relays, lock out relays, test switches, control switches and miscellaneous wire, fuses, terminal, etc. These materials are to be mounted in the Protection Front Panels.
- Two new Protection Panels will be installed in Churchill Falls 230-138 kV relay building replacing two existing empty panels.

Work Included:

- Product review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and expediting coordination between Consultant/Company and Supplier.
- Submission by Supplier of all Document Requirements on a timely basis.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier.

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
• Schweitzer SEL-387 protection relay	1
• Schweitzer SEL-551 protection relays	2
• Schweitzer SEL-321 protection relay	1
• Schweitzer SEL-351A protection relay	1
• Protection Front Panel with auxiliary devices (auxiliary relays, switches, fuses, wiring, etc.)	2

Contract Basis

Lump Sum Unit Rates

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0562	Type:	P-Purchase Order
Titles (long):	Supply of Protection Front Panels and Protection Relays (CF) – Construction Power	Revision No.:	01
(short):	Protection Front Panels (CF)	Date:	13-Apr-2012

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Installation and commissioning.	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NOT	
--	-----	---	-----	--

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
<input checked="" type="checkbox"/>	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Engineering Specifications defining each particular part and relay.

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for installation and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

Units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0562	Type:	P-Purchase Order
Titles (long):	Supply of Protection Front Panels and Protection Relays (CF) – Construction Power	Revision No.:	01
(short):	Protection Front Panels (CF)	Date:	13-Apr-2012

Specific Safety Conditions	Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.								
Special Requirements (All)									
Equipment List	<ul style="list-style-type: none"> Tag #s. For Churchill Falls 230-138 kV ac substation extension for Muskrat Falls Construction Power. Tag # TBD 								
Schedule and Milestones	<table border="0"> <thead> <tr> <th style="text-align: left;">Item</th> <th style="text-align: left;">Date</th> </tr> </thead> <tbody> <tr> <td>Issue RFP all items</td> <td>TBD</td> </tr> <tr> <td>Delivery ROS (Churchill Falls)</td> <td>TBD</td> </tr> <tr> <td>Installation Complete (Churchill Falls)</td> <td>TBD</td> </tr> </tbody> </table>	Item	Date	Issue RFP all items	TBD	Delivery ROS (Churchill Falls)	TBD	Installation Complete (Churchill Falls)	TBD
Item	Date								
Issue RFP all items	TBD								
Delivery ROS (Churchill Falls)	TBD								
Installation Complete (Churchill Falls)	TBD								
Budget	TBD								
Applicable Sub-Project/SPV	<table border="0"> <tr> <td>Muskrat Falls Generation</td> <td><input checked="" type="checkbox"/></td> <td>Labrador – Island Transmission Link</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>						
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>						
IBA Package	<table border="0"> <tr> <td>YES</td> <td><input type="checkbox"/></td> <td>NO</td> <td><input type="checkbox"/></td> </tr> </table>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>				
YES	<input type="checkbox"/>	NO	<input type="checkbox"/>						

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0563	Type:	P-Purchase Order
Titles	(long): Supply 138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs - Construction Power	Revision No.:	01
	(short): 138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Fred Wilcox	Package Engineer: Ashok Vyas
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer: Shauna Crosbie

Scope of Work Summary

Package includes:

- Engineering design, manufacturing, testing, supply and delivery of one 138 kV circuit switcher for extension of Churchill Falls 230-138 kV ac substation and 9 nos. Bypass switches & 3 nos. fuse cutouts for construction power delivery to Muskrat Falls;
- Unit will be rated at 138 kV, 1200 A; 650 kV BIL; 40 kA for 1 second; complete with galvanized support structure and recommended spare parts.
- Bypass switches to be 25 kV, 600 A, 150 kV BIL, 12.5 kA for 1 second; to include outdoor vertical mounting on steel structure; SMD-40 fuse switch with 90 degree fuse opening; and 2 pole load buster disconnects (vertical).
- Fused cut-outs to be 27 kV rated, 100A, 150 kV BIL, 12.0 kA for 1 second; for single pole outdoor installation. Fused cut-outs to be used for station service transformer arrangement.
- Fuse handling tool of 15 foot length suitable for SMD-40 fuses switch.

Work Included:

- Design review acceptance by Consultant/Company.
- Quality, Surveillance and Inspection and expediting coordination between Consultant/Company and Supplier.
- Agreement of schedule milestones with Supplier.
- Approval of inspection and test plan by Consultant/Company.
- Submission by Supplier of all Document Requirements on a timely basis.
- Factory acceptance testing (type test review) by Consultant/Company.
- Review of transportation logistics and coordination of site delivery with Supplier (and its Sub-Contractors).
- Progress reporting by Supplier on a monthly basis (or ad hoc basis, if required).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0563	Type:	P-Purchase Order
Titles (long):	Supply 138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs - Construction Power	Revision No.:	01
(short):	138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

Description	Estimated Quantity (Gate 3 Estimate)
138 kV circuit switcher	1
Bypass Switches for Reclosers	9
Fused Cut-outs	3
Fuse Handling Tool	1

Contract Basis

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded:

Description	Package No.
Foundations and Erection. For bypass switches and fused cut-outs; Erection for energization	CD0512

Quality

Requires Determination of the Equipment Quality Rating	YES	x	NO
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Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input checked="" type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification.
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification.
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification.
x	1	Final Quality Verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section

The following main documents are used to define the scope:

- Specification 505573-313A-47ES-0024

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PD0563	Type:	P-Purchase Order
Titles (long):	Supply 138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs - Construction Power	Revision No.:	01
(short):	138 kV Circuit Switcher (CF), MV Switches & Fuse Cut-outs	Date:	13-Apr-2012

Interface with Other Packages

Construction Contract CD0512 will provide all labour, tools and equipment for preparation of foundations and works excluded, as outlined above.

Specific Site Conditions

Specific Schedule Conditions

Energization of all units is dependent upon a coordinated power outage to the existing supply line (TL240). The timely delivery of the units and progress of CD0512 contract are crucial to a scheduled outage window ahead of winter conditions when an outage becomes unfavourable.

Specific Environment Conditions

As noted, units shall be rated for +40, -40 degrees Celsius ambient temperature range.

Specific Safety Conditions

Working around energized equipment; respecting limits of approach; deployment of safety watches, when applicable.

Special Requirements (All)

Equipment List

- Tag #s. For Churchill Falls 230-138 kV ac substation extension for Muskrat Falls Construction Power. Tag # TBD

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Delivery ROS (Churchill Falls & Muskrat Falls)	TBD
Installation Complete (Churchill Falls & Muskrat Falls)	TBD

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SD0536	Type:	S-Service Contract
Titles (long):	Provision of Integrated Commissioning Support Services	Revision No.:	01
(short):	Integrated Commissioning Support Services	Date:	13-Apr-2012

Discipline:			
Responsibilities:	Area Manager: Fred Wilcox(interim)	Package Engineer:	TBD
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	TBD

Scope of Work Summary

Package includes:

- Provision of specialized technical personnel services and instruments for electromechanical equipment testing and commissioning. Acceptance of personnel for this contract and commissioning reports on a specified basis.

Work Included:

- Pre-commissioning tests of substations electromechanical equipment at CF, MF and Soldiers Ponds once CD0502 mechanical completion is reached
- Pre-commissioning tests of Pond Electrode electromechanical equipment at L'anse au Diable and Dowden's Point once CD0508 mechanical completion is reached
- Pre-commissioning of electromechanical equipment related to System Upgrades in Western Avalon, Holyrood, Oxen Pond and Hardwoods and possibly in Happy Valley/Goose Bay,
- Pre-commissioning of electromechanical equipment of MF Hydro Plant not covered by CH0030
- Support for Energization and Commissioning test of the Island Link
- Pre-commissioning and commissioning reports
- Interface and coordination with other EPC Contractors commissioning crews
- On-site management of pre-commissioning and commissioning staff

Approximate Quantities (only major items are included)

Description	Estimated Quantity
<ul style="list-style-type: none"> • Pre-commissioning of equipment: 	number of tests based on quantity of equipment
<ul style="list-style-type: none"> • Commissioning and energization 	staff requirements based on MFL and time schedule

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SD0536	Type:	S-Service Contract
Titles (long):	Provision of Integrated Commissioning Support Services	Revision No.:	01
(short):	Integrated Commissioning Support Services	Date:	13-Apr-2012

Contract Basis	Lump Sum <input type="checkbox"/>	Unit Rates <input checked="" type="checkbox"/>
	Combination Lump Sum – Unit Rates <input type="checkbox"/>	Cost Reimbursable <input type="checkbox"/>
	<u>Remarks:</u>	
	Pre-commissioning tests: based on unit rate per type of equipment Commissioning; based on unit rate per day or month of personnel.	
Work Excluded:	The following works or activities are excluded:	
	Description	Package No.
	Services included with turnkey packages	CD0501 CD0508 CD0534 CH0030
	All works related to Construction Power and telecom	
Quality	Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.	
Reference Section	The following main documents are used to define the scope:	
	<ul style="list-style-type: none"> Substations Single line diagrams and list of equipment Commissioning time schedule 	
Interface with Other Packages	<ul style="list-style-type: none"> As referenced in Work Excluded Interface with CFLCo. for CF extension and NL Hydro in SP and upgraded substations 	
Specific Site Conditions	Tests in existing facilities with energized conditions where outage must be scheduled and supervised by CFLCo. and NL Hydro	
Specific Schedule Conditions	<ul style="list-style-type: none"> Energization First reduced level power transfer on the Island Link Integration of MF T/G unit <p>Full power transfer of Island Link to program depending on network dispatcher</p>	
Specific Environment Conditions	<ul style="list-style-type: none"> Outdoor for yard equipment in winter and spring time Indoor for equipment in buildings 	
Specific Safety Conditions	<ul style="list-style-type: none"> Pre-commissioning: Works in energised installation in CF, SP (Western Avalon, Holyrood, Oxen Pond and Hardwoods) and HV/GB. 	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SD0536	Type:	S-Service Contract
Titles (long):	Provision of Integrated Commissioning Support Services	Revision No.:	01
(short):	Integrated Commissioning Support Services	Date:	13-Apr-2012

Special Requirements (All)

- Responsiveness of Contractor to be based on competencies and availability of proposed personnel as well as previous project references, proposed test plan and protocols and compliance with time schedule

Equipment List

Bidders to submit their instrument list to perform the tests

Schedule and Milestones

Item	Date
Issue RFQ	TBD
Award	TBD
Mobilize	TBD
Initialization	TBD
Completion	TBD

Budget

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input checked="" type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SD0560	Type:	S- Service Contract
Titles (long):	Provision of Early Works Telecommunication Services (MF)	Revision No.:	01
(short):	Early Works Tele. Services (MF)	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager:	William Diaz	Package Engineer:	Claude-Olivier Pitt
	QA / QC:	Ken Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of work Summary

Deploy, provide and optimize the telecommunication services for the Lower Churchill Project for the Early Works Construction Phase and the Starter Camp Phase at Muskrat Falls and surrounding areas.

Work Included:

Land Mobile Radio Service for the portable and mobile devices for the Lower Churchill project at Muskrat Falls construction and surrounding areas during the Early Construction Work Phase and the Starter Camp Phase

- Deploy the service
 - Reinforce the infrastructure
- Optimize the service
- Provide the service for SLI and NALCOR
 - Configuration of the radio devices, if needed

Data and voice services on the cellular network for the Lower Churchill project at Muskrat Falls construction and surrounding areas for the Early Construction Work Phase and the Starter Camp Phase

- Optimize the service
- Provide the service for SLI and NALCOR
 - Configuration of the devices, if needed

Note:

It should be possible for the contractors to use the same agreement for providing the LMRS service.

Telecommunication services for the Lower Churchill project at Muskrat Falls and Happy Valley – Goose Bay for the Starter Camp Phase

- Internet access at Muskrat Falls
- Public Switch Telephone Network access at Muskrat Falls
- Satellite Television service at Muskrat Falls
- An Internet connection at SNC-Lavalin Inc. Happy Valley – Goose Bay office
- Public Switch Telephone Network access at SNC-Lavalin Inc. Happy Valley – Goose Bay office

Telecommunication infrastructure for the Lower Churchill project at Muskrat Falls and Happy Valley – Goose Bay for the Starter Camp Phase

- A telecommunication link between the Happy Valley – Goose Bay Telecommunication Service Provider and the Muskrat Falls Starter Camp site as required to provision Internet and Public Switch Telephone Network services
- Router(s), firewall(s) and switch(es) to provision Internet access at Muskrat Falls
- Equipment(s) to provision Public Switch Telephone Network access at Muskrat Falls
- Satellite dish(es) and receiver(s) to provision Satellite Television service at Muskrat Falls

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SD0560	Type:	S- Service Contract
Titles (long):	Provision of Early Works Telecommunication Services (MF)	Revision No.:	01
(short):	Early Works Tele. Services (MF)	Date:	13-Apr-2012

Approximate Quantities (only major items are included)

Description	Estimated Quantity
LMRS services (only for the Early Works Construction Phase)	
Portable service	40
Mobile service	30
LMRS infrastructure upgrade	1
Cellular services (only for the Early Works Construction Phase)	
Phone	29
Turbo Hub	12

Contract Basis

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

Service Agreement

The following works or activities are excluded from package SD0560:

Description	Package No.
Providing the SLI and NALCOR LMRS and cellular devices.	PD0533
The supply of the contractors' radio and cellular services.	Contractors
Providing the contractors' LMRS and cellular devices.	Contractors

Quality

Contractor shall comply with Quality Requirement Specification number 505573-0000-38RA-0003.

Reference Section

The following main documents are used to define the scope:

- Design Basis 505573-480A-47ER-0015 as formulated for the Lower Churchill Project.

Interface with Other Packages

- Early Works Construction Phase Contract for Telecommunication devices PD0533: devices (LMRS portables and mobiles and CTS and MIS) will be required to test the radio services.
- Provision of Happy Valley – Goose Bay Project Office Space SM0703: The office will be required to install the telecommunication services.
- Supply and Install Accommodation Complex Buildings: The Starter Camp will be required to install the telecommunication services and infrastructure.

Specific Site Conditions

Specific Schedule Conditions

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SD0560	Type:	S- Service Contract
Titles (long):	Provision of Early Works Telecommunication Services (MF)	Revision No.:	01
(short):	Early Works Tele. Services (MF)	Date:	13-Apr-2012

Specific Environment Conditions

Specific Safety Conditions

Special Requirements (All)

Equipment List

Schedule and Milestones

Budget

Applicable Sub-Project/SPV

IBA Package

	Not Applicable	
	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete: TBD	Dates for milestones will be updated once the Project baseline schedule is in place.
	TBD	
	Muskrat Falls Generation <input type="checkbox"/> Labrador – Island Transmission Link <input checked="" type="checkbox"/>	
	Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/>	
	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>	

LCP
PACKAGES DICTIONARIES –
COMPONENT 4

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CT0319	Type:	C- Contract
Titles	(long): Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.:	01
	(short): Construction of HVac TL	Date:	13-Apr-2012
Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Hamidreza Bakhshi
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary:

This contract package includes the construction work for approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

The scope of work will be divided into two contracts with sections of approximately 125 km each (considering two circuits per 125 km section). The first contract will also include the 735 kV interconnection lines and the second contract will include the 315 kV interconnection lines. The scope is structured so bidders may bid on either contract individually or both contracts.

Work Included:

The two main 315 kV transmission lines will generally be running in parallel to the existing 138 kV (TL240) wood pole H-Frame transmission line between the existing Churchill Falls Substation and Happy Valley-Goose Bay. Transmission lines will typically employ guyed-Y tangent, light angle, self-supporting heavy angle and strain lattice structures, with horizontal phase configuration and two peaks for shielding. The new transmission lines will be built on a total right-of-way (ROW) width of 100 m adjacent to the 20 m wide ROW of the existing 138 kV transmission line. Each transmission line will employ an overhead shield wire (OHSW) on one peak and an optical ground wire (OPGW) on the other, along the entire length of the line. Furthermore, counterpoise conductor will be used to connect all the structures along the entire length of the line. Phase conductor is twin bundle 795 kcmil 26/7 aluminum conductor, steel reinforced (ACSR) Drake and OHSW conductor is 12.7 mm (½”) Grade 220 Steel wire. OPGW will be of similar mechanical characteristics to that of OHSW. The construction work includes:

- Mobilization, construction of the Contractor’s own lay down areas and accommodation camp, including all associated permits for the installation and operation of the lay down area and camp;
- All telecom requirements needed by the Contractor and telecom connections for the Owner will be the Contractor’s responsibility and must meet all regulatory requirements;
- Material handling from the marshalling yard to the Contractor’s lay down areas;
- Enhancement of access previously created by the clearing contractor, as required for lines construction, as per the requirements of the Owner supplied permits;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0319	Type:	C- Contract
Titles	(long): Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.:	01
	(short): Construction of HVac TL	Date:	13-Apr-2012

- Supply and installation of temporary bridges, culverts, etc. that are necessary for construction purposes, as per the requirements of the owner supplied permits;
 - Staking of tower locations;
 - Installation of foundations for the lattice steel towers. The towers will be guyed (suspension) and self-supporting structures (dead-ends). The contractor will be responsible for supplying HP piles and concrete caps;
 - Assembly and erection of lattice steel towers;
 - Installation of insulators, guy wires, structure grounding systems and all associated assembly hardware;
 - Installation of counterpoise conductor along the lines. Grounding rods will be used for obstacle avoidance (rivers, road, etc.);
 - Stringing and sagging of phase conductors, OHSW and OPGW complete with spacer dampers and dampers;
 - Pre-commissioning;
 - Meeting all environmental requirements;
 - Inspection, site cleanup and mark-up of as-built drawings at the end of construction;
 - The Contractor is to restore any damage caused to any property to the satisfaction of the Engineer; and
 - Demobilization.
- There will be five types of towers used for the construction of the HVac lines (approximately 10,000 metric tonnes of steel) and the associated total estimated quantities are:
- 1,042 Type A, Tangent Tower (0° to 1°), Guyed-Y Design;
 - 66 Type B, Light Angle Tower (0° to 8°), Guyed-Y Design;
 - 68 Type C, Angle Dead-End - Strain (0° to 30°), Self-Supporting Towers;
 - 84 Type D, Angle Dead-End - Strain (0° to 45°), Self-Supporting Towers; and
 - 16 Type E, Angle Dead-End - Strain (45° to 90°), Self-Supporting Towers.
- There will be five types of foundations used for the construction of the HVac lines (approximately 1,960 tonnes of steel) and the associated total estimated quantities are:
- 320 Type 1: 250 kPa Steel Grillage;
 - 150 Type 2: 100 kPa Steel Grillage;
 - 680 Type 3: Steel Foundation Anchored to Bedrock;
 - 78 Type 4: Driven Pile Foundation;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0319	Type:	C- Contract
Titles (long):	Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.:	01
(short):	Construction of HVac TL	Date:	13-Apr-2012

- 48 Type 5: Bog Foundation;
- Quantity and Type of Foundation for 735 kV Interconnection Lines To Be Determined; and
- Quantity and Type of Foundation for 315 kV Interconnection Lines To Be Determined.

There will be two types of conductors used for the construction of the HVac lines and the associated total estimated quantities are:

- 3,083 km of 795 kcmil 26/7 ACSR Drake; and
- 15 km of 954 kcmil 54/7 Strands Cardinal ACSR.

There will be two types of OPGW used for the construction of the HVac lines and the associated total estimated quantities are:

- 550.2 km of 12.7 mm (½”) Galvanized (Class B) Stranded Steel Wire, Grade 220; and
- 1.2 km of 14.3 mm (9/16”) Galvanized (Class B) Stranded Steel Wire, Grade 220.

There will be two types of OHSW used for the construction of the HVac lines and the associated total estimated quantities are:

- 504 km of 12.7 mm (½”) Galvanized (Class B) Stranded Steel Wire, Grade 220; and
- 1.2 km of 14.3 mm (9/16”) Galvanized (Class B) Stranded Steel Wire, Grade 220.

Materials will be free-issued by Nalcor at designated marshalling yards. The Contractor is responsible for material transport from the marshalling yard to the work site. The Contractor is responsible for providing all labour, supervision, equipment and construction consumables required to construct the lines, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type 4, Driven Pile Foundation	each	78
2	Type 5: Bog Foundation	each	48
3	Remaining Items		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0319	Type:	C- Contract
Titles (long):	Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.:	01
(short):	Construction of HVac TL	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Clearing of Right-of-Way for 315 kV HVac Transmission Lines (MF to CF)	CT0341
Supply of Owner's Telecom and IT Equipment	Not Applicable
Handling of Marshalling Yard	To Be Determined

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Provision of Geotechnical Investigation Services - 315 kV HVac	ST0309
Provision of Survey Services - 315 kV HVac	ST0311
Third Party Quality Surveillance & Inspection Services	SM0701
Supply and Maintenance of Various IT Equipment	SM0710

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

- Any other packages that have to be started before the subject package can proceed:
- CT0341 – Clearing of Right-of-Way for 315 kV HVac Transmission Lines (MF to CF)
 - PT0300 – Supply of Transmission Line Conductors - 315 kV HVac
 - PT0301 – Supply of HVac Insulators - 315 kV HVac
 - PT0302 – Supply of Steel Towers - 315 kV HVac
 - PT0303 – Supply of Tower Hardware - 315 kV HVac
 - PT0304 – Supply of Optical Ground Wire (OPGW) - 315 kV HVac
 - PT0307 – Supply of Steel Tower Foundations - 315 kV HVac
 - PT0326 – Supply of Steel Wires - 315 kV HVac
 - PT0335 – Supply of Anchor Materials - 315 kV HVac
 - ST0309 – Provision of Geotechnical Investigation Services - 315 kV HVac

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: CT0319	Type: C- Contract
Titles (long): Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.: 01
(short): Construction of HVac TL	Date: 13-Apr-2012

Specific Environment Conditions:

<ul style="list-style-type: none"> • ST0311 – Provision of Survey Services - 315 kV HVac <p>Any other packages that cannot proceed before the subject package has started:</p> <ul style="list-style-type: none"> • Not Applicable
<p>The environmental requirements for the Lower Churchill Project are described in the following documents:</p> <ol style="list-style-type: none"> Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01); Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01); Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01); Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01). Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01). Exhibit 6 – Environmental and Regulatory Compliance Requirements Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01). Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01). Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01) <p>Note: Permit requirements are noted in Exhibit 6 (item h above)</p>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0319	Type:	C- Contract
Titles (long):	Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.:	01
(short):	Construction of HVac TL	Date:	13-Apr-2012

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
The supply of transmission line conductors	PT0300
The supply of HVac insulators	PT0301
The supply of steel towers	PT0302
The supply of tower hardware	PT0303
The supply of optical ground wire (OPGW)	PT0304
The supply of steel tower foundations	PT0307
The supply of steel wires	PT0326
The supply of anchor materials	PT0335

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 17-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0319	Type:	C- Contract
Titles (long):	Construction of 315 kV HVac Transmission Line (MF TO CF)	Revision No.:	01
(short):	Construction of HVac TL	Date:	13-Apr-2012

Applicable Sub-Project/SPV:

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input checked="" type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package:

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Construction of HVdc TL – 1	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Hamidreza Bakhshi
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of Work Summary:

This contract package includes the construction work for approximately 610 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to the end of the Long Range Mountains including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes the wood pole electrode line, approximately 20 km, near Lanse au Diable.

The scope of work will be divided into two contracts. The first contract will include approximately 309 km of ±350 kV HVdc transmission line and approximately 309 km of electrode line. The second contract will include approximately 301 km of ±350 kV HVdc transmission line, approximately 76 km of electrode line and approximately 20 km of wood pole electrode line. The scope is structured so bidders may bid on either contract individually or both contracts.

Work Included:

The Labrador section from Muskrat Falls to around Bujault River is approximately 309 km and the section from Bujault River to the end of the Long Range Mountains (LRM) is approximately 301 km. The new transmission line will be built on a total right-of-way (ROW) width of 60 m.

The construction work includes:

- Mobilization, construction of the Contractor's own lay down areas and accommodation camp, including all associated permits for the installation and operation of the lay down area and camp;
- All telecom requirements needed by the Contractor and telecom connections for the Owner will be the Contractor's responsibility and must meet all regulatory requirements;
- Material handling from the marshalling yard to the Contractor's lay down areas;
- Enhancement of access previously created by the clearing contractor, as required for line construction, as per the requirements of the Owner supplied permits;
- Supply and installation of temporary bridges, culverts, etc. that are necessary for construction purposes, as per the requirements of the owner supplied permits;
- Staking of tower locations;
- Installation of foundations for the lattice steel towers. The towers will be guyed (suspension) and self-supporting structures (dead-ends). The contractor will be responsible for supplying HP piles and concrete caps;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Construction of HVdc TL – 1	Date:	13-Apr-2012

- Assembly and erection of lattice steel towers;
- Installation of optical ground wire (OPGW) on a single peak, insulators, guy wires, structure grounding systems and all associated assembly hardware;
- Installation of counterpoise conductor along the line. Grounding rods will be used for obstacle avoidance (rivers, road, etc.);
- Installation and testing of all-dielectric self-supporting (ADSS) on the electrode line;
- Stringing and sagging of the two pole 3640 kcmil 91/0 aluminum stranded conductors (ASC), electrode conductors (1192.5 kcmil 54/19 aluminum conductor, steel reinforced (ACSR) Grackle for 50 mm ice load zone and 1590 kcmil 54/19 ACSR Falcon for Alpine load zone) on the Labrador section and OPGW;
- Installation of the wood pole electrode line. The electrode line comprises of two 1192.5 kcmil 54/19 ACSR Grackle conductors installed on the wood poles;
- Pre-commissioning;
- Meeting all environmental requirements;
- Inspection, site cleanup and mark-up of as-built drawings at the end of construction;
- The Contractor is to restore any damage caused to any property to the satisfaction of the Engineer; and
- Demobilization.

There will be five types of towers used for the construction of the HVdc line (approximately 17,030 tonnes of steel) and the associated total estimated quantities are:

- 1,808 Type A, Tangent Tower (0° to 1°), Guyed-Y Design;
- 47 Type B, Light Angle Tower (0° to 8°), Guyed-Y Design;
- 108 Type C, Angle Dead-End - Strain (0° to 30°), Self-Supporting Towers;
- 80 Type D, Angle Dead-End - Strain (0° to 45°), Self-Supporting Towers; and
- 27 Type E, Angle Dead-End - Strain (45° to 90°), Self-Supporting Towers.

There will be five types of foundations used for the construction of the HVdc line (approximate amount of steel is to be determined) and the associated total estimated quantities are:

- To Be Determined for Type 1: 250 kPa Steel Grillage;
- To Be Determined for Type 2: 100 kPa Steel Grillage;
- To Be Determined for Type 3: Steel Foundation Anchored to Bedrock;
- To Be Determined for Type 4: Driven Pile Foundation;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Construction of HVdc TL – 1	Date:	13-Apr-2012

- To Be Determined for Type 5: Bog Foundation;

There will be four types of conductors used for the construction of the HVdc line and the associated total estimated quantities are:

- 1,279,262 m of 3640 kcmil 91/0 ASC Pole Conductors;
- 350,380 m of 1192.5 kcmil 54/19 ACSR Grackle Electrode Conductor (50 mm Ice Load Zone);
- 104,607 m of 1590 kcmil 54/19 ACSR Falcon Electrode Conductor (135 mm Ice Alpine Load Zone); and
- 70,000 m of 1192.5 kcmil 54/19 ACSR Grackle Electrode Conductor (Wood Pole Electrode Line).

There will be three types of OPGW used for the construction of the HVdc line and the associated total estimated quantities are:

- 420,386 m of 140 kN, 14.5 mm 24 Fibre OPGW (50 mm Ice Zone);
- 106,294 m of 177 kN, 15.5 mm 24 Fibre OPGW (75 mm Ice Zone);
- 119,102 m of 277 kN, 20.6 mm 24 Fibre OPGW (135 mm Ice Alpine Zone);

There will be approximately 20 km of all-dielectric self-supporting (ADSS) fibre optic cable used for the construction of the wood pole electrode line but the exact type is to be determined.

The use of helicopters will likely be required for sections of the LRM and some other locations.

Materials will be free-issued by Nalcor at designated marshalling yards. The Contractor is responsible for material transport from the marshalling yard to the work site. The Contractor is responsible for providing all labour, supervision, equipment and construction consumables required to construct the lines, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type 4, Driven Pile Foundation		To Be Determined
2	Type 5, Bog Foundation		To Be Determined
3	Remaining Items		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Construction of HVdc TL – 1	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Clearing of Right-of-Way for HVdc Transmission Line - Section 1	CT0343
Supply of Owner’s Telecom and IT Equipment	Not Applicable
Handling of Marshalling Yard	To Be Determined

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Provision of Geotechnical Investigation Services - 350 kV HVdc	ST0310
Provision of Survey Services - 350 kV HVdc	ST0312
Supply and Install Converters, Harmonic Filters & Transition Compounds	CD0501
Construction of Electrodes Sites	CD0508
Third Party Quality Surveillance & Inspection Services	SM0701
Provision of Helicopter Services	SM0707
Supply and Maintenance of Various IT Equipment	SM0710

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles (long):	Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
(short):	Construction of HVdc TL – 1	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be complete before the subject package can proceed:

- CT0343 – Clearing of Right-of-Way for HVdc Transmission Line - Section 1
- PT0308 – Supply of Steel Tower Foundation - 350 kV HVdc
- PT0328 – Supply of Transmission Line Conductors - 350 kV HVdc
- PT0329 – Supply of HVdc Insulators - 350 kV HVdc
- PT0330 – Supply of Steel Towers - 350 kV HVdc
- PT0331 – Supply of Tower Hardware - 350 kV HVdc
- PT0334 – Supply of Steel Wires - 350 kV HVdc
- PT0351 – Supply of Wood Poles
- PT0352 – Supply of Anchor Materials - 350 kV HVdc
- PT0353 – Supply of Optical Ground Wire (OPGW) - 350 kV HVdc
- ST0310 – Provision of Geotechnical Investigation Services - 350 kV HVdc
- ST0312 – Provision of Survey Services - 350 kV HVdc
- SM0707 – Provision of Helicopter Services

Any other packages that cannot proceed before the subject package is completed:

- Not Applicable

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- a) Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- b) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Construction of HVdc TL – 1	Date:	13-Apr-2012

- h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
- i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
The supply of conductors	PT0328
The supply of insulators	PT0329
The supply of tower steel	PT0330
The supply of tower hardware	PT0331
The supply of optical ground wire (OPGW)	PT0353
The supply of steel tower foundations	PT0308
The supply of steel wires	PT0334
The supply of wood poles	PT0351
The supply of anchor materials	PT0352

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0327	Type:	C- Contract
Titles (long):	Construction of 350 kV HVdc Transmission Line – Section 1	Revision No.:	01
(short):	Construction of HVdc TL – 1	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	CT0341	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for 315 kV HVac Transmission Line(MF to CF)	Revision No.:	01
(short):	Clearing of ROW HVac TL	Date:	13-Apr-2012
Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary:

This contract package includes the right-of-way clearing for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

The scope of work will be divided into two contracts with sections of approximately 125 km each (considering two circuits per 125 km section). The second contract will also include the 315 kV interconnection lines. The scope is structured so bidders may bid on either contract individually or both contracts.

Work Included:

- The work includes:
- Mobilization and construction of the Contractor's accommodation camp, including all associated permits for the installation and operation of the camp;
 - All telecom requirements needed by the Contractor and telecom connections for the Owner will be the Contractor's responsibility and must meet all regulatory requirements.
 - Preparation and construction of the Contractor's own access roads, corduroy roads, stream crossings, etc., as per the requirements of the Owner supplied permits;
 - Supply and installation of temporary bridges, culverts, etc. that are necessary for right-of-way (ROW) clearing purposes, as per the requirements of the Owner supplied permits;
 - The ROW clearing work will be carried out on a 100 m wide corridor and consists of felling all trees and shrubs higher than 1 m at maturity. Trees and shrubs are cut at a height of 15 cm, measured from the highest level of the soil;
 - Trimming and salvaging of all commercial stems. Those stems are bucked in 2.5 m to 3.5 m logs and piled along and within the ROW;
 - Elimination of branches and cutting residues on the soil (dead trees, non-commercial stems, non-commercial size stems and trimming residue) by chipping or piling;
 - Meeting all environmental requirements;
 - The Contractor is to restore any damage caused to any property to the satisfaction of the Engineer; and
 - Demobilization.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0341	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for 315 kV HVac Transmission Line(MF to CF)	Revision No.:	01
(short):	Clearing of ROW HVac TL	Date:	13-Apr-2012

For Contract 1, there will be an approximate total clearing area of 1,173.5 ha.
 For Contract 2, there will be an approximate total clearing area is 1,172.3 ha.
 Additionally, this contract package includes the ROW clearing for the 315 kV interconnection lines. It is important to note that this part of the contract may be merged with the contract package CH0048 at a later date.
 The Contractor is responsible for providing all labour, supervision, equipment and construction consumables required for clearing, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Clearing for Contract 1	ha	1,173.5
2	Clearing for Contract 2	ha	1,172.3

Contract Basis:

This contract basis is:
 Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Line Construction Work	CT0319
Supply of Owner’s Telecom and IT Equipment	Not Applicable
Permits: Tree Clearing, Fording, Temporary Bridges, Culverts, etc.	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:
 Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Provision of Surveying Services	SM0704

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0341	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for 315 kV HVac Transmission Line(MF to CF)	Revision No.:	01
(short):	Clearing of ROW HVac TL	Date:	13-Apr-2012

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- Exhibit 6 – Environmental and Regulatory Compliance Requirements
- Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0341	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for 315 kV HVac Transmission Line(MF to CF)	Revision No.:	01
(short):	Clearing of ROW HVac TL	Date:	13-Apr-2012

Specific Safety Conditions:	<p>l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)</p> <p>Note: Permit requirements are noted in Exhibit 6 (item h above)</p> <p>The health and safety and security requirements for the Lower Churchill Project are described in the following documents:</p> <ul style="list-style-type: none"> SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00) SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00) SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001) SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11) 				
Special Requirements:	Not Applicable				
Free Issued Materials:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Not Applicable</td> <td>Not Applicable</td> </tr> </tbody> </table>	Description	Package No.	Not Applicable	Not Applicable
Description	Package No.				
Not Applicable	Not Applicable				
Major Equipment List:	Not Applicable				
Schedule and Milestones:	<p style="text-align: right;">EOI Date: 13-Jan-2012</p> <p style="text-align: right;">RFP Date: To Be Determined</p> <p style="text-align: right;">Award Date: To Be Determined</p> <p style="text-align: right;">1st Vendor Data Required by: To Be Determined</p> <p style="text-align: right;">Construction Complete: To Be Determined</p> <p>Dates for milestones will be updated once the Project baseline schedule is in place.</p>				
Budget:	To Be Determined				
Applicable Sub-Project/SPV:	<p>Muskrat Falls Generation <input type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/></p> <p>Labrador Transmission Assets <input checked="" type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/></p>				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0341	Type:	C- Contract
Titles	(long): Clearing of Right-of-Way for 315 kV HVac Transmission Line(MF to CF)	Revision No.:	01
	(short): Clearing of ROW HVac TL	Date:	13-Apr-2012

IBA Package:

Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0342	Type:	C-Contract
Titles (long):	Construction of AC Transmission Lines – Island	Revision No.:	01
(short):	Construction of AC TL – Island	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of Work Summary:

This contract package includes the construction work and right-of-way (ROW) clearing for approximately 15 km of wood pole electrode line, between Soldiers Pond and Dowden’s Point.

Additionally, this contract package includes the construction work for the re-termination of four existing 230 kV HVac transmission lines (TL201, TL217, TL218 and TL242) at the proposed Soldiers Pond Converter Station. Plus, the modification of three existing 230 kV HVac transmission lines (TL201, TL204 and TL 232), two existing 138 kV transmission lines (L301 and L302) and one existing 69 kV transmission line (TL251) located between Hampden and Soldiers Pond.

Work Included:

The construction work includes:

- Mobilization, construction of the Contractor’s own lay down areas and accommodation camp, if required, including all associated permits for the installation and operation of the lay down area and camp;
- All telecom requirements, if required, needed by the Contractor and telecom connections for the Owner, if required, will be the Contractor’s responsibility and must meet all regulatory requirements.
- Material handling from the marshalling yard to the Contractor’s lay down areas;
- Right-of-way (ROW) clearing, as required for line construction, as per the requirements of the Owner supplied permits;
- Supply and installation of temporary bridges, culverts, etc. that are necessary for construction purposes, as per the requirements of the owner supplied permits;
- Staking of tower locations;
- Installation of foundations;
- Assembly and erection of lattice steel towers;
- Installation of insulators, guy wires, structure grounding systems and all associated assembly hardware;
- Installation of counterpoise conductor along the transmission line. Grounding rods will be used for obstacle avoidance (rivers, road, etc.);
- Installation and testing of all-dielectric self-supporting (ADSS);
- Stringing and sagging of conductors (various), electrode conductors (1192.5 kcmil 54/19 aluminum conductor, steel reinforced (ACSR) Grackle) and overhead shield wire (OHSW);
- Pre-commissioning;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0342	Type:	C-Contract
Titles	(long): Construction of AC Transmission Lines – Island	Revision No.:	01
	(short): Construction of AC TL – Island	Date:	13-Apr-2012

- Meeting all environmental requirements;
- Inspection, site cleanup and mark-up of as-built drawings at the end of construction;
- The Contractor is to restore any damage caused to any property to the satisfaction of the Engineer; and
- Demobilization.

There will be will be approximately 15 km of all-dielectric self-supporting (ADSS) fibre optic cable used for the construction of the wood pole electrode line but the exact type is to be determined.

Materials will be free-issued by Nalcor at designated marshalling yards. The Contractor is responsible for material transport from the marshalling yard to the work site. The Contractor is responsible for providing all labour, supervision, equipment and construction consumables required to construct the lines, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	Work In Progress		Work In Progress

Contract Basis:

This contract basis is:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
350 kV HVdc Transmission Line Construction	CT0327 CT0346
350 kV HVdc Right-of-Way (ROW) Clearing	CT0343 CT0345
Supply of Owner’s Telecom and IT Equipment	Not Applicable
Handling of the Marshalling Yard	To Be Determined

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0342	Type:	C-Contract
Titles (long):	Construction of AC Transmission Lines – Island	Revision No.:	01
(short):	Construction of AC TL – Island	Date:	13-Apr-2012

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Provision of Geotechnical Investigation Services - 350 kV HVdc	ST0310
Provision of Survey Services - 350 kV HVdc	ST0312
Supply and Install Converters, Harmonic Filters & Transition Compounds	CD0501
Construction of Electrodes Sites	CD0508
Third Party Quality Surveillance & Inspection Services	SM0701
Supply and Maintenance of Various IT Equipment	SM0710

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- PT0308 – Supply of Steel Tower Foundation - 350 kV HVdc
- PT0347 – Supply of Modification and Re-termination Materials
- PT0351 – Supply of Wood Poles
- PT0353 – Supply of Optical Ground Wire (OPGW) – 350 kV HVdc

Any other packages that cannot proceed before the subject package has started:

- Not Applicable

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- a) Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- b) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0342	Type:	C-Contract
Titles	(long): Construction of AC Transmission Lines – Island	Revision No.:	01
	(short): Construction of AC TL – Island	Date:	13-Apr-2012

- g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
- i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)

SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Supply of steel towers	PT0308
Supply of OHSW (as required), insulators, hardware, accessories, counterpoise, fittings, guy wires, conductor, electrode conductor, grounding materials, steel grillage and rock anchors.	PT0347
Supply of wood poles	PT0351

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0342	Type:	C-Contract
Titles (long):	Construction of AC Transmission Lines – Island	Revision No.:	01
(short):	Construction of AC TL – Island	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0343	Type:	C- Contract
Titles	(long): Clearing of Right-of-Way for HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Clearing of ROW HVdc TL – 1	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary:

This contract package includes the right-of-way (ROW) clearing for the construction of approximately 610 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to the end of the Long Range Mountains (LRM) including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes the ROW clearing for approximately 20 km of wood pole electrode line, near Lanse au Diable.

The scope of work will be divided into three contracts. The first contract will include approximately 225 km from Muskrat Falls (Segments 1 and 2). The second contract will include approximately 160 km to Eastern Labrador (Segment 3) and approximately 20 km of wood pole electrode line. The third contract will include approximately 225 km from the top of the Northern Peninsula to the end of the LRM (Segments 4 and 5). The scope is structured so bidders may bid on either contract individually or any combination of the contracts together.

Work Included:

The work includes:

- Mobilization and construction of the Contractor’s accommodation camp, including all associated permits for the installation and operation of the camp;
- All telecom requirements needed by the Contractor and telecom connections for the Owner will be the Contractor’s responsibility and must meet all regulatory requirements.
- Preparation and construction of the Contractor’s own access roads, corduroy roads, stream crossings, etc., as per the requirements of the Owner supplied permits;
- Supply and installation of temporary bridges, culverts, etc. that are necessary for right-of-way (ROW) clearing purposes, as per the requirements of the Owner supplied permits;
- The ROW clearing work will be carried out on a 60 m wide corridor and consists of felling all trees and shrubs higher than 2 m at maturity. Trees and shrubs are cut at a height of 15 cm, measured from the highest level of the soil;
- Trimming and salvaging of all commercial stems. Those stems are bucked in 2.5 m to 3.5 m logs and piled along and within the ROW;
- Elimination of branches and cutting residues on the soil (dead trees, non-commercial stems, non-commercial size stems and trimming residue) by chipping or piling;
- Meeting all environmental requirements;
- The Contractor is to restore any damage caused to any property to the satisfaction

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0343	Type:	C- Contract
Titles	(long): Clearing of Right of-Way for HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Clearing of ROW HVdc TL – 1	Date:	13-Apr-2012

of the Engineer; and

- Demobilization.

For Contract 1, there will be an approximate total clearing area of 1,206.1 ha.

For Contract 2, there will be an approximate total clearing area of 743.9 ha.

For Contract 3, there will be an approximate total clearing area of 1,059.6 ha.

The Contractor is responsible for providing all labour, supervision, equipment and construction consumables required for clearing, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Clearing for Contract 1	ha	1,206.1
2	Clearing for Contract 2	ha	743.9
3	Clearing for Contract 3	ha	1,059.6

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Line Construction Work	CT0327
Right-of-Way Clearing Electrode Line Near Lanse au Diable	CT0342
Supply of Owner's Telecom and IT Equipment	Not Applicable
Permits: Tree Clearing, Forging, Temporary Bridges, Culverts, etc.	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0343	Type:	C- Contract
Titles	(long): Clearing of Right of-Way for HVdc Transmission Line – Section 1	Revision No.:	01
	(short): Clearing of ROW HVdc TL – 1	Date:	13-Apr-2012

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Provision of Survey Services - 350 kV HVdc	ST0312

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- Exhibit 6 – Environmental and Regulatory Compliance Requirements
- Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0343	Type:	C- Contract
Titles (long):	Clearing of Right of-Way for HVdc Transmission Line – Section 1	Revision No.:	01
(short):	Clearing of ROW HVdc TL – 1	Date:	13-Apr-2012

4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).

- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 13-Jan-2012
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0343	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for HVdc Transmission Line – Section 1	Revision No.:	01
(short):	Clearing of ROW HVdc TL – 1	Date:	13-Apr-2012

Applicable Sub-Project/SPV:

Muskkrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package:

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0345	Type:	C- Contract
Titles	(long): Clearing of Right-of-Way for HVdc Transmission Line– Section 2	Revision No.:	01
	(short): Clearing of ROW HVdc TL – 2	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Stella Roche

Scope of Work Summary:

This contract package includes the right-of-way clearing for the construction of approximately 470 km of 900 MW, ±350 kV HVdc transmission line from the end of the Long Range Mountains (LRM) to Soldiers Pond.

The scope of work will be divided into two contracts. The first contract will include approximately 290 km from the end of the LRM to Central Newfoundland (Segment 6 and 7). The second contract will include approximately 180 km from Central Newfoundland to Soldiers Pond (Segment 8). The scope is structured so bidders may bid on either contract individually or both contracts together.

Work Included:

The work includes:

- Mobilization and construction of the Contractor’s accommodation camp, including all associated permits for the installation and operation of the camp;
- All telecom requirements needed by the Contractor and telecom connections for the Owner will be the Contractor’s responsibility and must meet all regulatory requirements.
- Preparation and construction of the Contractor’s own access roads, corduroy roads, stream crossings, etc., as per the requirements of the Owner supplied permits;
- Supply and installation of temporary bridges, culverts, etc. that are necessary for right-of-way (ROW) clearing purposes, as per the requirements of the Owner supplied permits;
- The ROW clearing work will be carried out on a 60 m wide corridor and consists of felling all trees and shrubs higher than 2 m at maturity. Trees and shrubs are cut at a height of 15 cm, measured from the highest level of the soil;
- Trimming and salvaging of all commercial stems. Those stems are bucked in 2.5 m to 3.5 m logs and piled along and within the ROW;
- Elimination of branches and cutting residues on the soil (dead trees, non-commercial stems, non-commercial size stems and trimming residue) by chipping or piling;
- Meeting all environmental requirements;
- The Contractor is to restore any damage caused to any property to the satisfaction of the Engineer; and
- Demobilization.

For Contract 1, there will be an approximate total clearing area of 2,213.1 ha.

For Contract 2, there will be an approximate total clearing area of 772.4 ha.

The Contractor is responsible for providing all labour, supervision, equipment and

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0345	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for HVdc Transmission Line– Section 2	Revision No.:	01
(short):	Clearing of ROW HVdc TL – 2	Date:	13-Apr-2012

construction consumables required for clearing, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Clearing for Contract 1	ha	2,213.1
2	Clearing for Contract 2	ha	772.4

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Line Construction Work	CT0327
Right-of-Way Clearing for Wood Pole Electrode Line Near Lanse au Diable	CT0343
Supply of Owner's Telecom and IT Equipment	Not Applicable
Permits: Tree Clearing, Forging, Temporary Bridges, Culverts, etc.	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Provision of Survey Services - 350 kV HVdc	ST0312

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0345	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for HVdc Transmission Line– Section 2	Revision No.:	01
(short):	Clearing of ROW HVdc TL – 2	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- Exhibit 6 – Environmental and Regulatory Compliance Requirements
- Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0345	Type:	C- Contract
Titles (long):	Clearing of Right-of-Way for HVdc Transmission Line– Section 2	Revision No.:	01
(short):	Clearing of ROW HVdc TL – 2	Date:	13-Apr-2012

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0346	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 2	Revision No.:	01
	(short): Construction of HVdc TL – 2	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Hamidreza Bakhshi
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Sylvain Marsan

Scope of Work Summary:

This contract package includes the construction work for approximately 470 km of 900 MW, ±350 kV HVdc transmission line from the end of the Long Range Mountains to Soldiers Pond.

The scope of work will be divided into two contracts. The first contract will include approximately 290 km of ±350 kV HVdc transmission line. The second contract will include approximately 180 km of ±350 kV HVdc transmission line. The scope is structured so bidders may bid on either contract individually or both contracts.

Work Included:

The interior Newfoundland section is approximately 290 km and the Eastern Newfoundland section is approximately 180 km. The new transmission line will be built on a total right-of-way (ROW) width of 60 m.

The construction work includes:

- Mobilization, construction of the Contractor's own lay down areas and accommodation camp, including all associated permits for the installation and operation of the lay down area and camp;
- All telecom requirements needed by the Contractor and telecom connections for the Owner will be the Contractor's responsibility and must meet all regulatory requirements;
- Material handling from the marshalling yard to the Contractor's lay down areas;
- Enhancement of access previously created by the clearing contractor, as required for line construction, as per the requirements of the Owner supplied permits;
- Supply and installation of temporary bridges, culverts, etc. that are necessary for construction purposes, as per the requirements of the owner supplied permits;
- Staking of tower locations;
- Installation of foundations for the lattice steel towers. The towers will be guyed (suspension) and self-supporting structures (dead-ends). The contractor will be responsible for supplying HP piles and concrete caps;
- Assembly and erection of lattice steel towers;
- Installation of optical ground wire (OPGW) on a single peak, insulators, guy wires, structure grounding systems and all associated assembly hardware;
- Installation of counterpoise conductor along the line. Grounding rods will be used for obstacle avoidance (rivers, road, etc.);
- Stringing and sagging of the two pole 3640 kcmil 91/0 aluminum stranded

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0346	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 2	Revision No.:	01
	(short): Construction of HVdc TL – 2	Date:	13-Apr-2012

conductors (ASC) per pole and OPGW;

- Pre-commissioning;
- Meeting all environmental requirements;
- Inspection, site cleanup and mark-up of as-built drawings at the end of construction;
- The Contractor is to restore any damage caused to any property to the satisfaction of the Engineer; and
- Demobilization.

There will be five types of towers used for the construction of the HVdc line (approximately 12,845 tonnes of steel) and the associated total estimated quantities are:

- 1,364 Type A, Tangent Tower (0° to 1°), Guyed-Y Design;
- 36 Type B, Light Angle Tower (0° to 8°), Guyed-Y Design;
- 82 Type C, Angle Dead-End - Strain (0° to 30°), Self-Supporting Towers;
- 60 Type D, Angle Dead-End - Strain (0° to 45°), Self-Supporting Towers; and
- 21 Type E, Angle Dead-End - Strain (45° to 90°), Self-Supporting Towers.

There will be five types of foundations used for the construction of the HVdc line (approximate amount of steel is to be determined) and the associated total estimated quantities are:

- To Be Determined for Type 1: 250 kPa Steel Grillage;
- To Be Determined for Type 2: 100 kPa Steel Grillage;
- To Be Determined for Type 3: Steel Foundation Anchored to Bedrock;
- To Be Determined for Type 4: Driven Pile Foundation;
- To Be Determined for Type 5: Bog Foundation;

There will be three types of conductors used for the construction of the HVdc line and the associated total estimated quantities are:

- 965,058 m of 3640 kcmil 91/0 ASC Pole Conductors;
- 264,322 m of 1192.5 kcmil 54/19 aluminum conductor, steel reinforced (ACSR) Grackle Electrode Conductor (50 mm Ice Load Zone); and
- 78,914 m of 1590 kcmil 54/19 ACSR Falcon Electrode Conductor (135 mm Ice Alpine Load Zone).

There will be three types of OPGW used for the construction of the HVdc line and the associated total estimated quantities are:

- 317,134 m of 140 kN, 14.5 mm 24 Fibre OPGW (50 mm Ice Zone);

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0346	Type:	C- Contract
Titles (long):	Construction of 350 kV HVdc Transmission Line – Section 2	Revision No.:	01
(short):	Construction of HVdc TL – 2	Date:	13-Apr-2012

- 80,186 m of 177 kN, 15.5 mm 24 Fibre OPGW (75 mm Ice Zone);
 - 89,498 m of 277 kN, 20.6 mm 24 Fibre OPGW (135 mm Ice Alpine Zone);
- Materials will be free-issued by Nalcor at designated marshalling yards. The Contractor is responsible for material transport from the marshalling yard to the work site. The Contractor is responsible for providing all labour, supervision, equipment and construction consumables required to construct the lines, as well as provide all indirect support such as access roads, accommodations, transportation, security and medical services.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type 4, Driven Pile Foundation		To Be Determined
2	Type 5, Bog Foundation		To Be Determined
3	Remaining Items		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Clearing of Right-of-Way for HVdc Transmission Line - Section 2	CT0345
Electrode Line Construction Between Soldiers Pond and Dowden's Point	CT0342
Supply of Owner's Telecom and IT Equipment	Not Applicable
Handling of Marshalling Yard	To Be Determined

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0346	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 2	Revision No.:	01
	(short): Construction of HVdc TL – 2	Date:	13-Apr-2012

Interface with Other Packages:

Description	Package No.
Construction of ac Transmission Lines – Island	CT0342
Provision of Geotechnical Investigation Services - 350 kV HVdc	ST0310
Provision of Survey Services - 350 kV HVdc	ST0312
Supply and Install Converters, Harmonic Filters & Transition Compounds	CD0501
Third Party Quality Surveillance & Inspection Services	SM0701
Supply and Maintenance of Various IT Equipment	SM0710

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- CT0345 – Clearing of Right-of-Way for HVdc Transmission Line - Section 2
- PT0308 – Supply of Steel Tower Foundation - 350 kV HVdc
- PT0328 – Supply of Transmission Line Conductors - 350 kV HVdc
- PT0329 – Supply of HVdc Insulators - 350 kV HVdc
- PT0330 – Supply of Steel Towers - 350 kV HVdc
- PT0331 – Supply of Tower Hardware - 350 kV HVdc
- PT0334 – Supply of Steel Wires - 350 kV HVdc
- PT0352 – Supply of Anchor Materials - 350 kV HVdc
- PT0353 – Supply of Optical Ground Wire (OPGW) - 350 kV HVdc
- ST0310 – Provision of Geotechnical Investigation Services - 350 kV HVdc
- ST0312 – Provision of Survey Services - 350 kV HVdc

Any other packages that cannot proceed before the subject package has started:

- CT0342 – Construction of ac Transmission Line - Island

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- a) Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- b) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0346	Type:	C- Contract
Titles (long):	Construction of 350 kV HVdc Transmission Line – Section 2	Revision No.:	01
(short):	Construction of HVdc TL – 2	Date:	13-Apr-2012

- e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
- i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	CT0346	Type:	C- Contract
Titles	(long): Construction of 350 kV HVdc Transmission Line – Section 2	Revision No.:	01
	(short): Construction of HVdc TL – 2	Date:	13-Apr-2012

Free Issued Materials:

Description	Package No.
The supply of conductors	PT0328
The supply of insulators	PT0329
The supply of tower steel	PT0330
The supply of tower hardware	PT0331
The supply of optical ground wire (OPGW)	PT0353
The supply of steel tower foundations	PT0308
The supply of steel wires	PT0334
The supply of anchor materials	PT0352

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
RFP Date: To Be Determined
Award Date: To Be Determined
1st Vendor Data Required by: To Be Determined
Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0300	Type:	P-Purchase Order
Titles (long):	Supply of Transmission Line Conductors– 315 kV HVac	Revision No.:	01
(short):	Supply of Conductors – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities: Area Manager:	Kumar Kandaswamy	Package Engineer:	Ananth Rao
QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, delivery and warranty for phase conductors for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

This contract package includes:

- 795 kcmil aluminum conductor, steel reinforced (ACSR) Drake for the 315 kV HVac transmission lines;
- 954 kcmil 54/7 Strands Cardinal ACSR for the 735 kV interconnection lines; and
- 795 kcmil ACSR Drake for the 315 kV interconnection lines.

The conductors shall be delivered on steel reels of specified lengths to the marshalling yard. The steel reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	795 kcmil 26/7 ACSR Drake	km	3,083
2	954 kcmil 54/7 Strands Cardinal ACSR	km	15

Contract Basis:

This contract basis is:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0300	Type:	P-Purchase Order
Titles (long):	Supply of Transmission Line Conductors– 315 kV HVac	Revision No.:	01
(short):	Supply of Conductors – HVac	Date:	13-Apr-2012

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Tower Hardware - 315 kV HVac	PT0303

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0300	Type:	P-Purchase Order
Titles (long):	Supply of Transmission Line Conductors– 315 kV HVac	Revision No.:	01
(short):	Supply of Conductors – HVac	Date:	13-Apr-2012

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined
 Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0301	Type:	P-Purchase Order
Titles	(long): Supply of HVac Insulators – 315 kV HVac	Revision No.:	01
	(short): Supply of Insulators - HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for ball and socket type suspension insulator disks for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

This contract package includes:

- CS-3 70 kN suspension insulators for jumpers for the 315 kV HVac transmission lines;
- CS-11 220 kN suspension insulators for phase conductor for the 315 kV HVac transmission lines;
- 210 kN insulators (exact types to be determined) for the 735 kV interconnection lines;
- 300 kN insulators (exact types to be determined) for the 735 kV interconnection lines;
- CS-3 70 kN suspension insulators for jumpers for the 315 kV interconnection lines; and
- CS-11 220 kN suspension insulators for phase conductor for the 315 kV interconnection lines;

There are two acceptable types of insulator disks; porcelain and glass.

Additionally, this contract package includes the electrical tests for the OPGW which includes type tests for complete suspension assembly as per clause 5.3 of SLI Doc. No. 505573-361C-4ZES-0006 and type tests for complete tension assembly as per clause 5.3 of SLI Doc. No. 505573-361C-4ZES-0006.

The insulators shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	CS-3 70 kN Suspension Insulators for Jumpers	disks	10,203
2	CS-11 220 kN Suspension Insulators for Phase Conductor	disks	94,730

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0301	Type:	P-Purchase Order
Titles (long):	Supply of HVac Insulators – 315 kV HVac	Revision No.:	01
(short):	Supply of Insulators - HVac	Date:	13-Apr-2012

3	210 kN Insulators	disks	900
4	300 kN Insulators	disks	2,304
5	Type Test Suspension Assembly	each	1
6	Type Test Tension Assembly	each	1

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Optical Ground Wire (OPGW) - 315 kV HVac	PT0304

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0301	Type:	P-Purchase Order
Titles (long):	Supply of HVac Insulators – 315 kV HVac	Revision No.:	01
(short):	Supply of Insulators - HVac	Date:	13-Apr-2012

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 30-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined
 Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

- Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0301	Type:	P-Purchase Order
Titles	(long): Supply of HVac Insulators – 315 kV HVac	Revision No.:	01
	(short): Supply of Insulators - HVac	Date:	13-Apr-2012

IBA Package:

Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	PT0302	Type:	P-Purchase Order
Titles	(long): Supply of Steel Towers – 315 kV HVac	Revision No.:	01
	(short): Supply of Towers– HVac	Date:	13-Apr-2012
Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the detailing, fabrication, shop testing, prototype assembly, full load testing of selected tower types, delivery and warranty of galvanized lattice tower steel for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls.

Work Included:

The design of the towers will be completed by SLI and will be provided to the Supplier for preparation of shop drawings to facilitate the production of tower members. Towers will be designed for horizontal phase configuration, using 2-bundle 795 kcmil 26/7 aluminum conductor, steel reinforced (ACSR) Drake as phase conductors, with two shielding peaks carrying one 12.7 mm (½”) stranded galvanized steel Grade 220 overhead shield wire (OHSW) and one optical ground wire (OPGW) similar to the mechanical characteristics to that of the OHSW.

For the 315 kV HVac transmission lines, this contract package will include the following five types of towers:

- Type A, Tangent Tower (0° to 1°), Guyed-Y Design;
- Type B, Light Angle Tower (0° to 8°), Guyed-Y Design;
- Type C, Angle Dead-End - Strain (0° to 30°), Self-Supporting;
- Type D, Angle Dead-End - Strain (0° to 45°), Self-Supporting; and
- Type E, Angle Dead-End - Strain (45° to 90°), Self-Supporting.

The types of towers for the 735 kV interconnection lines are to be determined.

The spans are approximately 400 m.

The Supplier will be responsible for preparing shop drawings, providing updated PLS-TOWER Models and manufacturing tower members as per Tower Design and Manufacturing Specifications, which will be provided to the Supplier at a later date.

The galvanized tower steel members and accessories shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date and shall be delivered to the marshalling yard.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0302	Type:	P-Purchase Order
Titles (long):	Supply of Steel Towers – 315 kV HVac	Revision No.:	01
(short):	Supply of Towers– HVac	Date:	13-Apr-2012

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type A Towers	each	1,042
2	Type B Towers	each	66
3	Type C Towers	each	68
4	Type D Towers	each	84
5	Type E Towers	each	16
6	735 kV Towers		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0319
Design of the Towers	Not Applicable
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0302	Type:	P-Purchase Order
Titles	(long): Supply of Steel Towers – 315 kV HVac	Revision No.:	01
	(short): Supply of Towers– HVac	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Steel Tower Foundations - 315 kV HVac	PT0307

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

For prototype tower testing please see the following document:

315 kV HVac (Muskrat Falls to Churchill Falls) Transmission Line - Full Scale Tower Load Testing - Technical Specification
 SLI Document #: 505573-361B-43ES-0003
 NE-LCP Document #: MFA-SN-CD-6140-TL-TS-0013-01

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0302	Type:	P-Purchase Order
Titles (long):	Supply of Steel Towers – 315 kV HVac	Revision No.:	01
(short):	Supply of Towers– HVac	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: 19-Dec-2011
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0303	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware– 315 kV HVac	Revision No.:	01
	(short): Supply of Hardware – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for hardware, accessories, fittings and grounding materials for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

For the 315 kV HVac transmission lines, the conductor is 2-bundled 795 kcmil 26/7 aluminum conductor, steel reinforced (ACSR) Drake and overhead shield wire (OHSW) is 12.7 mm (½”) galvanized steel stranded wire, Grade 220. The steel towers have two shielding peaks; one for OHSW and one for optical ground wire (OPGW).
 For the 735 kV interconnection lines, the conductor is quad-bundled 954 kcmil 54/7 Strands Cardinal ACSR and OHSW is 14.3 mm (9/16”) galvanized steel stranded wire, Grade 220.

The materials (exact types and sizes are shown in the Approximate Quantities Section) to be supplied under this contract package include, but not limited, to the following items:

- Phase conductor spacer dampers;
- OHSW dampers;
- Conductor and OHSW suspension assemblies;
- Conductor and OHSW dead-end assemblies;
- Conductor and OHSW splices for compression type;
- Guy wire grips for different sizes from 12.7 mm (½”) to 25.4 mm (1”);
- Guy wire polyvinyl chloride (PVC) covers;
- Tower danger plates and tower number plates;
- Armor-rods;
- Aerial marker cones; and
- Grounding materials and hardware.

Additionally, this contract package includes the electrical tests for the conductor assemblies

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0303	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware– 315 kV HVac	Revision No.:	01
	(short): Supply of Hardware – HVac	Date:	13-Apr-2012

which includes corona tests and radio interference voltage (RIV) tests.

Grounding materials to be used on the 315 kV HVac transmission lines include, but not limited to the zinc-coated steel grounding rods and associated stainless steel ground clamps to be used at river crossings or any other obstacles. Ground clamps shall include all hardware necessary for assembly.

The applicable hardware fittings shall be low temperature performance rated (Charpy Impact Rated) for minimum energy absorption of 20 J at -20°C.

The materials shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	Twin Bundle 795 kcmil Drake Spacer Damper	each	25,688
2	Counterweights for Suspension and Jumper Assembly, 45 kg	each	2,448
3	Spiral Vibration Damper for 12.7 mm (½") Grade 220 OHSW	each	2,556
4	Twin Bundle 795 kcmil Drake Rigid Spacer for Jumper	each	2,952
5	Aerial Marker Cone, White, 45.7 cm (18")	each	350
6	Aerial Marker Cone, Orange, 45.7 cm (18")	each	350
7	Guy Wire Assembly	each	4,456
8	OHSW Tangent Suspension Assembly	each	1,114
9	OHSW Dead-End Assembly	each	314
10	Phase Conductor Tangent Suspension Assembly	each	3,342
11	Phase Conductor Jumper Suspension Assembly	each	492
12	Phase Conductor Dead-End Assembly	each	984
13	Tower Structure Number Tags	each	1,278
14	Tower Aerial Structure Number Boards	each	128
15	Tower Danger Signs	each	2,556
16	Tower Aerial Line Number Boards	each	12
17	Guy Wire Guard, Yellow 2.4 m (94.5") Per Guy	each	4,456
18	Corona Test	each	19
19	RIV Test	each	19
20	Downlead and Guide Clamp for 17.5 mm (11/16") 24 Fibre OPGW	each	4,000
21	Spiral Vibration Damper for 17.5 mm (11/16") 24 Fibre OPGW	each	2,556
22	Splice Box, OPGW to OPGW for 17.5 mm (11/16") 24 Fibre	each	100
23	Two-Hole Compression Terminal Lug for 7.2 mm (9/32") mm Steel Bonding Conductor	each	1,278

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0303	Type:	P-Purchase Order
Titles (long):	Supply of Tower Hardware– 315 kV HVac	Revision No.:	01
(short):	Supply of Hardware – HVac	Date:	13-Apr-2012

24	Compression Connector for 7.2 mm (9/32") Steel Bonding Conductor	each	1,278
25	Ground Clamp for Ground Rod	each	200
26	Grounding Rod	each	200
27	795 kcmil Drake Conductor Compression Type Splices	each	1,028
28	Bird Diverter, Firefly Bird Flapper for 12.7 mm (1/2") Grade 220 OHSW	each	5,112
29	12.7 mm (1/2") Grade 220 OHSW Compression Type Splices	each	168

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Counterpoise Conductor and Bonding Wire	PT0326
Installation of Supplies	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0303	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware– 315 kV HVac	Revision No.:	01
	(short): Supply of Hardware – HVac	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0303	Type:	P-Purchase Order
Titles (long):	Supply of Tower Hardware– 315 kV HVac	Revision No.:	01
(short):	Supply of Hardware – HVac	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0304	Type:	P-Purchase Order
Titles	(long): Supply of Optical Ground Wire (OPGW) – 315 kV HVac	Revision No.:	01
	(short): Supply of OPGW – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, delivery, construction supervision, installation support and warranty for optical ground wire and accessories for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

The optical ground wire (OPGW) shall have 24 single mode fibres (SMF) and shall have mechanical properties equivalent to that of the corresponding overhead shield wire (OHSW), stranded galvanized steel wire, size Grade 220.

This contract package includes:

- OPGW: 12.7 mm (½”) galvanized (Class B) stranded steel wire, Grade 220, with a rated tensile strength (RTS) of 138.8 kN as per CSA G12 Standard for the 315 kV HVac transmission lines;
- OPGW: 14.3 mm (9/16”) galvanized (Class B) stranded steel wire, Grade 220 as per CSA G12 Standard for the 735 kV interconnection lines; and
- OPGW: 12.7 mm (½”) galvanized (Class B) stranded steel wire, Grade 220, with a RTS of 138.8 kN as per CSA G12 Standard for the 315 kV interconnection lines.
- Suspension clamps for the proposed OPGW for tangent and running angle structures complete with grounding attachments to the tower body;
- Dead-end clamps for proposed OPGW for dead-end structures complete with grounding attachments to the tower body;
- Splicing boxes and associated accessories for splicing the proposed OPGW; and
- Aeolian vibration dampers for the proposed OPGW.

Additionally, this contract package includes the electrical tests for the OPGW which includes Type Test.

Construction supervision includes the supervision during stringing and sagging operation of the OPGW by Others to validate the warranty of the OPGW. Installation support includes

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0304	Type:	P-Purchase Order
Titles	(long): Supply of Optical Ground Wire (OPGW) – 315 kV HVac	Revision No.:	01
	(short): Supply of OPGW – HVac	Date:	13-Apr-2012

the splicing of proposed OPGW at the splice locations.

The OPGW shall be delivered on steel reels of the specified lengths to marshalling yard. The steel reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	12.7 mm (½") Galvanized (Class B) Stranded Steel Wire, Grade 220	km	550.2
2	14.3 mm (9/16") Galvanized (Class B) Stranded Steel Wire, Grade 220	km	1.2
3	Downlead and Guide Clamp for 17.5 mm (11/16") 24 Fibre OPGW	each	4,200
4	Spiral Vibration Damper for 17.5 mm (11/16") 24 Fibre OPGW	each	5,200
5	Splice Box, OPGW to OPGW for 17.5 mm (11/16") 24 Fibre OPGW	each	110
6	Suspension Assembly for 17.5 mm (11/16") 24 Fibre OPGW	each	1,150
7	Dead-End Assembly for 17.5 mm (11/16") 24 Fibre OPGW	each	570
8	Type Test		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0304	Type:	P-Purchase Order
Titles (long):	Supply of Optical Ground Wire (OPGW) – 315 kV HVac	Revision No.:	01
(short):	Supply of OPGW – HVac	Date:	13-Apr-2012

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of HVac Insulators - 315 kV HVac	PT0301

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0304	Type:	P-Purchase Order
Titles (long):	Supply of Optical Ground Wire (OPGW) – 315 kV HVac	Revision No.:	01
(short):	Supply of OPGW – HVac	Date:	13-Apr-2012

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined
 Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0307	Type:	P-Purchase Order
Titles	(long): Supply of Steel Tower Foundations – 315 kV HVac	Revision No.:	01
	(short): Supply of Steel Tower Foundations – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the detailing, fabrication, shop testing, delivery and warranty for galvanized steel foundations for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

For the 315 kV HVac transmission lines, this contract package will include four types of galvanized steel foundations (Types 4 and 5 are excluded):

- Type 1, steel grillage on 250 kPa granular soils;
- Type 2, steel grillage on 100 kPa granular soils; and
- Type 3, steel foundation anchored to bedrock.

The types of foundation for the 735 kV interconnection lines and 315 kV interconnection lines are to be determined.

The design of the foundation (grillage) steel will be provided to the Supplier for preparation of shop drawings to facilitate the production of members.

The Supplier will be responsible for the preparation of shop drawings and manufacturing of steel members shall be as per Foundation Design and Manufacturing Specifications, which will be provided to the Supplier at a later date.

The galvanized foundation steel members shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date and shall be delivered to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type 1, 250 kPa Steel Grillage	each	320
2	Type 2: 100 kPa Steel Grillage	each	150
3	Type 3: Steel Foundation	each	680
4	735 kV Foundations		To Be Determined
5	315 kV Interconnection Foundations		To Be Determined

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0307	Type:	P-Purchase Order
Titles (long):	Supply of Steel Tower Foundations – 315 kV HVac	Revision No.:	01
(short):	Supply of Steel Tower Foundations – HVac	Date:	13-Apr-2012

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Anchors for Rock Foundation	PT0335
Installation of Supplies	CT0319
Supply of Types 4 and 5 Foundations	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Steel Towers - 315 kV HVac	PT0302

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0307	Type:	P-Purchase Order
Titles (long):	Supply of Steel Tower Foundations – 315 kV HVac	Revision No.:	01
(short):	Supply of Steel Tower Foundations – HVac	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

- | | | | |
|------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Muskrat Falls Generation | <input type="checkbox"/> | Labrador – Island Transmission Link | <input type="checkbox"/> |
| Labrador Transmission Assets | <input checked="" type="checkbox"/> | Lower Churchill Project – General | <input type="checkbox"/> |

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0307	Type:	P-Purchase Order
Titles	(long): Supply of Steel Tower Foundations – 315 kV HVac	Revision No.:	01
	(short): Supply of Steel Tower Foundations – HVac	Date:	13-Apr-2012

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0308	Type:	P-Purchase Order
Titles (long):	Supply of Steel Tower Foundations – 350 kV HVdc	Revision No.:	01
(short):	Supply of Steel Tower Foundations– HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the detailing, fabrication, shop testing, delivery and warranty for galvanized steel foundations for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes foundation materials for the re-termination of two 230 kV HVac transmission lines (TL217 and TL218) at the proposed Soldiers Pond Converter Station. Plus, the modification of an existing 230 kV HVac transmission lines (TL204) located between Hampden and Soldiers Pond.

Work Included:

For the ±350 kV HVdc transmission line, this contract package will include three types of galvanized steel foundations (Types 4 and 5 are excluded):

- Type 1, steel grillage on 250 kPa granular soils;
- Type 2, steel grillage on 100 kPa granular soils; and
- Type 3, steel foundation anchored to bedrock.

The types of foundation for the re-termination and modification lines are to be determined.

The design of the foundation (grillage) steel will be provided to the Supplier for preparation of shop drawings to facilitate the production of members.

The Supplier will be responsible for the preparation of shop drawings and manufacturing of steel members shall be as per Foundation Design and Manufacturing Specifications, which will be provided to the Supplier at a later date.

The galvanized foundation steel members shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date and shall be delivered to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type 1, 250 kPa Steel Grillage		To Be Determined
2	Type 2: 100 kPa Steel Grillage		To Be Determined
3	Type 3: Steel Foundation		To Be Determined
4	Re-termination Foundation		To Be Determined
5	Modification Foundation		To Be Determined

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0308	Type:	P-Purchase Order
Titles (long):	Supply of Steel Tower Foundations – 350 kV HVdc	Revision No.:	01
(short):	Supply of Steel Tower Foundations– HVdc	Date:	13-Apr-2012

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Anchors for Rock Foundation	PT0352
Installation of Supplies	CT0327
	CT0342
	CT0346
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Line - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Steel Towers - 350 kV HVdc	PT0330

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0308	Type:	P-Purchase Order
Titles (long):	Supply of Steel Tower Foundations – 350 kV HVdc	Revision No.:	01
(short):	Supply of Steel Tower Foundations– HVdc	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Line - Island
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0308	Type:	P-Purchase Order
Titles	(long): Supply of Steel Tower Foundations – 350 kV HVdc	Revision No.:	01
	(short): Supply of Steel Tower Foundations– HVdc	Date:	13-Apr-2012

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0326	Type:	P-Purchase Order
Titles	(long): Supply of Steel Wires – 315 kV HVac	Revision No.:	01
	(short): Supply of Steel Wires – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for galvanized stranded steel wires for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

This contract package includes:

- Overhead shield wire (OHSW): 12.7 mm (½”) galvanized (Class B) stranded steel wire, Grade 220, with a rated tensile strength (RTS) of 138.8 kN as per CSA G12 Standard for the 315 kV HVac transmission lines;
- Counterpoise conductor: 7.2 mm (9/32”) galvanized (Class B) single-strand steel wire, Grade 50 or superior, as per CSA G12 Standard for the 315 kV HVac transmission lines;
- Tower A guy wire: 19.1 mm (¾”) galvanized (Class A) stranded steel wire, Grade 1, with a RTS of 302 kN as per ASTM A586-04a Standard for the 315 kV HVac transmission lines;
- Tower B guy wire: 20.6 mm (13/16”) galvanized (Class A) stranded steel wire, Grade 1, with a RTS of 356 kN as per ASTM A586-04a Standard for the 315 kV HVac transmission lines;
- OHSW: 14.3 mm (9/16”) galvanized (Class B) stranded steel wire, Grade 220 as per CSA G12 Standard for the 735 kV interconnection lines; and
- OHSW: 12.7 mm (½”) galvanized (Class B) stranded steel wire, Grade 220, with a RTS of 138.8 kN as per CSA G12 Standard for the 315 kV interconnection lines.

The steel wires shall be delivered on wooden reels of specified lengths to the marshalling yard. The wooden reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0326	Type:	P-Purchase Order
Titles (long):	Supply of Steel Wires – 315 kV HVac	Revision No.:	01
(short):	Supply of Steel Wires – HVac	Date:	13-Apr-2012

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	12.7 mm (1/2") Galvanized (Class B) Stranded Steel Wire, Grade 220	km	504
2	14.3 mm (9/16") Galvanized (Class B) Stranded Steel Wire, Grade 220	km	1.2
3	7.2 mm (9/32") Galvanized (Class B) Single-Strand Steel Wire, Grade 50 or Superior	km	517
4	19.1 mm (3/4") Galvanized (Class A) Stranded Steel Wire, Grade 1	km	168
5	20.6 mm (13/16") Galvanized (Class A) Stranded Steel Wire, Grade 1	km	13

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Guy Anchors	PT0335
Hardware, Grounding Materials, Beside Counterpoise Conductor	PT0303
Installation of Supplies	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0326	Type:	P-Purchase Order
Titles (long):	Supply of Steel Wires – 315 kV HVac	Revision No.:	01
(short):	Supply of Steel Wires – HVac	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Tower Hardware - 315 kV HVac	PT0303

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0326	Type:	P-Purchase Order
Titles (long):	Supply of Steel Wires – 315 kV HVac	Revision No.:	01
(short):	Supply of Steel Wires – HVac	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0328	Type:	P-Purchase Order
Titles	(long): Supply of Transmission Line Conductors – 350 kV HVdc	Revision No.:	01
	(short): Supply of Conductors– HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, delivery and warranty for conductors for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes two sections of wood pole electrode lines, approximately 20 km and 15 km each, near Lanse au Diable and between Soldiers Pond and Dowden’s Point, respectively.

Work Included:

This contract package includes:

- 3640 kcmil 91/0 aluminum stranded conductors (ASC) pole conductors for the ±350 kV HVdc transmission line;
- 1192.5 kcmil 54/19 aluminum conductor, steel reinforced (ACSR) grackle electrode conductor (50 mm ice load zone) for the ±350 kV HVdc transmission line;
- 1590 kcmil 54/19 ACSR Falcon electrode conductor (135 mm ice alpine load zone) for the ±350 kV HVdc transmission line; and
- 1192.5 kcmil 54/19 ACSR grackle electrode conductor for the two sections of wood pole electrode lines.

Additionally, this contract package includes the electrical tests for the conductor which includes Type Test.

The conductors shall be delivered on steel reels of specified lengths to the marshalling yard. The steel reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0328	Type:	P-Purchase Order
Titles	(long): Supply of Transmission Line Conductors – 350 kV HVdc	Revision No.:	01
	(short): Supply of Conductors– HVdc	Date:	13-Apr-2012

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	3640 kcmil 91/0 ASC Pole Conductors	m	2,244,320
2	1192.5 kcmil 54/19 ACSR Grackle Electrode Conductor (50 mm Ice Load Zone)	m	614,702
3	1590 kcmil 54/19 ACSR Falcon Electrode Conductor (135 mm Ice Alpine Load Zone)	m	183,521
4	1192.5 kcmil 54/19 ACSR Grackle Electrode Conductor	m	70,000
5	Type Test		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0327
	CT0342
	CT0346
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0328	Type:	P-Purchase Order
Titles	(long): Supply of Transmission Line Conductors – 350 kV HVdc	Revision No.:	01
	(short): Supply of Conductors– HVdc	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Line - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Tower Hardware - 350 kV HVdc	PT0331

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Line - Island
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0328	Type:	P-Purchase Order
Titles (long):	Supply of Transmission Line Conductors – 350 kV HVdc	Revision No.:	01
(short):	Supply of Conductors– HVdc	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0329	Type:	P-Purchase Order
Titles	(long): Supply of HVdc Insulators – 350 kV HVdc	Revision No.:	01
	(short): Supply of Insulators – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Hamidreza Bakhshi
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Steven

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for ball and socket type suspension insulator disks for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes two sections of wood pole electrode lines, approximately 20 km and 15 km each, near Lanse au Diable and between Soldiers Pond and Dowden's Point, respectively.

Work Included:

This contract package includes:

- 160 kN dc fog type insulators with 550 mm creepage and 171 mm spacing;
- 220 kN dc fog type insulators with 550 mm creepage and 171 mm spacing; and
- 300 kN dc fog type insulators with 635 mm creepage and 195 mm spacing.

There are two acceptable types of insulator disks; porcelain and glass.

Additionally, this contract package includes the electrical tests for the OPGW which includes type tests for complete suspension assembly as per clause 5.3 of SLI Doc. No. 505573-361C-4ZES-0006 and type tests for complete tension assembly as per clause 5.3 of SLI Doc. No. 505573-361C-4ZES-0006.

The insulators shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	dc Fog Type (160 kN, 550 mm Creepage, 171 mm Spacing)	disks	29,986
2	dc Fog Type (220 kN, 550 mm Creepage, 171 mm Spacing)	disks	217,104
3	dc Fog Type (300 kN, 635 mm Creepage, 195 mm Spacing)	disks	97,790
4	Type Test Suspension Assembly		To Be Determined
5	Type Test Tension Assembly		To Be Determined

Contract Basis:

This contract basis is:

- | | | | |
|-----------------------------------|--------------------------|-------------------|-------------------------------------|
| Lump Sum | <input type="checkbox"/> | Unit Rates | <input checked="" type="checkbox"/> |
| Combination Lump Sum – Unit Rates | <input type="checkbox"/> | Cost Reimbursable | <input type="checkbox"/> |

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0329	Type:	P-Purchase Order
Titles (long):	Supply of HVdc Insulators – 350 kV HVdc	Revision No.:	01
(short):	Supply of Insulators – HVdc	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Installation of Supplies	CT0327 CT0342 CT0346
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Line - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Tower Hardware - 350 kV HVdc	PT0331

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0329	Type:	P-Purchase Order
Titles (long):	Supply of HVdc Insulators – 350 kV HVdc	Revision No.:	01
(short):	Supply of Insulators – HVdc	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Line - Island
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0330	Type:	P-Purchase Order
Titles	(long): Supply of Steel Towers – 350 kV HVdc	Revision No.:	01
	(short): Supply of Towers – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Fabien Cuisinier Raynal

Scope of Work Summary:

This contract package includes the detailing, fabrication, shop testing, prototype assembly, full load testing of selected tower types, delivery and warranty of galvanized lattice tower steel for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes the re-termination of two 230 kV HVac transmission lines (TL217 and TL218) at the proposed Soldiers Pond Converter Station. Plus, the modification of the existing 230 kV HVac transmission lines (TL204) located between Hampden and Soldiers Pond.

Work Included:

The design of the towers will be completed by SLI and will be provided to the Supplier for preparation of shop drawings to facilitate the production of tower members. Towers will be designed for horizontal pole configuration, using 3640 kcmil 91/0 aluminum stranded conductors (ASC), with one shielding peak carrying a 24 fibre optical ground wire (OPGW). Each tower will have two electrode conductors made of 1192.5 kcmil 54/19 aluminum conductor, steel reinforced (ACSR) Grackle for the 50 mm ice load zone or 1510.5 kcmil 54/19 ACSR Parrot for the 135 mm ice Alpine load zone.

For the ±350 kV HVdc transmission line, this contract package will include thirteen different tower families where each family will have the following five types of towers:

- Type A, Tangent Tower (0° to 1°), Guyed-Y Design;
- Type B, Light Angle Tower (0° to 8°), Guyed-Y Design;
- Type C, Angle Dead-End - Strain (0° to 30°), Self-Supporting;
- Type D, Angle Dead-End - Strain (0° to 45°), Self-Supporting; and
- Type E, Angle Dead-End - Strain (45° to 90°), Self-Supporting.

For the re-termination and modification of 230 kV transmission lines, this contract package will be based on the following Nalcor's existing tower families:

- Guyed tangent dead-end structures (NDD Tower + 10');
- Guyed tangent structures (A Tower + 30');
- Self-supported dead-end structures (DDM Tower + 5');
- Self-supported dead-end structures (NDD Tower + 10');
- Single CCT dead-end structures (DDM Tower + 5'); and

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0330	Type:	P-Purchase Order
Titles	(long): Supply of Steel Towers – 350 kV HVdc	Revision No.:	01
	(short): Supply of Towers – HVdc	Date:	13-Apr-2012

- Single CCT dead-end structures (NDD Tower + 5’).

The spans are approximately:

- 200 m for tower families 2 and 6;
- 230 m for tower family 13;
- 250 m for tower family 11;
- 270 m for tower family 12;
- 320 m for tower families 7 and 8;
- 360 m for tower families 1, 3 and 9; and
- 400 m for tower families 4, 5 and 10.

The Supplier will be responsible for preparing shop drawings, providing updated PLS-TOWER models and manufacturing tower members as per Tower Design and Manufacturing Specifications, which will be provided to the Supplier at a later date.

The galvanized tower steel members and accessories shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date and shall be delivered to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Type A Towers	each	3,172
2	Type B Towers	each	83
3	Type C Towers	each	190
4	Type D Towers	each	140
5	Type E Towers	each	48
6	Guyed Tangent Dead-End Structures (NDD Tower + 10’)	each	2
7	Guyed Tangent Structures (A Tower + 30’)	each	5
8	Self-Supported Dead-End Structures (DDM Tower + 5’)	each	3
9	Self-Supported Dead-End Structures (NDD Tower + 10’)	each	5
10	Single CCT Dead-End Structures (DDM Tower + 5’)	each	1
11	Single CCT Dead-End Structures (NDD Tower + 5’)	each	1

Contract Basis:

This contract basis is:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0330	Type:	P-Purchase Order
Titles	(long): Supply of Steel Towers – 350 kV HVdc	Revision No.:	01
	(short): Supply of Towers – HVdc	Date:	13-Apr-2012

Lump Sum	<input type="checkbox"/>	Unit Rates	<input checked="" type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Work Excluded:

Description	Package No.
Installation of Supplies	CT0327 CT0342 CT0346
Design of the Towers	Not Applicable
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High	<input type="checkbox"/>	Minor	<input type="checkbox"/>
Significant	<input type="checkbox"/>	Negligible	<input type="checkbox"/>
Moderate	<input checked="" type="checkbox"/>		

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Lines - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Steel Tower Foundation - 350 kV HVdc	PT0308

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0330	Type:	P-Purchase Order
Titles	(long): Supply of Steel Towers – 350 kV HVdc	Revision No.:	01
	(short): Supply of Towers – HVdc	Date:	13-Apr-2012

Specific Site Conditions:	Not Applicable										
Specific Schedule Conditions:	<p>Any other packages that have to be started before the subject package can proceed:</p> <ul style="list-style-type: none"> • Not Applicable <p>Any other packages that cannot proceed before the subject package has started:</p> <ul style="list-style-type: none"> • CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1 • CT0342 – Construction of ac Transmission Lines - Island • CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2 										
Specific Environment Conditions:	Not Applicable										
Specific Safety Conditions:	Not Applicable										
Special Requirements:	<p>For prototype tower testing please see the following document:</p> <p>350 kV HVdc Line Full Scale Tower Load Testing Technical Specification SLI Document #: 505573-4622-43ES-0003 NE-LCP Document #: To Be Determined</p>										
Free Issued Materials:	<table border="1" style="width: 100%;"> <thead> <tr> <th style="width: 80%;">Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Not Applicable</td> <td></td> </tr> </tbody> </table>	Description	Package No.	Not Applicable							
Description	Package No.										
Not Applicable											
Major Equipment List:	Not Applicable										
Schedule and Milestones:	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"></td> <td>EOI Date: To Be Determined</td> </tr> <tr> <td></td> <td>RFP Date: To Be Determined</td> </tr> <tr> <td></td> <td>Award Date: To Be Determined</td> </tr> <tr> <td></td> <td>1st Vendor Data Required by: To Be Determined</td> </tr> <tr> <td></td> <td>Construction Complete: To Be Determined</td> </tr> </table> <p>Dates for milestones will be updated once the Project baseline schedule is in place.</p>		EOI Date: To Be Determined		RFP Date: To Be Determined		Award Date: To Be Determined		1 st Vendor Data Required by: To Be Determined		Construction Complete: To Be Determined
	EOI Date: To Be Determined										
	RFP Date: To Be Determined										
	Award Date: To Be Determined										
	1 st Vendor Data Required by: To Be Determined										
	Construction Complete: To Be Determined										
Budget:	To Be Determined										

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0330	Type:	P-Purchase Order
Titles (long):	Supply of Steel Towers – 350 kV HVdc	Revision No.:	01
(short):	Supply of Towers – HVdc	Date:	13-Apr-2012

Applicable Sub-Project/SPV:

Muskkrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input checked="" type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>

IBA Package:

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0331	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware – 350 kV HVdc	Revision No.:	01
	(short): Supply of Hardware – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for hardware, accessories, fittings and grounding materials for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes two sections of wood pole electrode lines, approximately 20 km and 15 km each, near Lanse au Diable and between Soldiers Pond and Dowden’s Point, respectively.

Work Included:

For the ±350 kV HVdc transmission line, the conductors are 3640 kcmil 91/0 aluminum stranded conductor (ASC), 1192.5 kcmil aluminum conductor, steel reinforced (ACSR) Grackle and 1590 kcmil 54/19 ACSR Falcon.

The materials (exact types and sizes are shown in the Approximate Quantities Section) to be supplied under this contract package include, but not limited, to the following items:

- Pole conductor spacer dampers;
- Conductor suspension assemblies;
- Conductor dead-end assemblies;
- Conductor jumper assemblies;
- Conductor splices for compression type;
- Guy wire grips for different sizes from 12.7 mm (½”) to 25.4 mm (1”);
- Guy wire polyvinyl chloride (PVC) covers;
- Tower danger plates and tower number plates;
- Armor-rods;
- Aerial marker cones; and
- Grounding materials and hardware.

Additionally, this contract package includes the electrical tests for the conductor assemblies which includes corona tests and radio interference voltage (RIV) tests.

Grounding materials to be used on the electrode lines include, but not limited zinc-coated steel grounding rods and associated stainless steel ground clamps to be used at river crossings or any other obstacles. Ground clamps shall include all hardware necessary for assembly.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0331	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware – 350 kV HVdc	Revision No.:	01
	(short): Supply of Hardware – HVdc	Date:	13-Apr-2012

The applicable hardware fittings shall be low temperature performance rated (Charpy Impact Rated) for a minimum energy absorption of 20 J at -20°C.

The materials shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	ASC Conductor Tangent Suspension Assembly	each	6,510
2	ASC Conductor Dead-End Assembly	each	1,512
3	ASC Conductor Jumper Suspension Assembly	each	756
4	Grackle Conductor Tangent Suspension Assembly	each	1,504
5	Grackle Conductor Dead-End Assembly	each	284
6	Falcon Conductor Tangent Suspension Assembly	each	892
7	Falcon Conductor Dead-End Assembly	each	116
8	#2 6/1 ACSR "Sparrow" Bonding Conductor	m	6,301.5
9	Counterweights for Suspension and Jumper Assembly, 45 kg	each	5,000
10	ASC Conductor Compression Type Splices	each	1,247
11	ASC Conductor Stockbridge Dampers	each	7,266
12	Aerial Marker Cone White	each	24
13	Aerial Marker Cone Orange	each	48
14	Grackle Conductor Compression Type Splices	each	342
15	Grackle Conductor Stockbridge Dampers	each	1,646
16	Parrot Conductor Compression Type Splices	each	102
17	Parrot Conductor Stockbridge Dampers	each	950
18	Tower Structure Number Tags	each	3,633
19	Tower Aerial Structure Number Boards	each	363
20	Tower Danger Signs	each	7,266
21	Tower Aerial Line Number Boards	each	10
22	Guy Wire Assembly	each	6,510
25	Guy Wire Guard, Yellow 2.4 m (94.5") Per Guy	each	6,510
26	Two-Hole Compression Terminal Lug for 7.2 (9/32") mm Steel Bonding Conductor	each	3,633
27	Compression Connector for 7.2 mm (9/32") Steel Bonding Conductor	each	3,633
28	Ground Clamp for Ground Rod	each	400
29	Grounding Rod	each	400
30	Corona Test		To Be Determined
31	RIV Test		To Be Determined

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0331	Type:	P-Purchase Order
Titles (long):	Supply of Tower Hardware – 350 kV HVdc	Revision No.:	01
(short):	Supply of Hardware – HVdc	Date:	13-Apr-2012

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Counterpoise Conductor and Bonding Wire	PT0334
Installation of Supplies	CT0327
	CT0342
	CT0346
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Line - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0331	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware – 350 kV HVdc	Revision No.:	01
	(short): Supply of Hardware – HVdc	Date:	13-Apr-2012

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Line - Island
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

- | | | | |
|------------------------------|--------------------------|-------------------------------------|-------------------------------------|
| Muskrat Falls Generation | <input type="checkbox"/> | Labrador – Island Transmission Link | <input checked="" type="checkbox"/> |
| Labrador Transmission Assets | <input type="checkbox"/> | Lower Churchill Project – General | <input type="checkbox"/> |

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0331	Type:	P-Purchase Order
Titles	(long): Supply of Tower Hardware – 350 kV HVdc	Revision No.:	01
	(short): Supply of Hardware – HVdc	Date:	13-Apr-2012

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0334	Type:	P-Purchase Order
Titles	(long): Supply of Steel Wires – 350 kV HVdc	Revision No.:	01
	(short): Supply of Wires – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for galvanized stranded steel wires for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes two sections of wood pole electrode lines, approximately 20 km and 15 km each, near Lanse au Diable and between Soldiers Pond and Dowden’s Point, respectively.

Work Included:

For the ±350 kV HVdc transmission line, this contract package includes:

- 7.2 mm galvanized (Class B) single-strand steel counterpoise wire, Grade 50 or superior, as per CSA G12 Standard; and
- Galvanized (Class A) stranded steel wires, Grade 1 as per ASTM A586-04a Standard. The diameter of guy wires will vary between 16 mm and 32 mm according to the type of tower and the loading zone. The different diameters will be specified later.

For the wood pole electrode lines, this contract package will only include galvanized (Class A) stranded steel wires, Grade 1 as per ASTM A586-04a Standard. The diameter of guy wires will vary between 16 mm and 32 mm according to the wood pole and the loading zone. The different diameters will be specified later.

The steel wires shall be delivered on wooden reels of specified lengths to the marshalling yard. The wooden reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	7.2 mm Galvanized (Class B) Single-Strand Steel Wire Grade 50 or Superior	m	1,136,910
2	Galvanized (Class A) Stranded Steel Wires, Grade 1	m	520,800

Contract Basis:

This contract basis is:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0334	Type:	P-Purchase Order
Titles	(long): Supply of Steel Wires – 350 kV HVdc	Revision No.:	01
	(short): Supply of Wires – HVdc	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Guy Anchors	PT0352
Hardware, Grounding Materials, Beside Counterpoise Conductor	PT0331
Installation of Supplies	CT0327 CT0342 CT0346
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Lines - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Tower Hardware - 350 kV HVdc	PT0331

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0334	Type:	P-Purchase Order
Titles (long):	Supply of Steel Wires – 350 kV HVdc	Revision No.:	01
(short):	Supply of Wires – HVdc	Date:	13-Apr-2012

Specific Schedule Conditions:	<p>Any other packages that have to be started before the subject package can proceed:</p> <ul style="list-style-type: none"> Not Applicable <p>Any other packages that cannot proceed before the subject package has started:</p> <ul style="list-style-type: none"> CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1 CT0342 – Construction of ac Transmission Lines - Island CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2 				
Specific Environment Conditions:	Not Applicable				
Specific Safety Conditions:	Not Applicable				
Special Requirements:	Not Applicable				
Free Issued Materials:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Not Applicable</td> <td></td> </tr> </tbody> </table>	Description	Package No.	Not Applicable	
Description	Package No.				
Not Applicable					
Major Equipment List:	Not Applicable				
Schedule and Milestones:	<p style="text-align: right;">EOI Date: To Be Determined RFP Date: To Be Determined Award Date: To Be Determined 1st Vendor Data Required by: To Be Determined Construction Complete: To Be Determined</p> <p>Dates for milestones will be updated once the Project baseline schedule is in place.</p>				
Budget:	To Be Determined				
Applicable Sub-Project/SPV:	<p>Muskrat Falls Generation <input type="checkbox"/> Labrador – Island Transmission Link <input checked="" type="checkbox"/></p> <p>Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input type="checkbox"/></p>				
IBA Package:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0335	Type:	P-Purchase Order
Titles	(long): Supply of Anchor Materials – 315 kV HVac	Revision No.:	01
	(short): Supply of Anchors – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Michel Belanger
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the fabrication, shop testing, delivery and warranty for threaded bars (Dywidag or equivalent) for rock and soil anchors for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Work Included:

This contract package will include:

- Mechanical anchors (Dywidag, Williams or equivalent all thread bars Grade 75 ASTM A615, $F_y = 520$ MPa): 25M rock anchor, length and rock depth is to be determined for Tower Type A;
- Grouted anchors (Williams Grade 75 ASTM A615 all thread bars R61 or equivalent): 45M soil anchor, length and soil depth is to be determined for Tower Type A;
- Grouted anchors (Williams Grade 75 ASTM A615 all thread bars R61 or equivalent): 45M rock anchor, length and soil depth is to be determined for Tower Type A (sound rock);
- Mechanical anchors (Dywidag, Williams or equivalent all thread bars Grade 75 ASTM A615, $F_y = 520$ MPa): 25M rock anchor, length and rock depth for Tower Type B;
- Grouted anchors (Williams Grade 75 ASTM A615 all thread bars R61 or equivalent): 45M soil anchor, length and soil depth is to be determined for Tower Type B;
- Grouted anchors (Williams Grade 75 ASTM A615 all thread bars R61 or equivalent): 45M rock anchor, length and soil depth is to be determined for Tower Type B (sound rock);
- Mechanical anchors (Dywidag, Williams or equivalent all thread bars Grade 75 ASTM A615, $F_y = 520$ MPa): 35M rock anchor, length and rock depth is to be determined for Tower Type C (sound rock);
- Mechanical anchors (Dywidag, Williams or equivalent all thread bars Grade 75 ASTM A615, $F_y = 520$ MPa): 45M rock anchor, length and rock depth is to be determined for Tower Type D (sound rock); and
- Mechanical anchors (Dywidag, Williams or equivalent all thread bars Grade 75 ASTM A615, $F_y = 520$ MPa): 45M rock anchor, length and rock depth is to be determined for Tower Type E (sound rock).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0335	Type:	P-Purchase Order
Titles (long):	Supply of Anchor Materials – 315 kV HVac	Revision No.:	01
(short):	Supply of Anchors – HVac	Date:	13-Apr-2012

The anchor materials shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date and shall be delivered to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	25M Rock Anchor – Mechanical	each	2,520
2	35M Rock Anchor – Mechanical	each	352
3	45M Rock Anchor – Mechanical	each	800
4	45M Soil Anchor – Grouted	each	560
5	45M Rock Anchor – Grouted	each	3,648

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0319
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0335	Type:	P-Purchase Order
Titles	(long): Supply of Anchor Materials – 315 kV HVac	Revision No.:	01
	(short): Supply of Anchors – HVac	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Steel Wires - 315 kV HVac	PT0326

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0335	Type:	P-Purchase Order
Titles (long):	Supply of Anchor Materials – 315 kV HVac	Revision No.:	01
(short):	Supply of Anchors – HVac	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0336	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Distribution Line Hardware	Revision No.:	01
(short):	Supply of 25 kV Hardware	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary: This contract package includes the purchase for hardware for the construction of approximately 31 km of 25 kV HVac overhead distribution line between the proposed construction power tap substation and the proposed accommodation complex at Muskrat Falls.

Work Included: This contract package includes the purchase for hardware for the 25 kV HVac overhead distribution line and the full details on the types and quantities of hardware can be found in the RFI. The materials shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	See RFI Information PT0336-03 PM+ RFI Report: PT0336		Not Applicable

Contract Basis: This contract basis is:

Lump Sum	<input type="checkbox"/>	Unit Rates	<input checked="" type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Work Excluded:

Description	Package No.
Installation of Supplies	CD0512
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0336	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Distribution Line Hardware	Revision No.:	01
	(short): Supply of 25 kV Hardware	Date:	13-Apr-2012

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of Construction Power Facilities	CD0512

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CD0512 – Construction of Construction Power Facilities

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0336	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Distribution Line Hardware	Revision No.:	01
(short):	Supply of 25 kV Hardware	Date:	13-Apr-2012

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 03-Oct-2011
 RFP Date: 02-Feb-2012
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0337	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Distribution Line ADSS Fibre Optic Cable	Revision No.:	01
	(short): Supply of 25 kV ADSS	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, delivery, construction supervision, installation support and warranty for two all-dielectric self-supporting fibre optic cable and accessories for the construction of approximately 31 km of 25 kV HVac overhead distribution line between the proposed construction power tap substation and the proposed accommodation complex at Muskrat Falls.

Work Included:

This contract package includes but not be limited to the following:

- Fibre cable, single mode, 48 strand all-dielectric self-supporting (ADSS) cable (reel size is 5,500 m);
- Suspension clamps for the proposed ADSS for tangent and running angle structures complete with grounding attachments to the pole body;
- Dead-end clamps for proposed ADSS for dead-end structures complete with grounding attachments to the pole body;
- Splicing boxes and associated accessories for splicing the proposed ADSS; and
- Aeolian vibration dampers for the proposed ADSS.

Construction supervision includes the supervision during stringing and sagging operation of the ADSS by Others to validate the warranty of the ADSS. Installation support includes the splicing of proposed ADSS at the splice locations.

The ADSS shall be delivered on steel reels of specified lengths to the marshalling yard. The steel reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	ADSS Hardware Assembly For Tangent Suspension Wood Pole Structures	each	239
2	ADSS Hardware Assembly For Light and Medium Angle Suspension Wood Pole Structures	each	50
3	ADSS Hardware Assembly For Dead-End Wood Pole Structures	each	277
4	Fibre Cable, Single Mode, 48-Strand ADSS Cable	km	22
5	Splice Enclosure of ADSS	each	20

Contract Basis:

This contract basis is:

Lump Sum	<input type="checkbox"/>	Unit Rates	<input checked="" type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0337	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Distribution Line ADSS Fibre Optic Cable	Revision No.:	01
	(short): Supply of 25 kV ADSS	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Installation of Supplies	CD0512
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of Construction Power Facilities	CD0512

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CD0512 – Construction of Construction Power Facilities

Specific Environment Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0337	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Distribution Line ADSS Fibre Optic Cable	Revision No.:	01
(short):	Supply of 25 kV ADSS	Date:	13-Apr-2012

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 13-Sept-2011
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0338	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Distribution Line Conductors	Revision No.:	01
	(short): Supply of 25 kV Conductors	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the purchase for conductors for the construction of approximately 31 km of 25 kV HVac overhead distribution line between the proposed construction power tap substation and the proposed accommodation complex at Muskrat Falls.

Work Included:

This contract package includes:

- 3/8" Grade 160-7 guy wire;
- No. 2 SD aluminum tie wire;
- No. 2 aluminum alloy stranded conductor (AASC) aluminum bare wire;
- 1/0 AASC aluminum bare wire;
- 4/0 AASC aluminum bare wire;
- 477 aluminum stranded conductor (ASC) aluminum bare wire;
- 2/0 SD stranded copper bare wire; and
- No. 4 SD solid copper bare wire.

The conductors shall be delivered on steel reels of specified lengths to the marshalling yard. The steel reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	3/8" Grade 160-7	m	7,500
2	No. 2 SD	m	2,294
3	No. 2 AASC	m	925
4	1/0 AASC	m	254
5	4/0 AASC	m	21,090
6	No. 4 SD Solid	m	3,660
7	2/0 SD Stranded	m	135
8	477 ASC	m	62,000

Contract Basis:

This contract basis is:

Lump Sum	<input type="checkbox"/>	Unit Rates	<input checked="" type="checkbox"/>
Combination Lump Sum – Unit Rates	<input type="checkbox"/>	Cost Reimbursable	<input type="checkbox"/>

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0338	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Distribution Line Conductors	Revision No.:	01
(short):	Supply of 25 kV Conductors	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Installation of Supplies	CD0512
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of Construction Power Facilities	CD0512

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CD0512 – Construction of Construction Power Facilities

Specific Environment Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0338	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Distribution Line Conductors	Revision No.:	01
	(short): Supply of 25 kV Conductors	Date:	13-Apr-2012

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 24-Aug-2011
 RFP Date: 03-Feb-2012
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: PT0339 Type: P-Purchase Order
 Titles (long): Supply of 25 kV Distribution Line Insulators Revision No.: 01
 (short): Supply of 25 kV Insulators Date: 13-Apr-2012

Discipline: Transmission Lines
 Responsibilities: Area Manager: Kumar Kandaswamy Package Engineer: Ananth Rao
 QA / QC: Kenneth Morrison Contract Admin. / Buyer: Hartfield Stevens

Scope of Work Summary:

This contract package includes the purchase for insulators for the construction of approximately 31 km of 25 kV HVac overhead distribution line between the proposed construction power tap substation and the proposed accommodation complex at Muskrat Falls.

Work Included:

This contract package includes:

- 35 kV pin Type 42 insulator: 1 3/8" thread, vise top, PE;
- 34.5 kV Line Post Insulator: 3/4" Thread, Vertical, Porcelain; and
- 25 kV Suspension Insulator: Polymer.

The insulators shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	1 3/8" Thread, Vise Top, PE	each	831
2	3/4" Thread, Vertical, Porcelain	each	342
3	Polymer	each	783

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CD0512
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0339	Type:	P-Purchase Order
Titles	(long): Supply of 25 kV Distribution Line Insulators	Revision No.:	01
	(short): Supply of 25 kV Insulators	Date:	13-Apr-2012

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of Construction Power Facilities	CD0512

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CD0512 – Construction of Construction Power Facilities

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0339	Type:	P-Purchase Order
Titles (long):	Supply of 25 kV Distribution Line Insulators	Revision No.:	01
(short):	Supply of 25 kV Insulators	Date:	13-Apr-2012

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 09-Sept-2011
 RFP Date: 02-Feb-2012
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined
 Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0340	Type:	P-Purchase Order
Titles (long):	Supply of Wood Poles for 138/25 KV Distribution Line	Revision No.:	01
(short):	Supply of Poles for 138/25 KV	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Installation of Supplies	CD0512
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of Construction Power Facilities	CD0512

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CD0512 – Construction of Construction Power Facilities

Specific Environment Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0340	Type:	P-Purchase Order
Titles (long):	Supply of Wood Poles for 138/25 KV Distribution Line	Revision No.:	01
(short):	Supply of Poles for 138/25 KV	Date:	13-Apr-2012

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: 15-Sept-2011
 RFP Date: 09-Dec-2011
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0347	Type:	P-Purchase Order
Titles	(long): Supply of Re-Termination Materials	Revision No.:	01
	(short): Supply of RT Materials	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, packaging, delivery and warranty for hardware, accessories, fittings, galvanized stranded steel wires, phase conductors and ball and socket type suspension insulator disks for the construction of the re-termination of four 230 kV HVac transmission lines (TL201, TL217, TL218 and TL242) at the proposed Soldiers Pond Converter Station.

Additionally, this contract package includes the modification of three existing 230 kV HVac transmission lines (TL201, TL204 and TL 232), two existing 138 kV transmission lines (L301 and L302) and one existing 69 kV transmission line (TL251) located between Hampden and Soldiers Pond.

Work Included:

For the re-termination and modification of the lines, Counterpoise conductor 7.2 mm (9/32") galvanized (Class B) single-strand steel wire, Grade 50 or superior, as per CSA G12 Standard, overhead shield wire (OHSW) is 12.7 mm (1/2") galvanized (Class B) steel stranded wire, Grade 220 with a rated tensile strength (RTS) of 138.8 kN as per CSA G12 Standard and guy wires galvanized (Class A) stranded steel wires, Grade 1 as per ASTM A586-04a Standard. The diameter of the guy wires will vary according to the type of tower and the loading zone.

The materials (exact types and sizes are shown in the Approximate Quantities Section) to be supplied under this contract package include, but not limited, to the following items:

- 804 kcmil AACSR/TW phase conductor;
- 266 kcmil ACSR partridge phase conductor;
- 1192.5 kcmil grackle phase conductor;
- 397 kcmil ACSR Ibis phase conductor;
- Phase conductor spacer dampers;
- Counterpoise conductor;
- Insulators
- OHSW;
- OHSW dampers;
- Conductor and OHSW suspension assemblies;
- Conductor and OHSW dead-end assemblies;
- Conductor and OHSW splices for compression type;
- Guy wires;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0347	Type:	P-Purchase Order
Titles	(long): Supply of Re-Termination Materials	Revision No.:	01
	(short): Supply of RT Materials	Date:	13-Apr-2012

- Guy wire grips suitable for different sizes from 12.7 mm (½”) to 25.4 mm (1”);
- Guy wire polyurethane chloride (PVC) covers;
- Tower danger plates and tower number plates;
- Assembly hardware for poles;
- Armor-rods; and

Aerial marker cones. The quantities and types will be specified at a later date.

There are two acceptable types of insulator disks; porcelain and glass.

The quantities and types of structural materials for foundations and towers will be specified at a later date.

The applicable hardware fittings shall be low temperature performance rated (Charpy Impact Rated) for a minimum energy absorption of 20 J at -20°C.

The conductors and OHSW shall be delivered on steel reels of specified lengths to the marshalling yard. The steel wires shall be delivered on wooden reels of specified lengths to the marshalling yard. The reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

The other materials shall be delivered in suitable crates to the marshalling yard.

Approximate Quantities
(Major Items Only):

Item	Description	Unit	Quantity
1	12.7 mm (½”) Galvanized (Class B) Stranded Steel Wire, Grade 220	m	20,700
2	7.2 mm (9/32”) Galvanized (Class B) Single-Strand Steel Wire, Grade 50 or Superior	m	5,000
3	Guy Wires Galvanized (Class A) Stranded Steel Wires, Grade 1		To Be Determined
4	804 kcmil AACSR/TW	m	30,000
5	266 kcmil ACSR Partridge	m	900
6	1192.5 kcmil Grackle	m	4,800
7	397 kcmil ACSR Ibis	m	2,100
8	Other Materials		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0347	Type:	P-Purchase Order
Titles (long):	Supply of Re-Termination Materials	Revision No.:	01
(short):	Supply of RT Materials	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Installation of Supplies	CT0342
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of ac Transmission Lines - Island	CT0342

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0342 – Construction of ac Transmission Lines - Island

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0347	Type:	P-Purchase Order
Titles	(long): Supply of Re-Termination Materials	Revision No.:	01
	(short): Supply of RT Materials	Date:	13-Apr-2012

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0351	Type:	P-Purchase Order
Titles	(long): Supply of Wood Poles	Revision No.:	01
	(short): Supply of Poles	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the fabrication, packing, delivery and warranty for wood poles for two sections of wood pole electrode lines, approximately 20 km and 15 km, near Lanse au Diable and between Soldiers Pond and Dowden's Point, respectively. Additionally, this contract package includes the re-termination of two 230 kV HVac transmission lines (TL201 and TL242) at the proposed Soldiers Pond Converter Station. Plus, the modification of two existing 230 kV HVac transmission lines (TL201 and TL 232), two existing 138 kV transmission lines (L301 and L302) and one existing 69 kV transmission line (TL251) located between Hampden and Soldiers Pond.

Work Included:

This contract package includes:

- H1 class wood poles for the two sections of wood pole electrode lines;
- 3-Pole dead-end wood poles for the re-termination of the 230 kV HVac transmission lines and the modification of the 230 kV HVac transmission lines and 138 kV transmission lines;
- H-Frame tangent structures for the re-termination of the 230 kV HVac transmission lines;
- Single pole dead-end wood pole for the modification of the 69 kV transmission line; and
- Single pole tangent wood pole for the modification of the 69 kV transmission line.

The H1 class wood poles will have a height range of 12.2 m (40') to 18.3 m (60') and a ruling span of approximately 100 m.

Suppliers will be responsible for manufacturing pole as per pole and manufacturing specifications, which will be provided to the Supplier at a later date.

The wood poles and accessories shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date. The wood poles and accessories shall be delivered to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	3-Pole Dead-End	each	24
2	H-Frame Tangent Structure	each	17
3	Single Pole Dead-End	each	2
4	Single Pole Tangent	each	2
5	H1 Class - Labrador	each	179
6	H1 Class - Newfoundland	each	171

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0351	Type:	P-Purchase Order
Titles (long):	Supply of Wood Poles	Revision No.:	01
(short):	Supply of Poles	Date:	13-Apr-2012

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0327 CT0342
May Exclude Delivery Depending On Project Logistics Plan	Not Applicable

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Lines - Island	CT0342

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0351	Type:	P-Purchase Order
Titles	(long): Supply of Wood Poles	Revision No.:	01
	(short): Supply of Poles	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- ST0312 – Provision of Survey Services - 350 kV HVdc

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Lines - Island

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Will use existing Nalcor long-term supply agreement where possible.

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskkrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0351	Type:	P-Purchase Order
Titles	(long): Supply of Wood Poles	Revision No.:	01
	(short): Supply of Poles	Date:	13-Apr-2012

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0352	Type:	P-Purchase Order
Titles	(long): Supply of Anchor Materials – 350 kV HVdc	Revision No.:	01
	(short): Supply of Anchors – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Michel Belanger
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the fabrication, shop testing, delivery and warranty for threaded bars (Dywidag or equivalent) for rock and soil anchors for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes two sections of wood pole electrode lines, approximately 20 km and 15 km each, near Lanse au Diable and between Soldiers Pond and Dowden’s Point, respectively.

Work Included:

The types and quantities of threaded bars are to be determined.
The anchor materials shall be packed as per detailed packing instructions which will be provided to the Supplier at a later date and shall be delivered to the marshalling yard.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Threaded Bars (Dywidag or Equivalent)	each	To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Installation of Supplies	CT0327 CT0342 CT0346
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0352	Type:	P-Purchase Order
Titles	(long): Supply of Anchor Materials – 350 kV HVdc	Revision No.:	01
	(short): Supply of Anchors – HVdc	Date:	13-Apr-2012

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

4	Continuous in process quality monitoring and verification and final verification
3	Regular in process quality monitoring and verification and final quality verification
2	Limited in process quality monitoring and verification and final quality verification
1	Final quality verification
0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Lines - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Steel Tower Foundations - 350 kV HVdc	PT0308

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Lines - Island
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0352	Type:	P-Purchase Order
Titles (long):	Supply of Anchor Materials – 350 kV HVdc	Revision No.:	01
(short):	Supply of Anchors – HVdc	Date:	13-Apr-2012

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0353	Type:	P-Purchase Order
Titles	(long): Supply of Optical Ground Wire (OPGW) – 350 kV HVdc (short): Supply of OPGW – HVdc	Revision No.:	01
		Date:	13-Apr-2012
Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Hamidreza Bakhshi
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Hartfield Stevens

Scope of Work Summary:

This contract package includes the design, fabrication, shop testing, delivery, construction supervision, installation support and warranty for optical ground wire and accessories for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Additionally, this contract package includes all-dielectric self-supporting fibre optic cable and accessories for the construction of two sections of wood pole electrode lines, approximately 20 km and 15 km each, near Lanse au Diable and between Soldiers Pond and Dowden’s Point, respectively.

Work Included:

The optical ground wire (OPGW) shall have 24 single mode fibres (SMF) for the ±350 kV HVdc transmission line.

This contract package includes:

- 140 kN – 14.5 mm 24 Fibre OPGW for 50 mm ice zone;
- 177 kN – 15.5 mm 24 Fibre OPGW for 75 mm ice zone;
- 277 kN – 20.6 mm 24 Fibre OPGW for 135 mm ice zone;
- Suspension assemblies for each of the proposed OPGW for tangent and running angle structures complete with grounding attachments to the tower body;
- Dead-end assemblies for each of the proposed OPGW for dead-end structures complete with grounding attachments to the tower body;
- Splicing boxes and associated accessories for splicing the proposed OPGW; and
- Aeolian vibration dampers for each of the proposed OPGW.

The all-dielectric self-supporting (ADSS) fibre optic cable shall have 24 single mode fibres (SMF) and mechanical properties as per IEEE Standard 1222. The ADSS will be employed on the electrode lines, along the entire length of the lines.

This contract package will include ADSS and accessories for the two sections of wood pole electrode lines:

- Suspension clamps for the proposed ADSS for tangent and running angle structures complete with grounding attachments to the pole body;
- Dead-end clamps for proposed ADSS for dead-end structures complete with grounding attachments to the pole body;
- Splicing boxes and associated accessories for splicing the proposed ADSS; and

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0353	Type:	P-Purchase Order
Titles	(long): Supply of Optical Ground Wire (OPGW) – 350 kV HVdc	Revision No.:	01
	(short): Supply of OPGW – HVdc	Date:	13-Apr-2012

- Aeolian vibration dampers for the proposed ADSS.

Additionally, this contract package includes the electrical tests for the OPGW which includes Type Test.

Construction supervision includes the supervision during stringing and sagging operation of the OPGW and ADSS by Others to validate the warranty of the OPGW and ADSS. Installation support includes the splicing of proposed OPGW and ADSS at the splice locations.

The OPGW and ADSS shall be delivered on steel reels of the specified lengths to marshalling yard. The steel reels may be returnable but the collection from the marshalling yard following construction will be the responsibility of the Supplier, or as per negotiated with the Supplier.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: PT0353
 Titles (long): Supply of Optical Ground Wire (OPGW) – 350 kV HVdc
 (short): Supply of OPGW – HVdc

Type: P-Purchase Order
 Revision No.: 01
 Date: 13-Apr-2012

Approximate Quantities
 (Major Items Only):

Item	Description	Unit	Quantity
1	140 kN – 14.5 mm 24 Fibre OPGW	m	737,520
2	177 kN – 15.5 mm 24 Fibre OPGW	m	186,480
3	277 kN – 20.6 mm 24 Fibre OPGW	m	208,950
4	24 Fibre ADSS: To Be Determined	m	35,000
5	Suspension Assembly for 14.5 mm 24 Fibre OPGW	each	1,618
6	Dead-End Assembly for 14.5 mm 24 Fibre OPGW	each	604
7	Suspension Assembly for 15.5 mm 24 Fibre OPGW	each	493
8	Dead-End Assembly for 15.5 mm 24 Fibre OPGW	each	194
9	Suspension Assembly for 20.6 mm 24 Fibre OPGW	each	954
10	Dead-End Assembly for 20.6 mm 24 Fibre OPGW	each	338
11	Downlead and Guide Clamp for 14.5 mm 24 Fibre OPGW	each	4,920
12	Spiral Vibration Damper for 14.5 mm 24 Fibre OPGW	each	3,840
13	Splice Box, OPGW to OPGW for 14.5 mm 24 Fibre OPGW	each	123
14	Downlead and Guide Clamp for 15.5 mm 24 Fibre OPGW	each	1,280
15	Spiral Vibration Damper for 15.5 mm 24 Fibre OPGW	each	730
16	Splice Box, OPGW to OPGW for 15.5 mm 24 Fibre OPGW	each	32
17	Downlead and Guide Clamp for 20.6 mm 24 Fibre OPGW	each	1,400
18	Spiral Vibration Damper for 20.6 mm 24 Fibre OPGW	each	2,246
19	Splice Box, OPGW to OPGW for 20.6 mm 24 Fibre OPGW	each	35
20	Type Test		To Be Determined

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0353	Type:	P-Purchase Order
Titles (long):	Supply of Optical Ground Wire (OPGW) – 350 kV HVdc	Revision No.:	01
(short):	Supply of OPGW – HVdc	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Installation of Supplies	CT0327 CT0346 CT0342
May Exclude Delivery Depending On Project Logistics Plan	To Be Determined

Quality:

Requires Determination of the Equipment Quality Rating: Yes No

Determination of Equipment Criticality based on GP-5600-PR-02-E

High Minor
 Significant Negligible
 Moderate

Determination of Quality Surveillance level based on GP-5600-PR-03-E is to be determined.

<input type="checkbox"/>	4	Continuous in process quality monitoring and verification and final verification
<input type="checkbox"/>	3	Regular in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	2	Limited in process quality monitoring and verification and final quality verification
<input type="checkbox"/>	1	Final quality verification
<input type="checkbox"/>	0	No quality surveillance, no quality verification

Reference Section:

The following main document was used to define the scope:

DG3 Capital Cost Estimate – Basis of Estimate
 SLI Document Number: 505573-0000-33RA-I-001
 Nalcor Reference Number: LCP-SN-CD-0000-EP-ES-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Line - Island	CT0342
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Tower Hardware – 350 kV HVdc	PT0331

Specific Site Conditions:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	PT0353	Type:	P-Purchase Order
Titles	(long): Supply of Optical Ground Wire (OPGW) – 350 kV HVdc	Revision No.:	01
	(short): Supply of OPGW – HVdc	Date:	13-Apr-2012

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Line - Island
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Not Applicable

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0309	Type:	Service Contract
Titles	(long): Provision of Geotechnical Investigation Services – 315 kV HVac	Revision No.:	01
	(short): Provision of Geotech – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	To Be Determined

Scope of Work Summary: This contract package includes geotechnical investigation work required for the soil design parameters and the selection of appropriate foundations for the construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Work Included: This contract package includes:

- Analysis of available geotechnical information;
- Geotechnical investigation program to characterize the soil in homogeneous portion of ground by using the following techniques:
 - Geologist site visit;
 - Dynamic cone or vane test;
 - Percussion penetrometers or test pit; and
 - Borehole (piezometer).
- Report and recommendation for every foundation.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Work In Progress		Work In Progress

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Camps and Marshalling Sites	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0309	Type:	Service Contract
Titles (long):	Provision of Geotechnical Investigation Services – 315 kV HVac	Revision No.:	01
(short):	Provision of Geotech – HVac	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Supply of Steel Tower Foundations - 315 kV HVac	PT0307
Supply of Anchor Materials - 315 kV HVac	PT0335

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

- Any other packages that have to be started before the subject package can proceed:
- Not Applicable
- Any other packages that cannot proceed before the subject package has started:
- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)
 - PT0307 – Supply of Steel Tower Foundations - 315 kV HVac
 - PT0335 – Supply of Anchor Materials - 315 kV HVac

Specific Environment Conditions:

- The environmental requirements for the Lower Churchill Project are described in the following documents:
- Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
 - Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
 - Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
 - Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
 - Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
 - Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0309	Type:	Service Contract
Titles	(long): Provision of Geotechnical Investigation Services – 315 kV HVac	Revision No.:	01
	(short): Provision of Geotech – HVac	Date:	13-Apr-2012

PL-0006-01)

- g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
- i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0309	Type:	Service Contract
Titles (long):	Provision of Geotechnical Investigation Services – 315 kV HVac	Revision No.:	01
(short):	Provision of Geotech – HVac	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0310	Type:	Service Contract
Titles (long):	Provision of Geotechnical Investigation Services – 350 kV HVdc	Revision No.:	01
(short):	Provision of Geotech – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities: Area Manager:	Keenan Healey	Package Engineer:	Ananth Rao
QA / QC:	Kenneth Morrison	Contract Admin. / Buyer:	To Be Determined

Scope of Work Summary:

This contract package includes geotechnical investigation work required for the soil design parameters and the selection of appropriate foundations for the construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast.

Work Included:

This contract package includes:

- Analysis of available geotechnical information;
- Geotechnical investigation program to characterize the soil in homogeneous portion of ground by using the following techniques:
 - Geologist site visit;
 - Dynamic cone or vane test;
 - Percussion penetrometers or test pit; and
 - Borehole (piezometer).
- Report and recommendation for every foundation.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Work In Progress		Work In Progress

Contract Basis:

This contract basis is:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Camps and Marshalling Sites	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0310	Type:	Service Contract
Titles	(long): Provision of Geotechnical Investigation Services – 350 kV HVdc	Revision No.:	01
	(short): Provision of Geotech – HVdc	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Supply of Steel Tower Foundations - 350 kV HVdc	PT0308
Supply of Anchor Materials - 350 kV HVdc	PT0352

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2
- PT0308 – Supply of Steel Tower Foundations - 350 kV HVdc
- PT0352 – Supply of Anchor Materials - 350 kV HVdc

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- a) Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- b) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0310	Type:	Service Contract
Titles	(long): Provision of Geotechnical Investigation Services – 350 kV HVdc	Revision No.:	01
	(short): Provision of Geotech – HVdc	Date:	13-Apr-2012

- f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
- i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0310	Type:	Service Contract
Titles (long):	Provision of Geotechnical Investigation Services – 350 kV HVdc	Revision No.:	01
(short):	Provision of Geotech – HVdc	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0311	Type:	Service Contract
Titles (long):	Provision of Survey Services – 315 kV HVac	Revision No.:	01
(short):	Provision of Survey – HVac	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Kumar Kandaswamy	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	To Be Determined

Scope of Work Summary:

This contract package includes the centerline, ground and aerial surveys for the design and construction of approximately 500 km of two parallel, single circuit, 3-phase, 315 kV HVac transmission lines (each approximately 250 km in length) from Muskrat Falls to Churchill Falls.

Additionally, this contract package includes two short 735 kV interconnection lines, approximately 0.6 km each, between the existing switchyard and the proposed substation at Churchill Falls. Plus, four short 315 kV interconnection lines, approximately 0.5 km each, between the proposed powerhouse and the proposed switchyard at Muskrat Falls.

Work Included:

For the 315 kV HVac transmission lines, 735 kV interconnection and the 315 kV interconnection line, this contract package includes:

- Legal surveys;
- Individual ownership plans;
- Quality control of the Contractor's surveys;
- Route changes; and
- Line crossings.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Work In Progress		Work In Progress

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Not Applicable	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0311	Type:	Service Contract
Titles	(long): Provision of Survey Services – 315 kV HVac	Revision No.:	01
	(short): Provision of Survey – HVac	Date:	13-Apr-2012

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 315 kV HVac Transmission Lines (MF to CF)	CT0319
Clearing of Right-of-Way for 315 kV HVac Transmission Lines (MF to CF)	CT0341

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0319 – Construction of 315 kV HVac Transmission Lines (MF to CF)
- CT0341 – Clearing of Right-of-Way for 315 kV HVac Transmission Lines (MF to CF)

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- a) Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- b) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
- c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0311	Type:	Service Contract
Titles	(long): Provision of Survey Services – 315 kV HVac	Revision No.:	01
	(short): Provision of Survey – HVac	Date:	13-Apr-2012

	Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
g)	Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
h)	Exhibit 6 – Environmental and Regulatory Compliance Requirements
i)	Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
j)	Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
k)	Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
l)	Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)
	Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

	The health and safety and security requirements for the Lower Churchill Project are described in the following documents:
	<ul style="list-style-type: none"> • SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00) • SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00) • SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001) • SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

	Not Applicable
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Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

	Not Applicable
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Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0311	Type:	Service Contract
Titles	(long): Provision of Survey Services – 315 kV HVac	Revision No.:	01
	(short): Provision of Survey – HVac	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0312	Type:	Service Contract
Titles	(long): Provision of Survey Services – 350 kV HVdc	Revision No.:	01
	(short): Provision of Survey – HVdc	Date:	13-Apr-2012

Discipline:	Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	Ananth Rao
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	To Be Determined

Scope of Work Summary:

This contract package includes the centerline, ground and aerial surveys for the design and construction of approximately 1,080 km of 900 MW, ±350 kV HVdc transmission line from Muskrat Falls to Soldiers Pond including approximately 385 km of electrode line carried on the ±350 kV HVdc towers from Muskrat Falls to approximately 20 km from the coast. Plus, two sections of wood pole electrode lines, approximately 20 km and 15 km, near Lanse au Diable and between Soldiers Pond and Dowden’s Point, respectively.

Additionally, this contract package includes the re-termination of four 230 kV HVac transmission lines (TL201, TL217, TL218 and TL242) at the proposed Soldiers Pond Converter Station. Plus, the modification of three existing 230 kV HVac transmission lines (TL201, TL204 and TL 232), two existing 138 kV transmission lines (L301 and L302) and one existing 69 kV transmission line (TL251) located between Hampden and Soldiers Pond.

Work Included:

For the ±350 kV HVdc transmission line, the electrode line, the wood pole electrode lines, the re-termination and modification of 230 kV HVac, the modification of 138 kV transmission lines and 69 kV transmission line, this contract package includes:

- Legal surveys;
- Individual ownership plans;
- Quality control of the Contractor’s surveys;
- Route changes; and
- Line crossings.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Work In Progress		Work In Progress

Contract Basis:

This contract basis is:

Lump Sum Unit Rates
 Combination Lump Sum – Unit Rates Cost Reimbursable

Work Excluded:

Description	Package No.
Not Applicable	Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0312	Type:	Service Contract
Titles (long):	Provision of Survey Services – 350 kV HVdc	Revision No.:	01
(short):	Provision of Survey – HVdc	Date:	13-Apr-2012

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main document was used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Construction of ac Transmission Lines - Island	CT0342
Clearing of Right-of-Way for HVdc Transmission Line - Section 1	CT0343
Clearing of Right-of-Way for HVdc Transmission Line - Section 2	CT0345
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Any other packages that have to be started before the subject package can proceed:

- Not Applicable

Any other packages that cannot proceed before the subject package has started:

- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
- CT0342 – Construction of ac Transmission Line – Island
- CT0343 – Clearing of Right-of-Way for HVdc Transmission Line - Section 1
- CT0345 – Clearing of Right-of-Way for HVdc Transmission Line - Section 2
- CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the following documents:

- Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
- Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0312	Type:	Service Contract
Titles	(long): Provision of Survey Services – 350 kV HVdc	Revision No.:	01
	(short): Provision of Survey – HVdc	Date:	13-Apr-2012

- c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
- d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
- e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
- f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
- g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
- h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
- i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
- j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).
- k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)
- l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)

Note: Permit requirements are noted in Exhibit 6 (item h above)

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001)
- SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11)

Special Requirements:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	ST0312	Type:	Service Contract
Titles (long):	Provision of Survey Services – 350 kV HVdc	Revision No.:	01
(short):	Provision of Survey – HVdc	Date:	13-Apr-2012

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: To Be Determined
 RFP Date: To Be Determined
 Award Date: To Be Determined
 1st Vendor Data Required by: To Be Determined
 Construction Complete: To Be Determined

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

To Be Determined

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

LCP
PACKAGES DICTIONARIES –
(Across the Project – SM)

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.:	SM0700
Titles (long):	Provision of General Freight Forwarding Services
(short):	Freight Forwarding Services
Type:	S-Service Contract
Revision No.:	01
Date:	13-Apr-2012

Work Excluded:	Customs Clearance
Quality:	(Not Applicable)
Reference Section:	(Not Applicable)
Interface with other Packages:	(Not Applicable)
Specific Site Conditions:	(Not Applicable)
Specific Schedule Conditions:	(Not Applicable)
Specific Environment Conditions:	(Not Applicable)
Specific Safety Conditions:	(Not Applicable)
Special Requirements:	<ol style="list-style-type: none"> 1. Be CIFFA member 2. Be ISO 9001 Certified 3. Worldwide network of exclusive agents or owned and operated offices 4. Experience handling oversize, heavy lift and other special cargo
Free Issued Materials:	Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD															
Package No.: SM0700 Titles (long): Provision of General Freight Forwarding Services (short): Freight Forwarding Services	Type: S-Service Contract Revision No.: 01 Date: 13-Apr-2012														
Major Equipment List:	Not Applicable														
Schedule and Milestones:	<table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%; text-align: right;">EOI Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">RFP Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Award Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Construction Complete:</td> <td>TBD</td> </tr> <tr> <td colspan="2" style="text-align: right;">Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	TBD	Dates for milestones will be updated once the Project baseline schedule is in place.	
EOI Date:	TBD														
RFP Date:	TBD														
Award Date:	TBD														
Receive Initial Vendor Drawings:	TBD														
Forecast at Site:	TBD														
Construction Complete:	TBD														
Dates for milestones will be updated once the Project baseline schedule is in place.															
Budget	TBD														
Applicable Sub-Project/SPV	Muskrat Falls Generation <input type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input checked="" type="checkbox"/>														
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>														

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0701	Type:	Services
Titles (long):	Provision of Third Party Quality Surveillance and Inspection Services	Revision No.:	01
(short):	Third Party Quality Surveillance and Inspection	Date:	13-Apr-2012

Discipline: Hydro/Transmission Lines/DC Specialties
 Responsibilities: Area Manager: Project Quality Manager Package Engineer: Inspection Manager
 QA / QC: Contract Admin. / Buyer: Steve Mullen

Scope of Work Summary: Coordinate and provide Third Party Quality Surveillance and Inspection Services which includes, but is not limited to, the following: plant surveys, pre-production meetings, in-process inspections, progress meetings, preparation of surveillance procedures, quality audits, document reviews, interface verification, final inspection and testing, coating inspection, non-destructive examination, laboratory testing, concrete inspection and baseline surveys, factory acceptance testing and site acceptance testing.

Provide support for the development of project surveillance plans and inspection strategies, procedures and review of project inspection and test plans.

Provide procedures, surveillance and inspection reports for review.

Provide suitably qualified inspection personnel for the above services.

Provide all non-destructive inspection and testing equipment

Work Included: Provide Third Party Quality Surveillance and Inspection Services encompassing all the works associated with the manufacture, fabrication and installation of equipment and materials for the Lower Churchill Project.

The Works shall include but not be limited to civil works, electrical works, fabrication works, and mechanical works.

Provide services at supplier's, manufacturer's and contractor's facilities in the Province of Newfoundland and Labrador, other Canadian locations and internationally.

Contractor shall work under the direction of the SNC-Lavalin Project Inspection Manager.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity

Contract Basis:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0701	Type:	Services
Titles (long):	Provision of Third Party Quality Surveillance and Inspection Services	Revision No.:	01
(short):	Third Party Quality Surveillance and Inspection	Date:	13-Apr-2012

Specific Site Conditions:

-

Specific Schedule Conditions:

Specific Environment Conditions:

Specific Safety Conditions:

-

Special Requirements:

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

-

Major Equipment List:

Not Applicable

Schedule and Milestones:

EOI Date: TBD
 RFP Date: TBD
 Award Date: TBD
 1st Vendor Data Required by: TBD
 Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0701	Type:	Services
Titles (long):	Provision of Third Party Quality Surveillance and Inspection Services	Revision No.:	01
(short):	Third Party Quality Surveillance and Inspection	Date:	13-Apr-2012

Budget:

TBD

Applicable Sub-Project/SPV:

Muskrat Falls Generation

Labrador – Island Transmission Link

Labrador Transmission Assets

Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	SM0703	Type:	Lease
Titles (long):	Provision of Happy Valley-Goose Bay Project Office Space	Revision No.:	01
(short):	Happy Valley-Goose Bay Project Office Space	Date:	13-Apr-2012
Discipline:	Construction		
Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	Al Edmunds
	QA / QC:	Contract Admin. / Buyer:	Steve Mullen

Scope of work Summary:

Rental of approximately 250m² of office space for a period of 9 to 12 months.

Work Included:

- 20 Offices, approx 3m x 4m in size which are to include all furniture and communications hookup (data/telephone/fax jacks).
- 20 Workstations of typical open 2.4m x 2.4m office type portable partitions including all furniture and communications hookup (data/telephone/fax jacks)..
- (1) Male and (1) Female washroom
- Kitchen/Lunchroom; approx. 6m x 6m; including all appliances and furniture.
- Storage Space; 4m x 4m and should include furniture
- Server/Photocopy/Document Control Room; approx. 4m x 4m and include furniture
- Space for Receptionist; approx. 3m x 3m which is to include all furniture and communications hookup (data/telephone/fax jacks).
- (1) Meeting Room; approx. 8m x 4m which is to include all furniture and communications hookup (data/telephone/fax jacks).
- Parking Lot suitable for 40 vehicles
- Building should have all municipal utilities including power, water and sewer
- Janitorial Services
- Building should also include; Air conditioning, Operable Windows and Snow Clearing when required.

Approximate Quantities (major items only):

ITEM	DESCRIPTION	UNIT	QUANTITY
1			
2			

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD			
Package No.:	SM0703	Type:	Lease
Titles (long):	Provision of Happy Valley-Goose Bay Project Office Space	Revision No.:	01
(short):	Happy Valley-Goose Bay Project Office Space	Date:	13-Apr-2012

Contract Basis:

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Supply and Install Accommodations Complex Buildings	CH0002
Supply and install of Administrative Buildings	CH0003
Construction of Southside Access Road	CH0004

Quality:

Not Applicable

Reference Section:

Not Applicable

Interface with other Packages:

Description	Package No.
Not Applicable	

Specific Site Conditions:

Not Applicable

Specific Schedule Conditions:

Specific Environment Conditions:

Not Applicable

Specific Safety Conditions:

Building must meet all building code requirements regarding; fire exits, fire alarms and fire extinguishers.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD													
Package No.: SM0703 Titles (long): Provision of Happy Valley-Goose Bay Project Office Space (short): Happy Valley-Goose Bay Project Office Space	Type: Lease Revision No.: 01 Date: 13-Apr-2012												
Special Requirements:													
Free Issued Materials:	Not Applicable												
Major Equipment List:													
Schedule and Milestones:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: right;">EOI Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">RFP Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Award Date:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td style="text-align: right;">Construction Complete:</td> <td>Dates for milestones will be updated once the Project baseline schedule is in place.</td> </tr> </table>	EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.
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Forecast at Site:	TBD												
Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.												
Budget:	TBD												
Applicable Sub-Project/SPV	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">Muskrat Falls Generation</td> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 40%;">Labrador – Island Transmission Link</td> <td style="width: 10%; text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Labrador Transmission Assets</td> <td style="text-align: center;"><input type="checkbox"/></td> <td>Lower Churchill Project – General</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>	Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>				
Muskrat Falls Generation	<input checked="" type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>										
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input type="checkbox"/>										
IBA Package	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/>												

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0704	Type:	Services
Titles	(long): Provision of Surveying Services	Revision No.:	01
	(short): Surveying Services	Date:	13-Apr-2012

Discipline: Hydro/Transmission Lines
 Responsibilities: Area Manager: Package Engineer: Wallace Piercy
 QA / QC: Kenneth Morrison Contract Admin. / Buyer: Steve Mullen

Scope of Work Summary: Supply of personnel, equipment and material required to perform surveying services during the construction of the Muskrat Falls Project

Work Included:

Provide all personnel required to execute Surveying function including engineers, technicians, clerical support and supervision;

Supply all equipment and material needed to perform surveying on the sites including;

Supply their own surveying software

Supply vehicles;

Supply offices at Goose Bay – Happy Valley until those expected at the site are ready.

Developing, maintaining and updating of working procedures for surveying and calibration of equipment.

Maintaining Survey Records for its own activities including calibration records.

Monitoring other Construction Contractor's works, through identification of witness and hold points on the construction Inspection and Test Plans and development of a single plan for Site surveying.

Establish primary control points and benchmarks within the Project Sites for other Construction Contractors to establish detailed lines and levels they require to carry out their contract work.

Monitoring all surveys done by other Construction Contractors to ensure compliance with specified requirements and procedures, identify any problems that could result in delays or non-acceptance of works, or jeopardize another Contractor's work. Report all non-conformances to Company's Representative.

Providing surveys of all investigation works.

Independently carrying out and verifying quantity/measurement surveys for Construction Contractor's progress payments.

Verifying correctness of work, completing daily and weekly reports to accurately reflect progress of work. Prepare site daily reports and submit to the Company's Representative.

Compiling survey records.

Assisting the Company's Representative in reviewing and accepting Construction Contractor's survey procedures, electronic data, survey reports, field logbook entries, "As-built" survey mark-ups on drawings and Contractor's records.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: SM0704
 Titles (long): Provision of Surveying Services
 (short): Surveying Services

Type: Services
 Revision No.: 01
 Date: 13-Apr-2012

**Approximate Quantities
 (Major Items Only):**

Item	Description	Unit	Quantity
	Chief Surveyor	Man	1
	Surveyor	Man	32
	Vehicle	Truck	10
	Survey equipment for each surveyor team		8

Contract Basis:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Contractors will make the implementation of all works SLI to supply telecommunication & IT Equipment	
Accommodation Complex Buildings	CH0002
Provision of Survey Services – 315 kV HVac	ST0311
Provision of Survey Services – 350 kV HVdc	ST0312
Administrative Buildings	CH0003

Quality:

Review of survey and calibration procedures developed by other Contractors to cover all of the Civil, Mechanical and Electrical works related to surveying.

Maintain and periodically check primary control points.

Must be suitably register to Newfoundland Surveyor Association.

Reference Section:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0704	Type:	Services
Titles (long):	Provision of Surveying Services	Revision No.:	01
(short):	Surveying Services	Date:	13-Apr-2012

Interface with Other Packages:

Description	Package No.
Surveyors will have to coordinate their audit work in accordance with construction activities that will be completed concurrently.	
Will have to coordinate with contractors doing the job define in section Work Excluded	

Specific Site Conditions:

--

Specific Schedule Conditions:

The audit work of survey must follow the progress of construction contractors. So it will be necessary to have enough surveyors not to cause any delay in the execution of work.

Must be provided as may be required survey crews on night shift.

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described int the Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document: 505573-0000-68RA-I-0005).

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)

SNC-Lavalin Global Power Health and Safety Management System (505573-0000-68-AG-0001)

Prior to starting any task, surveyors shall complete a field level hazard assessment. Included in this is the following:

- Location of work
- Communication mechanisms

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0704	Type:	Services
Titles (long):	Provision of Surveying Services	Revision No.:	01
(short):	Surveying Services	Date:	13-Apr-2012

Special Requirements:

- Notification process to other contractors working in the same area

Free Issued Materials:

Description	Package No.
Standard IT equipment provide by owner.	
GIS software provide by owner	
Consumables will be provided by owner.	

Major Equipment List:

Vehicles
Surveying equipment for 8 teams.

Schedule and Milestones:

EOI Date: TBD
RFP Date: TBD
Award Date: TBD
1st Vendor Data Required by: TBD
Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

TBD

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0705	Type:	Services
Titles	(long): Provision of Laboratory Services	Revision No.:	01
	(short): Laboratory Services	Date:	13-Apr-2012

Discipline:	Hydro/Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	To Be Determined
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Steve Mullen

Scope of Work Summary:	Provide all necessary test, measurement and sampling equipment to carry out scope of works and tests in Laboratory at site and in the field at various locations on site of Muskrat Falls and HVAC line from Muskrat Falls to Churchill Falls and HVDC line from Muskrat Falls to Soldier Ponds.
Work Included:	<p>Provide all equipment required to operate a Soil and Concrete Laboratory except building and office furniture.</p> <p>Provide all vehicles needed for the operation on sites of works</p> <p>Provide all necessary inspection, sampling and test equipment, including consumables to carry out the following:</p> <ul style="list-style-type: none"> - Soil/Aggregate/Concrete Aggregate – Sampling and Testing - Field Compaction Testing - Sampling, curing, testing – plastic concrete – all areas at truck tail gate, chute and/or placement of formwork - Verification of properties through trial batching on commissioning of Concrete Batch Plant at Site - Testing for uniformity of mixed concrete after calibration of Batch Plant equipment and commissioning - Early strength test - Concrete-mix design adjustments and testing - Grout – compressive strength and flow, viscosity, bleeding and expansion - Concrete coring and testing of hardened concrete - Supply, installation, calibration, proper operation and maintenance of all inspection, test and Laboratory equipment. - Provide laboratory equipment spares, consumables and testing supplies to sample, test or operate equipment. - Disposal of Concrete Waste - All other testing requested by SLI

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: SM0705
 Titles (long): Provision of Laboratory Services
 (short): Laboratory Services

Type: Services
 Revision No.: 01
 Date: 13-Apr-2012

Approximate Quantities
 (Major Items Only):

Item	Description	Unit	Quantity
	All laboratory equipments for 1 laboratory		1
	Provide mobile Laboratory with equipment		6
	Provide engineer, staff, clerical and technician		77
	Office and Laboratory at Happy Valley – Goose Bay		1

Contract Basis:

Lump Sum Unit Rates X

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Work Excluded:

Description	Package No.
Administrative Buildings	CH0003

Quality:

Establish, maintain and implement proper and suitable procedures and systems in accordance with CSA A283

Staff Laboratory suitably qualified and supervision must meet the requirements of CSA A283

Reference Section:

Not applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0705	Type:	Services
Titles (long):	Provision of Laboratory Services	Revision No.:	01
(short):	Laboratory Services	Date:	13-Apr-2012

Interface with Other Packages:

Description	Package No.
Accommodation Complex site Utilities	CH0005
South Side Access Road	CH0004
Bulk Excavation Works	CH0006
Intake, Powerhouse, Spillway and transition dams	CH0007
North Spur Stabilization	CH0008
RCC Dams – North and South Construction	CH0009
Construction of 315 KV HVAC Transmission line	CT0319
Construction of 350 KV HVDC Transmission line	CT0327
Construction Telecommunication Services – Phase 2	CD0509

Specific Site Conditions:

The execution of the project will require the installation and operation of a permanent soil and concrete laboratory installed at Muskrat Falls and several mobile laboratories located in Labrador and Newfoundland.

Specific Schedule Conditions:

The Soil and Concrete Laboratory shall be in operation day and night seven days per week at Muskrat Falls..

Specific Environment Conditions:

The environmental requirements for the Lower Churchill Project are described in the Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document: 505573-0000-68RA-I-0005).

Specific Safety Conditions:

The health and safety and security requirements for the Lower Churchill Project are described in the following documents:

- SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00)
- SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00)
- SNC-Lavalin Global Power Health and Safety Management System (505573-0000-68-AG-0001)

Special Requirements:

Not Applicable

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0705	Type:	Services
Titles (long):	Provision of Laboratory Services	Revision No.:	01
(short):	Laboratory Services	Date:	13-Apr-2012

Free Issued Materials:

Description	Package No.
Laboratory building at Muskrat Falls	Not Applicable
Offices at Muskrat Falls	
IT equipment	

Major Equipment List:

Compression Machine
 Mixer (100 L)
 Nucleodensimeter
 Gilson Testing Screen
 Ovens
 Vehicles
 Mobile Laboratory for transmission line

Schedule and Milestones:

EOI Date: TBD
 RFP Date: TBD
 Award Date: TBD
 1st Vendor Data Required by: TBD
 Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

TBD

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0706	Type:	C- Contract
Titles	(long): Supply and Maintenance of Project Vehicles	Revision No.:	01
	(short): Supply of vehicles	Date:	13-Apr-2012

Discipline:

Responsibilities:	Area Manager: Wallace Piercey	Package Engineer:	
	QA / QC:	Contract Admin. / Buyer::	Steve Mullen

Scope of work Summary

Package SM-0706 includes:

- Supply various types of vehicles for EPCM personnel
- Maintain and repair vehicles.

Work Included:

- Supply and delivery to the project sites five (5) types of vehicle: SUV mid and full size, truck ½ and ¾ ton and passenger van;
- Install safety devices as back-up alarm, high visibility flag ...
- Maintenance of vehicle at HVGBfor the vehicles in Labrador;
- Giving towing service on every sites of the project
- Give a maintenance and warranty repair program
- Provision of ATVs and Snowmobiles
- Provision of a safety boat

Approximate Quantities (only major items are included)

ITEM	DESCRIPTION	UNIT	QUANTITY
1	100 vehicles	Lot	1

Lump Sum

Unit Rates

Combination Lump Sum – Unit Rates

Cost Reimbursable

Remarks:

Work Excluded:

The following works or activities are excluded from package SM-0706:

Description	Package No.
Fuel supply	SH-0022

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0706	Type:	C- Contract
Titles (long):	Supply and Maintenance of Project Vehicles	Revision No.:	01
(short):	Supply of vehicles	Date:	13-Apr-2012

Quality	<p>All controls specified by Applicable Laws, Codes and Regulations and all quality control prescribed by the Contractor for a reliable and safe operation of the equipment will be done by the Contractor.</p> <p>The Contractor shall do its own Quality Control. The permits required by law shall be obtained by the Contractor.</p>											
Reference Section	Not applicable											
Interface with Other Packages	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Provision of Road Maintenance and Snow clearing Services (MF)</td> <td>SH0021</td> </tr> <tr> <td>Construction of Reservoir Clearing South Bank</td> <td>CH0023</td> </tr> <tr> <td>Construction of Reservoir Clearing North Bank</td> <td>CH0024</td> </tr> <tr> <td>Construction Telecommunication Services – Phase 2</td> <td>CD0509</td> </tr> </tbody> </table>		Description	Package No.	Provision of Road Maintenance and Snow clearing Services (MF)	SH0021	Construction of Reservoir Clearing South Bank	CH0023	Construction of Reservoir Clearing North Bank	CH0024	Construction Telecommunication Services – Phase 2	CD0509
Description	Package No.											
Provision of Road Maintenance and Snow clearing Services (MF)	SH0021											
Construction of Reservoir Clearing South Bank	CH0023											
Construction of Reservoir Clearing North Bank	CH0024											
Construction Telecommunication Services – Phase 2	CD0509											
Specific Site Conditions	<p>All construction roads are dirt road. When working inside the project limits, the Contractor will have to respect the Health & Safety Management Program of Muskrat Falls</p>											
Specific Schedule Conditions												
Specific Environment Conditions	<p>When working inside the project limits, the Contractor has to respect the Project -Wide Environmental Plan of Muskrat Falls</p>											
Specific Safety Conditions	<p>While towing vehicle on site's roads, the contractor has to follow Health and Safety Management Program of Muskrat Falls project</p>											
Special Requirements (All)												
Equipment List	Not Applicable											

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0706	Type:	C- Contract
Titles (long):	Supply and Maintenance of Project Vehicles	Revision No.:	01
(short):	Supply of vehicles	Date:	13-Apr-2012

Schedule and Milestones

EOI Date:	TBD
RFP Date:	TBD
Award Date:	TBD
Receive Initial Vendor Drawings:	TBD
Forecast at Site:	TBD
Construction Complete:	TBD
Dates for milestones will be updated once the Project baseline schedule is in place.	

Budget

TBD

Applicable Sub-Project/SPV

Muskrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input checked="" type="checkbox"/>

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0707	Type:	Services
Titles	(long): Provision of Helicopter Services	Revision No.:	01
	(short): Helicopter Services	Date:	13-Apr-2012

Discipline:	Hydro/Transmission Lines		
Responsibilities:	Area Manager: Keenan Healey	Package Engineer:	To Be Determined
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Steve Mullen

Scope of Work Summary: This contract package includes helicopter services in Newfoundland and Labrador necessary for Component 1 (Hydro) for supervision and inspection during the reservoir clearing and Component 4 (Transmission Lines) for geotechnical investigation, inspection and supervision during the construction of the transmission lines.

Work Included:

This package includes the following items:

- Mobilization, supply, operation and maintenance of aircraft;
- Supply, installation and operation of a jet fuel distribution system for remote sites in Newfoundland and Labrador.
- Aerial lifts of equipment for geotechnical investigation;
- Medical evacuations from construction sites;
- Fire suppression activities; and
- Demobilization of all aircraft, associated equipment and fuel distribution systems.

This package also requires the following equipment:

- Communication system with the capability of inputting frequencies used by contractors and SLI / Nalcor;
- GPS system capable of inputting locations;
- Capability for medical evacuations; and
- Equipment for fire suppression.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Schedule for Flight Services: 2012	hours	1000
2	Schedule for Flight Services: 2013	hours	1800
3	Schedule for Flight Services: 2014	hours	1900
4	Schedule for Flight Services: 2015	hours	1800
5	Schedule for Flight Services: 2016	hours	800
6	Schedule for Flight Services: 2017	hours	100

Contract Basis:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0707	Type:	Services
Titles (long):	Provision of Helicopter Services	Revision No.:	01
(short):	Helicopter Services	Date:	13-Apr-2012

Work Excluded:

Description	Package No.
Helicopter services for contractors' scope of work	Not Applicable
Supply of room and board for pilots and engineers. This will be supplied by the Project at no additional cost.	Not Applicable
Supply of helipads at the camp will be supplied and maintained by the project at no additional cost.	Not Applicable

Quality:

Contractor shall comply with Quality Requirement Specification Number 505573-0000-38RA-0003.

Reference Section:

The following main documents were used to define the scope:

Lower Churchill Phase 1 Development – Construction Management Plan
 SLI Document Number: 505573-0000-30PL-I-0003
 Nalcor Reference Number: LCP-SN-CD-0000-CS-PL-0002-01

Transport Canada Regulations

Interface with Other Packages:

Description	Package No.
Construction of 350 kV HVdc Transmission Line - Section 1	CT0327
Clearing of Right of Way for HVdc Transmission Line - Section 1	CT0343
Clearing of Right of Way for HVdc Transmission Line - Section 2	CT0345
Construction of 350 kV HVdc Transmission Line - Section 2	CT0346
Provision of Geotechnical Investigation Services - 350 kV HVdc	ST0310
Provision of Air Transportation Services	SM0709

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0707	Type:	Services
Titles (long):	Provision of Helicopter Services	Revision No.:	01
(short):	Helicopter Services	Date:	13-Apr-2012

Specific Site Conditions:

- Mobilization to and from remote camp sites will be required;
- Frequent flights over remote areas of Labrador and on the island of Newfoundland.
- Environmental constraints will be implemented and supplied to the provider at a later date.

Specific Schedule Conditions:

- Any other packages that have to be started before the subject package can proceed:
- CT0343 – Clearing of Right of Way for HVdc Transmission Line - Section 1
 - CT0345 – Clearing of Right of Way for HVdc Transmission Line - Section 2
- Any other packages that cannot proceed before the subject package has started:
- CT0327 – Construction of 350 kV HVdc Transmission Line - Section 1
 - CT0346 – Construction of 350 kV HVdc Transmission Line - Section 2

Specific Environment Conditions:

- The environmental requirements for the Lower Churchill Project are described in the following documents:
- a) Project-Wide Environmental Protection Plan – Component 1 and 4b, Volume I and II (SLI Document #: 505573-0000-68RA-I-0005; Nalcor Document #:LCP-SN-CD-0000-EV-PL-0002-01)
 - b) Project-Wide Rehabilitation Plan (SLI Document # 505573-0000-68RA-I-0007, Nalcor Document # LCP-SN-CD-0000-EV-PL-0004-01);
 - c) Regulatory Compliance Plan (SLI Document # 505573-0000-68RA-I-0003, Nalcor Document # LCP-SN-CD-0000-RT-PL-0001-01);
 - d) Waste Management Plan – Component 1 and 4b (SLI Document # 505573-0000-68RA-I-0008, Nalcor Document # LCP-SN-0000-EV-PL-0005-01);
 - e) Emergency Response Plan (SLI Document # 505573-0000-68RA-I-0012, Nalcor Document # LCP-SN-CD-0000-HS-PL-0004-01).
 - f) Contract-Specific Environmental Protection Plan Template (C-SEPP) (SLI Document # 505573-0000-68RA-I-0011, Nalcor Document # LCP-SN-CD-0000-EV-PL-0006-01)
 - g) Technical Specification - General Environmental Requirements (SLI Document # 505573-0000-68RA-I-0015, Nalcor Document # MFA-SN-CD-0000-EV-SP-0001-01).
 - h) Exhibit 6 – Environmental and Regulatory Compliance Requirements
 - i) Design Criteria – Erosion and Sedimentation Control (SLI Document # 505573-315A-4EEC-0001, Nalcor Document # MFA-SN-CD-2000-EV-DC-0001-01).
 - j) Environmental Design Criteria – Site Water Control (SLI Document # 505573-315A-

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0707	Type:	Services
Titles	(long): Provision of Helicopter Services	Revision No.:	01
	(short): Helicopter Services	Date:	13-Apr-2012

	<p>4EEC-0002, Nalcor Document # MFA-SN-CD-2000-EV-DC-0002-01).</p> <p>k) Recommendation on Biodegradable Fluids for the Lower Churchill Project (SLI Document #. 505573-0000-4EER-0002, Nalcor Document # LCP-SN-CD-0000-EV-RP-0002-01)</p> <p>l) Recommendation on Wood Preservation Options for the Lower Churchill Project (SLI Document # 505573-0000-4EER-0001, Nalcor Document # LCP-SN-CD-0000-EV-RP-0001-01)</p> <p>Note: Permit requirements are noted in Exhibit 6 (item h above)</p> <p>Standard specifications for refuelling and fuel storage are also applicable.</p>				
<p>Specific Safety Conditions:</p>	<p>The health and safety and security requirements for the Lower Churchill Project are described in the following documents:</p> <ul style="list-style-type: none"> • SNC-Lavalin Health and Safety Management Plan (505573-0000-68RA-1-0001-00) • SNC-Lavalin Site Security and Access Control Plan (505573-0000-68RA-I-0002-00) • SNC-Lavalin Global Power Health and Safety Management System (503011-0000-68-AG-0001) • SNC-Lavalin Critical Risk Control Protocols (6845.2.1.1-EN-Rev.4 03/11) 				
<p>Special Requirements:</p>	<p>Pilots need to be experienced with flying in remote areas and preferably have local experience.</p>				
<p>Free Issued Materials:</p>	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Not Applicable</td> <td>Not Applicable</td> </tr> </tbody> </table>	Description	Package No.	Not Applicable	Not Applicable
Description	Package No.				
Not Applicable	Not Applicable				
<p>Major Equipment List:</p>	<p>The following is a major equipment list for package SM0707:</p> <ul style="list-style-type: none"> • Communication system with the capability of inputting frequencies used by contractors and SLI / Nalcor; • GPS system capable of inputting locations; • Capability for medical evacuations; • Equipment for fire suppression. 				
<p>Major Equipment List:</p>	<p>Not Applicable</p>				

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0707	Type:	Services
Titles (long):	Provision of Helicopter Services	Revision No.:	01
(short):	Helicopter Services	Date:	13-Apr-2012

Schedule and Milestones:

EOI Date: TBD
 RFP Date: TBD
 Award Date: TBD
 1st Vendor Data Required by: TBD
 Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

TBD

Applicable Sub-Project/SPV:

Muskrat Falls Generation Labrador – Island Transmission Link
 Labrador Transmission Assets Lower Churchill Project – General

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0709	Type:	P- Purchase
Titles (long):	Provision of Air Transportation Services	Revision No.:	01
(short):	Air Transportation Services	Date:	13-Apr-2012

Interface with other Packages:	Description		Package No.
	None		
Specific Site Conditions:			
Specific Schedule Conditions:			
Specific Environment Conditions:			
Specific Safety Conditions:	Nalcor and SLI safety requirements. All Laws and Federal, Provincial Regulations.		
Special Requirements:			
Free Issued Materials:			
Major Equipment List:	None		
Schedule and Milestones:	EOI Date: TBD RFP Date: TBD Award Date: TBD Receive Initial Vendor Drawings: TBD Forecast at Site: TBD Construction Complete:	Dates for milestones will be updated once the Project baseline schedule is in place.	
Budget:	TBD		
Applicable Sub-Project/SPV	Muskrat Falls Generation <input checked="" type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/>		

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0709	Type:	P- Purchase
Titles	(long): Provision of Air Transportation Services	Revision No.:	01
	(short): Air Transportation Services	Date:	13-Apr-2012

Labrador Transmission Assets Lower Churchill Project – General

IBA Package

YES NO

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0710	Type:	Services
Titles (long):	Supply and Maintenance of various IT Equipment	Revision No.:	01
(short):	IT Equipment	Date:	13-Apr-2012

Discipline: Information Technology Services
 Responsibilities: Area Manager: Ricardo Cumming Package Engineer: To Be Determined
 QA / QC: Kenneth Morrison Contract Admin. / Buyer: Steve Mullen

Scope of Work Summary: Supply network infrastructure to project sites for all components.

Work Included:

- Server infrastructure: servers, power distribution, backup equipment, CAL licensing and racking.
- WAN acceleration, firewalls, core and distribution switching. WIFI access points.
- Dell computers: Desktops, Notebooks and Cadd/GIS Workstations.
- Web Conferencing equipment.
- Printers, plotters and Multifunction devices.
- Deliver all equipment to all specified site locations FOB.
- Installation and configuration of equipment.
- Training in the use of plotters.
- Maintain plotters as required.
- Training in the use of MDFs.
- Maintain MDFs as required.

Approximate Quantities (Major Items Only):

Item	Description	Unit	Quantity
1	Servers		TBD
2	Telecommunications equipment		TBD
3	Printing equipment		TBD
4	Computers		TBD

Contract Basis:

Lump Sum Unit Rates

Combination Lump Sum – Unit Rates Cost Reimbursable

Remarks:

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: SM0710
 Titles (long): Supply and Maintenance of various IT Equipment
 (short): IT Equipment

Type: Services
 Revision No.: 01
 Date: 13-Apr-2012

Work Excluded:

Description	Package No.
Telephony	
External Telecommunication	

Quality:

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Reference Section:

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Interface with Other Packages:

Description	Package No.
Site Telecommunication	

Specific Site Conditions:

•

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.: SM0710
 Titles (long): Supply and Maintenance of various IT Equipment
 (short): IT Equipment

Type: Services
 Revision No.: 01
 Date: 13-Apr-2012

Specific Schedule Conditions:

Specific Environment Conditions:

Specific Safety Conditions:

Special Requirements:

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Major Equipment List:

Schedule and Milestones:

EOI Date: TBD
 RFP Date: TBD
 Award Date: TBD
 1st Vendor Data Required by: TBD
 Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Budget:

TBD

Applicable Sub-

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0710	Type:	Services
Titles (long):	Supply and Maintenance of various IT Equipment	Revision No.:	01
(short):	IT Equipment	Date:	13-Apr-2012

Project/SPV:	Muskrat Falls Generation <input checked="" type="checkbox"/>	Labrador – Island Transmission Link <input checked="" type="checkbox"/>
	Labrador Transmission Assets <input checked="" type="checkbox"/>	Lower Churchill Project – General <input checked="" type="checkbox"/>
IBA Package:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0713	Type:	Services
Titles (long):	Provision of Geotechnical Investigation Services	Revision No.:	01
(short):	2012 Field Geotechnical Investigations	Date:	13-Apr-2012

Discipline:	Hydro/Transmission Lines		
Responsibilities:	Area Manager: Michel Maeyens	Package Engineer:	Raynald Lemieux
	QA / QC: Kenneth Morrison	Contract Admin. / Buyer:	Steve Mullen

Scope of Work Summary:

This package consists of the 2012 field Investigations which include:

1. **NORTH SPUR:** Sonic and conventional boreholes, in situ and laboratory testing, installation of instrumentation and survey
2. **SOUTH BANK - STRUCTURE AREA:** Boreholes in Churchill river, reverse seismic refraction survey and ground penetration radar across the Churchill River, seismic refraction surveys on land, and topographic survey
3. **MACKENZIE BRIDGE - Boreholes**

Work Included:

- The work described includes the supply of all labour, equipment and materials required for the execution of Geotechnical Investigation works at locations described above and includes:
- Mobilization and demobilization of all drilling equipment and materials necessary to carry out the investigation work on land and water;
 - Topographic surveys of boreholes, seismic lines and in general of all investigation works;
 - Clearing of the work areas;
 - Temporary access roads to investigation sites;
 - Supply of helicopter for moves on the 5 conventional boreholes in the North Spur;
 - Supply of helicopter to move all equipment, materials and personnel at the South bank investigation sites.
 - Execution of diamond drill holes from the barge on Churchill River;
 - Execution of sonic and conventional geotechnical boreholes in the North Spur;
 - Execution of seismic refraction surveys on land;
 - Execution of ground penetration radar and reverse seismic refraction surveys on water in Churchill River;
 - Execution of water pressure tests in diamond drill holes;
 - Execution of in situ tests including Standard Penetration Tests, Field Vane Shear Tests and Permeability Tests;
 - Sampling with thin-walled tube;
 - Execution of winkie drill boreholes;
 - Supply and installation of piezometers;
 - Supply and installation of water level loggers;

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0713	Type:	Services
Titles (long):	Provision of Geotechnical Investigation Services	Revision No.:	01
(short):	2012 Field Geotechnical Investigations	Date:	13-Apr-2012

Quality:

As specified in the relevant contract documents

Reference Section:

Year	Company	Reference	Data
1965	ACRES CANADIAN BECHTEL	Lower Churchill River Muskrat Falls and Gull Island Sites Exploration Data February 1966 H.G. Acres & Co. Ltd for British Newfoundland Corporation Limited	Boreholes: 2 Test Pits or Trenches: 20 (location only) Seismic Lines: 3 (location only)
1979	SNC-LAVALIN Newfoundland Ltd	Muskrat Falls Power Development & 345 KV Transmission Intertie to Churchill Falls Vol. III – 1979 Field Investigation Program Soils Investigation Borehole Logs and Lab. Results March 1980 for Lower Churchill Development Corporation Limited	Boreholes: 54 Test Pits or Trenches: 86 Seismic Lines: 18
1998	SNC-AGRA	Muskrat Falls Hydroelectric Development Final Feasibility Study Volume 2 – 1998 Geotechnical Investigations January 1999 for Newfoundland and Labrador Hydro	Boreholes: 8 Test Pits or Trenches: 61 Seismic Lines: 8
2007	SNC-LAVALIN Inc.	Lower Churchill Project MF1020 – Muskrat Falls Site Investigation Technical Report to	Test Pits or Trenches: 11

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0713	Type:	Services
Titles	(long): Provision of Geotechnical Investigation Services	Revision No.:	01
	(short): 2012 Field Geotechnical Investigations	Date:	13-Apr-2012

		<i>Newfoundland and Labrador Hydro April, 2008</i>	
2010	<i>SNC-LAVALIN BAE-Newplan</i>	<i>Lower Churchill Project MF1300 – Muskrat Falls 2010 Site Investigations – Geotechnical Report to Nalcor Energy January 2011 Preliminary</i>	<i>Boreholes: 51 Test Pits or Trenches: 188</i>

Interface with Other Packages:

Description	Package No.
None at this stage	

Specific Site Conditions:

In addition to the specified geotechnical field work, seismic survey and ground penetration radar, the following support services are required:

- All environmental and other permits, inclusive of clearing, use water and blasting permits for the seismic work.
- Provision of clearing or regarding trails and temporary access tracks, clearing of proposed borehole location, test pits and geophysical lines.
- Cleaning of disturbed access and sites
- Survey of all investigations
- Analysis and reporting

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0713	Type:	Services
Titles (long):	Provision of Geotechnical Investigation Services	Revision No.:	01
(short):	2012 Field Geotechnical Investigations	Date:	13-Apr-2012

Specific Schedule Conditions:

TBD

Specific Environment Conditions:

Bidders to follow the “Environmental Protection Plan for Geotechnical Investigation and Resistivity Testing” and “Environmental and Regulatory Compliance requirements)”
These documents will be supplied to the bidders.

Specific Safety Conditions:

Safety is a concern when executing work close or in the water. The site investigations defined in this package will partly have to be done in the river between the upstream and downstream falls and will require special measures to ensure the safety of the drilling crews.

Special Requirements:

None

Free Issued Materials:

Description	Package No.
Not Applicable	Not Applicable

Major Equipment List:

Not Applicable

Minor Equipment List:

Water level logger
Piezometers

Schedule and Milestones:

EOI Date: TBD
RFP Date: TBD
Award Date: TBD
1st Vendor Data Required by: TBD
Construction Complete: TBD

Dates for milestones will be updated once the Project baseline schedule is in place.

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD

Package No.:	SM0713	Type:	Services
Titles	(long): Provision of Geotechnical Investigation Services	Revision No.:	01
	(short): 2012 Field Geotechnical Investigations	Date:	13-Apr-2012

Budget:

To be provided by Estimation

Applicable Sub-Project/SPV:

Muskkrat Falls Generation	<input type="checkbox"/>	Labrador – Island Transmission Link	<input type="checkbox"/>
Labrador Transmission Assets	<input type="checkbox"/>	Lower Churchill Project – General	<input checked="" type="checkbox"/>

IBA Package:

Yes No

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD																									
Package No.: SM0715 Titles (long): Provision of Expediting Services (short): Expediting Services	Type: S-Service Contract Revision No.: 01 Date: 13-Apr-2012																								
Discipline: Procurement: Responsibilities: Area Manager: Project Procurement Manager Package Engineer: TBD QA / QC: Ken Morrison Contract Admin. / Buyer: Steve Mullen																									
Scope of work Summary:	To monitor, track and report on all manufacturing/fabrication and supplier data activities and progress against the required on-site project dates. Conduct regular reviews of the purchase order and schedule obligations with the supplier.																								
Work Included:	This package includes: <ul style="list-style-type: none"> • Conducting regular reviews of the purchase order and schedule obligations with the supplier • Monitoring and reporting on the status of the Purchase Order deliverables • Keeping records of all contacts and shop visits to suppliers. • Communicating information in a manner that it can be recorded in PM+ 																								
Approximate Quantities (major items only):	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">ITEM</th> <th style="width:60%;">DESCRIPTION</th> <th style="width:10%;">UNIT</th> <th style="width:20%;">QUANTITY</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Expediting Services</td> <td>Hours</td> <td></td> </tr> <tr> <td>2</td> <td>Expediting Services</td> <td>Hours</td> <td></td> </tr> <tr> <td>3</td> <td>Expediting Services</td> <td>Hours</td> <td></td> </tr> <tr> <td>4</td> <td>Expediting Services</td> <td>Hours</td> <td></td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>	ITEM	DESCRIPTION	UNIT	QUANTITY	1	Expediting Services	Hours		2	Expediting Services	Hours		3	Expediting Services	Hours		4	Expediting Services	Hours					
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1	Expediting Services	Hours																							
2	Expediting Services	Hours																							
3	Expediting Services	Hours																							
4	Expediting Services	Hours																							
Contract Basis:	Lump Sum <input type="checkbox"/> Unit Rates <input type="checkbox"/> Combination Lump Sum – Unit Rates <input checked="" type="checkbox"/> Cost Reimbursable <input type="checkbox"/> <u>Remarks:</u> Services to be provided on an as required basis. No commitment will be made to any minimum or maximum amount of hours																								
Work Excluded:	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:70%;">Description</th> <th style="width:30%;">Package No.</th> </tr> </thead> <tbody> <tr> <td>Expediting in local area.</td> <td></td> </tr> <tr> <td>Expediting which can be effectively performed by in-house resources or delegated to the inspector.</td> <td></td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Description	Package No.	Expediting in local area.		Expediting which can be effectively performed by in-house resources or delegated to the inspector.																			
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Expediting in local area.																									
Expediting which can be effectively performed by in-house resources or delegated to the inspector.																									
Quality:	(Not Applicable)																								

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: SM0715	Type: S-Service Contract
Titles (long): Provision of Expediting Services	Revision No.: 01
(short): Expediting Services	Date: 13-Apr-2012

Reference Section:	(Not Applicable)													
Interface with other Packages:	<table border="1"> <thead> <tr> <th>Description</th> <th>Package No.</th> </tr> </thead> <tbody> <tr> <td>Provision of Third Party Quality Surveillance & Inspection Services</td> <td>SM0701</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>		Description	Package No.	Provision of Third Party Quality Surveillance & Inspection Services	SM0701								
Description	Package No.													
Provision of Third Party Quality Surveillance & Inspection Services	SM0701													
Specific Site Conditions:	<ul style="list-style-type: none"> Visit supplier facilities as directed by SLI/Nalcor Flights to supplier facilities in various countries around the world (China, Turkey, India, Germany, France, Mexico) 													
Specific Schedule Conditions:	(Not Applicable)													
Specific Environment Conditions:	(Not Applicable)													
Specific Safety Conditions:	(Not Applicable)													
Special Requirements:	(Not Applicable)													
Free Issued Materials:	(Not Applicable)													
Major Equipment List:	(Not Applicable)													
Schedule and Milestones:	<table> <tr> <td>EOI Date:</td> <td>TBD</td> </tr> <tr> <td>RFP Date:</td> <td>TBD</td> </tr> <tr> <td>Award Date:</td> <td>TBD</td> </tr> <tr> <td>Receive Initial Vendor Drawings:</td> <td>TBD</td> </tr> <tr> <td>Forecast at Site:</td> <td>TBD</td> </tr> <tr> <td>Construction Complete:</td> <td>TBD</td> </tr> </table> <p>Dates for milestones will be updated once the Project baseline schedule is in place.</p>		EOI Date:	TBD	RFP Date:	TBD	Award Date:	TBD	Receive Initial Vendor Drawings:	TBD	Forecast at Site:	TBD	Construction Complete:	TBD
EOI Date:	TBD													
RFP Date:	TBD													
Award Date:	TBD													
Receive Initial Vendor Drawings:	TBD													
Forecast at Site:	TBD													
Construction Complete:	TBD													

Lower Churchill Project

PACKAGE DICTIONARY

Project Base Currency: CAD	
Package No.: SM0715	Type: S-Service Contract
Titles (long): Provision of Expediting Services	Revision No.: 01
(short): Expediting Services	Date: 13-Apr-2012
Budget	TBD
Applicable Sub-Project/SPV	Muskrat Falls Generation <input type="checkbox"/> Labrador – Island Transmission Link <input type="checkbox"/> Labrador Transmission Assets <input type="checkbox"/> Lower Churchill Project – General <input checked="" type="checkbox"/>
IBA Package	YES <input type="checkbox"/> NO <input type="checkbox"/>