Document Front Sheet

nalcor energy
LOWER CHURCHILL PROJECT

NE-LCP Contractor/Supplier

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Lower Churchill Project

MATERIALS MANAGEMENT PLAN

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1 MATERIALS MANAGEMENT

1.1 GENERAL

Materials Management integrates the material control processes and systems used by Engineering, Procurement and Construction departments as presented in the schematic below. Materials management personnel collaborate with the disciplines to achieve this objective. The diagram below depicts the integrated process to be used on the Lower Churchill Project. Project materials will be managed through the application of various engineering design programs, Engineering Material Definition System (EMDS) and the Project Management System (PM+).

Project material will be managed from the initial design phase through to the end of construction. The material control process commences with the design of the facilities and ends with the completed installation of all components. Materials Management will involve Engineering, Procurement, Construction and Project Controls.

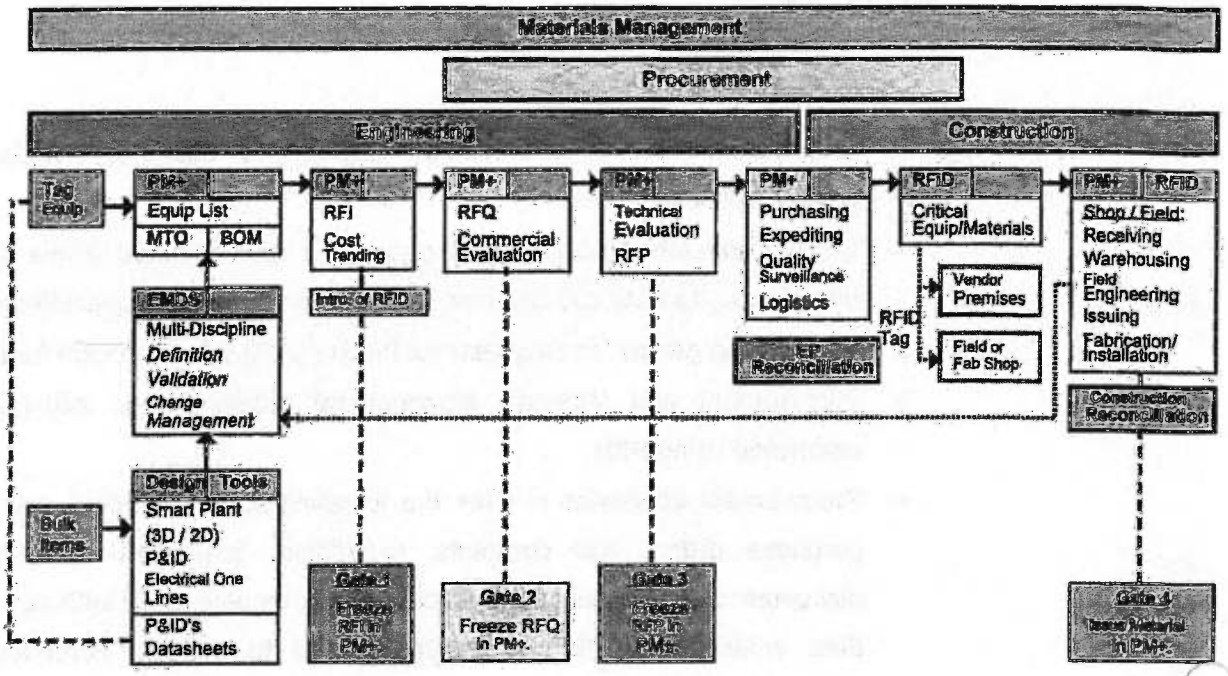
Material/commodity codes will be established for the different disciplines. Each discipline will be set up with a material coding matrix in order for the data to be entered into PM+.

The Project Team will apply two methods for sourcing bulk materials. One will be to buy the materials and free issue the materials to the construction Contractor. The other method being the Contractor supply materials. Tagged equipment will be purchased by Nalcor and free issued to the installation Contractors. Turbine, Generator and Converter equipment will be provided by the turnkey / EPC Contractors.

Quantities will be obtained through the design software and adjusted for contingency at the time of requisition for inquiry to ensure representative lump sum / unit pricing is obtained at the bidding stage. Quantities will be adjusted prior to issuing contracts / purchase orders and through to the end of detail design.

The key steps in the process are:

- Engineering channels Bills of Material (BOM) for Bulk Commodities from CADD design tools into PM+.
- Engineering introduces tagged equipment and material items for all design disciplines into PM+ directly from P&ID's and Equipment Data Sheets.
- Engineering generates Requests for Inquiry (RFI) and Requests for Purchase.
- Procurement and Materials Management support these activities which are performed using PM+.
- Procurement generates in PM+ the following steps; sourcing and placement of purchase orders and contracts, expediting, inspection and logistics. Initial placement of Purchase orders is expected to be developed with key item and cost data entered into PM+. Revisions issued to existing purchase orders are processed in PM+.
- Construction identifies equipment and material items that need to be tagged for use in the radio frequency identification system (if RFID is considered for the Project). Construction is responsible for material receiving at site, inventory control and issue to end user.



1.2 HYDRO PLANT

1.2.1 General

The majority if not all bulk materials for the hydro plant will be Contractor supply, based on Contractor takeoff quantities according to the drawings provided at the bidding stage then adjusted based on drawings issued for construction. Bulk materials will be included in the supply and install unit prices quoted at the bidding stage. Unit prices will not be adjustable unless the quantities have materially changed from the quantities according to the bid documents. Quantities will be verified by engineering at the bidding stage and upon issue of the approved for construction drawings. 'As built' quantities will be verified by final construction drawings and / or field measurement.

1.2.2 Structural steel

Structural steel for the power house will be designed by the Project Team and a contract will be let for the supply and erection of the structural steel. The hydro plant structural steel quantities will be generated through the software 'ADVANCE STEEL' and Equipment Material Data Sheets will be used to manage the quantities through to PM+.

1.2.3 Pipe, valves and fittings

Pipe, valves and fittings (PVF) type and size will be categorized and detailed in the technical specification. Contractor may supply and install all piping, valves and fittings except for any special long lead valve requirement that may be free issued. Contractor may be responsible for supply, expediting, inspection, delivery and storage of the material outlined in the technical specification. If Naicor has to supply any free issue bulk materials such as; piping, valves, fittings quantities will be defined through the CAD software 'CATIA' and EMDS will be used to manage the quantities through to PM+.

The preliminary estimate of PVF is established in the early stage from preliminary drawings, sketches, etc., generally with estimated quantities. The P&ID's are frozen and the pipe line classes and material specifications are developed. This estimate is then downloaded, inserted into the specification for bidding purposes; the estimate quantities will be registered in EMDS and PM+ as the material take-off quantity (MTO). During detailed engineering and post contract award there is a continuous import from the piping design tool and quantities are adjusted and verified with the Contractor. Material Control coordinates with Engineering to ensure download from the Engineering software to PM+. EMDS, being the interface between CAD and PM+, will validate the design and identify the changes to PM+.

1.2.4 Electrical & Instrument cable and grounding material

Major power and instrument cable and grounding material will normally be bought by the project EPCM Team and free issued to the construction Contractors. Cabling will be reeled according to estimated pull lengths. Cable drums may be issued to the

Contractor or controlled by warehouse staff. Electrical and instrument cable type and lengths will be obtained through the CAD software 'CATIA'. Quantities will be established in a similar manner to the above PVF quantities.

A particular package plan will be prepared to outline the recommended procurement strategy to be followed for this material.

1.2.5 Electrical and Instrument components

Any packages that will be purchased by the project and free issued to the Contractor will follow the standard Project procedures for identification methodologies, requisitioning and awarding of purchase orders in the PM+ system. All other materials/equipment will be supplied by the sub-Contractors and SNC Lavalin will do the due diligence to get progress reports to ensure no delays on the schedule.

1.2.6 Construction consumables

All consumable items will be Contractor supply.

1.3 TRANSMISSION LINES

General

Engineering will provide the tower manufacturer with tower families and preliminary design drawings for tower configuration, tower outline, vector loads, material types, standard bolt sizes and materials specifications, testing requirements. The main software to be used will be PLS TOWER. The preliminary design quantities will form the basis for the Material Take Off (MTO) and will be defined in ICA/EMDS and PM+. The tower manufacturer will do the detailed design and determine the steel sizes and quantities within the requirements of SLI's provided preliminary design and specifications. The tower weights will be optimized by more detailed engineering calculations and further verified by full scale proto-type testing. Detailed design quantities from the Supplier will form the basis for the Bill of Material (BOM) and will be defined in ICA/EMDS and PM+.

1.3.1 Conductor cable

Transmission line conductor cable quantity will be optimized through the software program PLS CADD and ICA/EMDS will be used to manage the bulk material quantities. Cable will be bought by the Project in PM+ and free issued to the stringing Contractor(s).

1.3.2 Tower Steel

Tower steel will be purchased by the Project and free issued to the Contractor(s). ICA/EMDS and PM+ will be used to manage the bulk material quantities.

1.3.3 Insulators

Insulators will be purchased by the Project and free issued to the Contractor(s). ICA/EMDS will be used to manage the bulk material quantities.

1.3.4 Line Hardware, Accessories and Fittings

Line Hardware will be purchased by the Project and free issued to the Contractor(s). ICA/EMDS will be used to manage the bulk material quantities.

1.3.5 Guy Wire

Guy wire will be purchased by the Project and free issued to the Contractor(s). ICA/EMDS will be used to manage the bulk material quantities.

1.3.6 Construction consumables

All consumable items will be Contractor supply.

1.4 DC SPECIALTIES

General

This component will have a mix of free issue materials/equipment and also some Contractor supplied materials/equipment. The main software to be used will be PSS/E. The preliminary design quantities will form the basis for the MTO and will be defined in ICA/EMDS and PM+. The material/equipment manufacturers will do the detailed design and determine the sub-components within the requirements of SLI's

provided design and specifications. Detailed design quantities and Nalcor purchase orders to the Supplier will form the basis for the Bill of Material (BOM) and will be defined in PM+ for material tracking and deliveries to site for issuance to sub-Contractors for installation.

1.4.1 Temporary Construction Power

These early works packages will have a mix of free issue materials/equipment and also some Contractor supplied materials/equipment. All free issue materials that will be purchased by the Project will be in PM+ and free issued to the Contractor(s) for installation.

1.4.2 Permanent AC Substations and all other Elements of Component 3

These supply and installation packages will have a mix of free issue materials/equipment and Contractor supplied materials/equipment. All free issue materials will be identified by the Project in PM+ and free issued to the Contractor(s) for installation.

1.4.3 Construction consumables

All consumable items will be Contractor supply.

1.5 SITE MATERIAL CONTROL

1.5.1 Overview

Site Material Control will be responsible to monitor, control, report and initiate corrective action as required on all matters pertaining to the receipt, warehousing, inventory control and protection of material and equipment.

PM+ material control and warehouse modules will be used for the control of all materials on the Project from the initial identification in the design phase through to issue and erection at offsite fabrication and pre-assembly yards, and the main construction site.

The Site Material Management module in PM+ will be used to manage the receipt, distribution and control of 'free issue' material and equipment on a site. The Site Material Management module registers the following:

- The receipt and warehousing of new material / equipment form (s) or other sources.
- The receipt and warehousing of material / equipment issued from our inventory and returned by the Contractor(s) and Fabricators.
- The issue of usable material / equipment to Contractor(s).
- The ship out of usable material / equipment to Fabricators(s).
- The ship out of damaged, non-conforming and/or over-shipped materials and equipment back to Supplier(s).
- The transfer of damaged material / equipment to other warehouse locations and the shortage/overage of material on a receipt.
- Isolating of discrepant materials and equipment.
- Managing of quarantine issues.
- The transfer of usable material / equipment between warehouse locations.
- The adjustment of the computer quantities to match actual usable and damaged quantities.

The Site Material Management module may also be used to plan the shop fabrication of portions of isometrics or the installation of the field materials for specific isometrics and to examine the history and status of the material and equipment within the site warehouses to review the progress of the material and equipment through the stages of material definition, material tracking, logistics and material movement on the site. In order to achieve this, the BOM's from piping design systems will be defined by isometric drawing.

1.5.2 Material Planning

Material planning is important to ensure that all equipment and bulk materials required for construction are purchased, shipped, and received on site in a timely fashion. The ENPLREP (Equipment and Material Planning Report) screen in PM+ is

used for this purpose and shows all project material requirements along with their RAS and delivery dates. The reports shows the variance in days between these two dates and also if the item has been purchased or not. This report is run separately for tags and bulks and several filters can be applied to drive the construction schedule. The figure below illustrates the report:

Figure 1: Equipment & Material Planning Report

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Equipment & Material Planning Report
PROJECT: 505573 : LOWER CHURCHILL PROJECT
CLIENT: Nalcor Energy
Scope of Report: Supply PO: PD0513 - - Supply 138 KV - MVA - Transformer, Install CP: All, Material Type = T - Tagged Items, Equipment code: All

nalcor energy

ENPLREP

Install CP (No. - Name) / Item	Item Name / Type Sub - Comp.	Supply CP	Supply PO	Award	Delivery (1)	SFA	RAS Date (2)	Variance (2)-(1)
CD0512 - Construction Contract for Construction P								
T1	T 138/25 kV , 30/40/50 MVA transformer	PD0513	PD0513	☒	5/1/2012	F	3/23/2012	-39

By applying filters to this screen in PM+ the following reports can be generated:

- Early items
- Late items
- Weekly or monthly look aheads (based on RAS date or scheduled / forecast delivery at site)
- Ordered but no RAS date
- Ordered but no delivery date
- Items not ordered

1.5.3 Warehouse Set-Up

The PM+ System will be the tool to manage all materials at site.

A Hazardous Goods area will be established and maintained in compliance with HSE site standards.

Warehouse lay-down areas - indoors and out - will incorporate a grid system for locating material. An electronic identification system (RFID-Radio Frequency Identification) may also be used to assist with material location.

The Material Control Supervisor shall be responsible for safety within his mandate while adhering to the established Site Safety Program.

1.5.4 Receipt of Goods

All shipments consigned to the various receiving sites will be logged through the warehouse module of PM+.

A Material Receiving Report (MRR) will be generated from the PM+ system. The MRR shall reflect what has been received against the Purchase Order (PO) quantity and packing list.

In general, the Ocean Bill of Lading (OBL) shall be reconciled at the port (as applicable). This will include the accounting of containers and their numbers, packages etc. Trucking waybills will follow the same pattern.

Should warranty or preservation requirements preclude opening certain containers or crates, a "Subject to Claim after Inspection" will be invoked with the Supplier in question being notified. This will be strictly on an exception basis.

Equipment and materials received shall be checked against the Purchase Order (PO) for quantity and general specifications.

Visual examination of goods will be made with an Overage Shortage / Damage report generated when required.

Site materials management will be responsible for inspecting and receiving of goods when they arrive to determine if there are any damages, non-conformance issues or quantity discrepancies. Once all goods are received, the MRR (Material Receiving Report) will be prepared using the MREC screen in PM + and also the OS&D (Overage, Shortage & Damages) report, if required.

These reports are shown below:

Figure 2: PM+ MRR

Material Receiving Report

SNC·LAVALIN — PROJECT: — CLIENT: — Scope of Report: MRR No = 0000000010 — SNC·LAVALIN MRR

MRR NO.	DATE	STATUS	CARRIER	PACKING LIST	BILL OF LADING	RECEIVED BY
0000000010	2011-02-28	Received		ONT-005		MITCH LAVOIE

WAREHOUSE: BALZER - PCL'S (C-505) OFFSITE STORAGE FACILITY — LOCATION: BALZER - STORAGE — ORIGIN OF MATERIAL: Sandale Utility Products - Brantford, ON

PURCHASE ORDER:

ITEM NO.	DESCRIPTION	T	MATERIAL CODE	SIZE	SUB COMP. / HEAT NO.	UOM	QTY REC'D	QTY P.O.	REMARKS
P-6182 - HDPE Pipe Supply									
0000000007	PIPE, DR 21.0, 03350 PE4710 CL445574C, PE	B	51110ZD1X2C8ZZZ	48		FT	200.00	400.00	

Remarks:

Contractor confirms that the above quantities / descriptions are true & correct and that the Equipment / Materials fully conform to all Contractual requirements.

ISSUED BY MATERIAL CONTROLLER:	APPROVED BY QC	RESERVES AND / OR REMARKS	INSPECTION WITNESSED BY: (OWNER REPRESENTATIVE)	APPROVED BY CLIENT (OWNER REPRESENTATIVE)
NAME:	NAME:		NAME:	NAME:
SIGN:	SIGN:		SIGN:	SIGN:
DATE:	DATE:		DATE:	DATE:

PM+ OS&D

OSD — OVER, SHORT & DAMAGE REPORT — SNC·LAVALIN — Report Date: 2010-10-15 Time: 10:40:42

Project: — Executed for: — Scope of Report: MRR No = 0000000001

OS&D NO.	DATE	STATUS	INITIALIZED BY	MRR NO.
0000000001	2010-10-15	Open	Ragan Handa	0000000001

PURCHASE ORDER: 9479 - RFID Tracking — ORIGIN OF MATERIAL: Identec Solutions Inc. - 17220 - Head Office

QUANTITY PACKING LIST	QUANTITY RECEIVED	QUANTITY OVER/ SHORT	QUANTITY DAMAGED	QUANTITY NON CONFORME	BRIEF DESCRIPTION OF ITEM RECEIVED	MATERIAL T	MATERIAL CODE / TAG NUMBER	SIZE / SUB COMP.	UOM	DESCRIPTION OF DISCREPANCY/ ACTION RECOMMENDED
2.00	1.00	-1.00	0.00	0.00	INTELLIFIND MOBILE (PER DEVICE) USE A HANDHELD OR VEHICLE-MOUNT MOBILE READER TO	B	9479-720163			EACH ONLY 1 CD FOUND IN BOX CALLED "PRODUCT INFORMATION"

OS&D Desc.: MISSING SOFTWARE

SITE MATERIAL CONTROLLER:	QUALITY CONTROL MANAGER:	CLIENT:	DISPOSAL INSTRUCTIONS:
NAME:	NAME:	NAME:	
SIGN:	SIGN:	SIGN:	
DATE:	DATE:	DATE:	

By registering the OS&D information in PM+, home-office expediting and inspection can input and control remedial actions to be taken including defining the actions, updating the status and timelines. The communication between site and home office personnel for OS&D questions is easily achieved if both entities regularly review the OS&D Log report and OS&D detailed report for specific purchase orders available in PM+. Both the MRR and OS&D reports will be signed off by the receiving personal for records.

1.5.5 Storage of Goods

All goods will be stored in accordance to the PO specifications, preservation and technical requirements, and their upkeep will be registered. The warehouse personnel or others will perform the actual upkeep. Special attention shall be given regarding perishable goods and all lots shall clearly indicate the expiry date.

1.5.6 Documentation

The following documents will be applicable to the receipt of materials at site:

- Copy of PO with latest Change Order
- Ocean Bill of Lading, Truck waybill or Airfreight bill
- Supplier- packing list
- Shipping Release where applicable

Any goods, which cannot be matched to a PO or do not meet the specification will be held in quarantine.

1.5.7 Over, Short And Damage Report (OS&D)

The OS&D Report is the primary document for dealing with shipment abnormalities. The OS&D will be prepared by Site Materials Management and numbered sequentially and reference the MRR number. The OS&D will be registered in the PM+ system and the required action will be undertaken by the respective PO Expeditor and Buyer. The register will contain the following info:

- OS&D #
- OS&D date
- Initiated by
- PO Number
- Brief description of problem and recommended action
- Resolved by
- Resolve date

1.5.8 Material Issue Slip (MIS)

Materials issued from the warehouse shall be covered by an MIS and refer to:

- Supply Package #
- Install Package # & Contractor requesting goods
- Name of person issuing goods
- Person receiving goods form the warehouse
- PO#, Item#, Tag#, Short Description, PO Qty, Qty required, Qty Issued, Qty B/O
- Date requested, Date Issued

Site materials management will create a MREQ (Material Request) in PM+ and run the engineering build analysis to ensure that the materials requested are available or enroute to site. When handing over materials to a sub-Contractor, a MIS (Material Issue Slip) will be presented by site materials management. This slip confirms that the goods have been issued to the sub-Contractor and records the quantity. The sub-Contractor will need to sign off on the MIS to agree that the goods were issued in a usable condition. The figure below shows a MIS:

Figure 3: Material Issue Slip

Material Issue Slip

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PROJECT:

CLIENT:

Scope of Report: Issue No = 0000000014 - HDPE PIPING (ONT-001)

SNC-LAVALIN MIS

ISSUE NO.	DESCRIPTION	DATE	REQUESTED BY	WAREHOUSE
0000000014	HDPE PIPING (ONT-001)	2011-03-08	MITCH LAVOIE	BALZER - PCL'S (C-505) OFFSITE STORAG

CONTRACT	CONTRACTOR
P-8192 - HDPE Pipe Supply	Bandale Utility Products - 006798 - Brantford, ON

DESTINATION
BALZER OFFSITE STORAGE, SK

#	T	MATERIAL CODE	SIZE	DESCRIPTION	TAG NUMBER	SUB COMP.	UOM	QUANTITY ISSUED
01	B	61110202QZC01ZZZ	10	PIPE, DR 17.0, D3350 PE4710 CL445574C, PE			FT	50.00
02	B	61110202X2C01ZZZ	12	PIPE, DR 17.0, D3350 PE4710 CL445574C, PE			FT	100.00

Remark:

REQUESTED BY:	APPROVED BY: (Engineer)	ISSUED BY:	RECEIVED BY:
Name (block letters)	Name (block letters)	Name (block letters)	Name (block letters)
date	date	date	date
Signature	Signature	Signature	Signature

All site material control transactions will be recorded in PM+.

1.5.9 Material Return by Contractors

Materials will only be permitted to be returned to the Project Warehouse when accompanied by a Site Instruction (SI) issued by the Area Superintendent, or his delegated representative.

1.5.10 Storage

The Warehouse or other facilities i.e. lay down areas; will be utilized for the receipt and storage of the equipment and material required for the Project.

Contractor supplied equipment and materials stored at the site will be at their risk unless covered by a project wide All Risk Insurance policy.

1.5.11 Inventory Control System

PM+ will be the inventory control mechanism.

PM+ records will include:

- Deliverable Items List (DIL)
- Receipt of Deliverables (MRR)
- Over Short & Damage Reports (OS&D)
- Non Conformance Report (NCR)
- Material Issue Slip (MIS)

PM+ will be used to record the receipt, inventory and issue to the Contractor as well as all returns from Contractors and to s in the event of overage or damage etc.

Material bought by the Project and shipped to a pre-assembly area for fabrication will be received there and entered in to PM+.

It will then be issue to the Contractor. This form of remote checking/issuing is designed to save double handling. A similar effort will be used to issue directly to a Contractor on site.

Packing lists will be co-signed as issued with the data being entered into PM+ at a later point.

1.5.12 Shipping from Pre-Assembly and Fabrication Sites

All materials, including disposal of surplus and scrap items, which are shipped from the Project site, must be recorded on a Shipping Report (SR).

The Shipping Report shall contain:

- SR Number
- Tag Number
- P.O. and item number on which the material was received
- Full description of the material
- Full details of consignee's name, address, telephone and fax number as well as a contact person's name
- Reason for the shipment, i.e. repairs, replacement, overages, sale of surplus, scrap, rejected, etc.

1.5.13 Disposal of Materials

Surplus

Surplus Materials are usually identified by the Contractor as the needs for those goods diminish in a particular area.

This type of surplus can be returned to the warehouse for re-issue to a new Contractor. Normally this would be bulk items.

Surplus goods at the end of the project will be put into inventory and handed over to operations unless otherwise disposed.

Scrap

Scrap shall be defined throughout the Project by construction personnel.

A scrap removal contract may be put in place to facilitate the expeditious removal of said goods.

Goods of questionable use will be put in a separate location from the general inventory either for re-use or eventual disposal.

Reconciliation, Handover to Operations and Close-out

At the end of any pre-assembly activity all surplus material will be transferred to the main construction site following standard procedures.

At the end of the main construction all material will be reconciled against receipt and issue and a final report will be issued. All surplus will be transferred to Operations unless to be sold for scrap or otherwise disposed.

In order to ensure that all material and equipment requirements have been fulfilled, Site Materials Management will complete a reconciliation by running the RII (Required Vs Issued by Installation Package) report in PM+. The figure below shows the report:

Figure 4: Material Required Vs Issued by Installation Package

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PROJECT: 332472 : Boundary Dam 803 Carbon Capture System
CLIENT: SaskPower
Scope of Report: CRC = All, Material Code = %, Warehouse = All, Inst. Pack.= 505 - Caisson Foundations & Buried Utilities

SNC·LAVALIN

Installation Package / T	Material Code	Size		UoM	BOM Qty (1)	Alt. Qty (2)	Req. Qty (3)	Issued Qty (4)	Delta Issued (5) = (4) - (3)	On Hand
505 - Caisson Foundations & Buried Utilities										
B	61110Z02XZC01ZZZ	4	PIPE, DR 17.0, D3350 PE4710 CL445574C, PE.	FT	98.54	9.85	108.39	0.00	-108.39	0.0
B	61110Z02WZC01ZZZ	54	PIPE, DR 13.5, D3350 PE4710 CL445574C, PE.	FT	353.14	35.31	388.45	0.00	-388.45	0.0
B	61110Z2ZNZ20M30V	4	PIPE, 0.197 IN NOM WALL, D2396 RTRP-12ED4314, BUTT & STRAP ENDS, CBL W.	FT	1,229.59	122.96	1,352.55	0.00	-1,352.55	0.0
B	6212A72ZPZZ0M30U	4	ELL, 45 LR, CBL WNEXUS, PDS & S LAYERS, 0.208 IN NOM WALL, D2396 RTRP-	EACH	190.00	0.00	190.00	0.00	-190.00	0.0
B	6212A702XZC0M20H	54	ELL, 22.5, FAB, IPS, 2 SEG, DR 17.0, D3350 PE4710 CL445574C, PE, AS PER MAN	EACH	2.00	0.00	2.00	0.00	-2.00	0.0

If the quantity remaining to be issued to the Contractor falls in the range of the allowance quantity and the Contractor does not require any additional quantity, an agreement can be reached with the Contractor and both parties can sign off on this.

A final close out report will be issued summarizing the Material Control activity.

1.5.14 Inter-site Coordination and Interface

A coordinator will be appointed to act as liaison between the various assembly sites and the main site office to monitor incoming materials and equipment (applicable mostly to the Transmission Line and Converter construction). The coordinator shall

act as the go-between for the construction site, assembly sites, logistics, expediting, inspection and purchasing and contracts.

1.5.15 Site Purchasing

The majority of the purchasing will be carried out from the St John's Project office; however, where deemed beneficial limited site based purchasing will be arranged. Care will be taken to ensure that field requisitioning and purchase of materials is performed according to Project Procedures. Field engineering will define all site requirements in EMDS and PM+ for the requisitioning process.

Standard Project procurement procedures established for the Project will be followed. Bidder identification, technical documentation, ordering, follow-up, inspection, logistics and monitoring systems will be the same as in the main Project office. The Procurement Manager will have functional responsibility for this activity.

1.5.16 Procedures

The following standard SNC-Lavalin Procedures will be used to coordinate the project materials function:

GP-5400-PR-00-E Table of Contents

GP-5401-PR-01-E Introduction

GP-5402-PR-01-E Equipment and Material Identification

GP-5403-PR-01-E Frame Agreements

GP-5404-PR-01-E Material Tracking and Delivery

GP-5405-PR-01-E Shop Fabrication

GP-5406-PR-01-E Site Material Management

GP-5407-PR-01-E Over, Short or Damaged Report Resolution

1.6 Material Responsibility Matrix

The material responsibility matrix (MRM) is the over arching "live" document for components 1 (Hydro), 3 (DC Specialities) and 4 (Transmission) that is correlated to the Materials Management Plan and will be used to develop the Detailed Materials Management Procedures.

These matrices represent and identify:

a the stakeholders responsible

b materials and equipment by supply and installation package numbers

c processes and tracking systems used for the life cycle of all SNC Lavalin "free issue" materials and equipment from engineering identification methodologies and coding, through the requisitioning and supply chain to the receipt, storage and hand over for installation to sub-Contractors and registration in Nalcor Asset Management System.

See attachments 1, 2 & 3 that are the individual Material Responsibility Matrices for each of the LCP components. Further development will include the sub-Contractor supplied packages.

LOWER CHURCHILL Component 1 Hydro Power Material Responsibility Matrix for Execution Phase

Installation package #	Supply Package#	KEY E - Engineering CM - Construction Management FMM - Field Matl Mgmt A - Automated (CATIA) M - Manual (EMDS or ICA) SP - SLI Procurement (HO) VF - Vendor/Fabricator TC - Trade Contractor NA - Not Applicable	Identification Methodology for Detail Engineering			BOM Method	Engineering								Procurement								Warehousing					Construction Management Issue Strategy				Shortages/Surplus						
			Bulk Material Code (BCA)	Engineered Tag No.	Description	(Automated) CATIA (Manual) EMDS & ICA Equipment List	Specifications	Data Sheets	Drawings	Shop Detail Drawings	BOM in PM+	Construction review prior to issuing requisitions	PM+ Material Requisition (RFI=Request for Proposal)	Technical Evaluation	RFQ (Request for Quote) in PM+	Commercial Evaluation	Construction review prior to issuing purchase orders	PM+ Material Requisition (RFP=REQ Request for Purchase)	Home office Purchase Order in PM+	Expediting in PM+	Shop Surveillance	Traffic & Logistics in PM+	Commercial Receipt	Technical Receipt in PM+	Non-Tech O,S&D	Tech O,S&D in PM+	Warehouse / Storage in PM+	Inventory Control in PM+	Material Planning/Bulk Analysis in PM+	Pick Tickets/Material Request by Dwg	Pick Tickets by Commodity	Free/Bulk Issue (Min/Max) in PM+	Identify Shortages	Approve Shorts (MR) in PM+	Procure Shorts (PO)	Identify Surplus in PM+	Dispose Surplus	Interface to Nalcor Asset Register
	MECHANICAL (CRC 50000's) & ELECTRICAL (CRC 70000's)																																			
CH0031 BOP Mech & Elec Aux	PH-0016	Isolated Phase Bus	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0018	Generator Circuit Breakers	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0017	345 kV XLPE Cable	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0514	Transformer & Spare Transformer	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0035	15 kV Switchgear	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
CH0005 Accom. Complex Site Util.	PH-0035	15 kV Switchgear	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0036	Aux. Transformers Acc. Complex	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0037	25 kV Switchgear Acc. Complex	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0043	Sewage Treatment Plant for Accom.	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PH-0038	Emerg. Diesel Generator	NA	E	E	E	E	E	E	VF	NA	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM

LOWER CHURCHILL Component 3 Material Responsibility Matrix for Execution Phase

KEY
E - Engineering
CM - Construction Management
FMM - Field Matl Mgmt
A - Automated (CATIA)
M - Manual (EMDS or ICA)
SP - SLI Procurement (HO)
VF - Vendor/Fabricator
TC - Trade Contractor
NA - Not Applicable

Installation package #	Supply Package#		Identification Methodology for Detail Engineering			BOM Method	Home Office Engineering							
			[illegible]	[illegible]	[illegible]	[illegible]	Specifications	Data Sheets	Drawings	Shop Detail Drawings	BOM in PM+	Construction review prior to issuing requisitions	PM+ Material Requsition (RFI=Request for Proposal)	Technical Evaluation
		MECHANICAL (CRC's 50000) & ELECTRICAL (CRC's 70000)												
CD0502	PD-0506	Supply Equip. / Material SW	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0502	PD-0537	Transformers	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0513	138/25 kV Transformer Muskrat Falls	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0514	138KV & 25kV Circuit Breakers	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0515	230, 138 kV 7 25 kV Terminal Station	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0518	138 kV Capacitor Voltage Transformer	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0519	25 kV Vacuum Interrupter	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0520	25kV 6X4 MVAR Capacitor Banks	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0522	Pre-Fabrication Control Room Building	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0523	Substation Service Transformer	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0529	25 kV Reclosers, MV Switches & Fuse cut	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0530	138 kV & 25kV Surger Arresters	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0531	MV Instrument Transformer	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0561	RTU Cabinet	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
CD0512 Construction Power	PD-0562	Protection Relays	NA	E	E	EL	E	E	E	TC	NA	CM	E	E
[illegible]	PD-0506	Supply of Electrodes & Connectors	NA	E	E	EL	E	E	E	TC	NA	CM	E	E

Supply Package#	Procurement								Warehousing					
	RFQ (Request for Quote) in PM+	Commercial Evaluation	Construction review prior to issuing purchase orders	PM+ Material Requisition (RFP=REQ Request for Purchase)	Home office Purchase Order in PM+	Expediting in PM+	Shop Surveillance	Traffic & Logistics in PM+	Commercial Receipt	Technical Receipt in PM+	Non-Tech O,S&D	Tech O,S&D in PM+	Warehouse / Storage in PM+	Inventory Control in PM+
PD-0506	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0537	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0513	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0514	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0515	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0518	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0519	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0520	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0522	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0523	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0529	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0530	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0531	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0561	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0562	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM
PD-0506	SP	CM	SP	E	SP	SP	E/SP	SP	FMM	FMM	FMM	FMM	FMM	FMM

Supply Package#	Construction Management Issue Strategy				Shortages Surplus					
	Material Planning/Bull Analysis in PM+	Pick Tickets/Material Request by Dwg	Pick Tickets by Commodity	Free/Bulk Issue (Min/Max) in PM+	Identify Shortages	Approve Shorts (MR) in PM+	Procure Shorts (PO)	Identify Surplus in PM+	Dispose Surplus	Interface to Nalcor Asset Register
PD-0506	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0537	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0513	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0514	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0515	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0518	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0519	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0520	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0522	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0523	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0529	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0530	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0531	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0561	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0562	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM
PD-0506	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM	FMM

LOWER CHURCHILL Component 4 (Transmission) Material Responsibility Matrix for Execution Phase

KEY
E - Engineering
CM - Construction Management
FMM - Field Matl Mgmt
A - Automated (CATIA)
M - Manual (EMDS or ICA)
SP - SLI Procurement (HO)
VF - Vendor/Fabricator
TC - Trade Contractor
NA - Not Applicable

Area & Installation Package #	Supply Package#		Identification Methodology for Detail Engineering			BOM Method	Engineering								Procurement									Construction Management: Warehousing					Issue Strategy				Shortages/Surplus					
			Bulk Material Code (ICA)	Engineered Tag No.	Description	(Automated (CATIA) (Manual: EMDS & ICA Equipment List))	Specifications	Data Sheets	Drawings	Shop Detail Drawings	BOM in PM+	Construction review prior to issuing requisitions	PM+ Material Requisition (RFI=Request for Proposal)	Technical Evaluation	RFQ (Request for Quote) in PM+	Commercial Evaluation	Construction review prior to issuing purchase orders	PM+ Material Requisition (RFP=REQ Request for Purchase)	Home office Purchase Order in PM+	Expediting in PM+	Shop Surveillance	Traffic & Logistics in PM+	Commercial Receipt	Technical Receipt in PM+	Non-Tech O,S&D	Tech O,S&D in PM+	Warehouse / Storage in PM+	Inventory Control in PM+	Material Planning/Bulk Analysis in PM+	Pick Tickets/Material Request by Dwg	Pick Tickets by Commodity	Free/Bulk Issue (Min/Max) in PM+	Identify Shortages	Approve Shorts (MR) in PM+	Procure Shorts (PO)	Identify Surplus in PM+	Dispose Surplus	Interface to Nalcor Asset Register
		ELECTRICAL & STRUCTURAL STEEL (CRC's 70000)																																			
AC Line CT-0319	PT-0302	Towers Steel	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0300	Conductors	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0301	Insulators	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0304	OPGW	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0303	Hardware & Fittings	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0326	Guy Wires & OHSW	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0305	Earthing Material	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0307	Foundations Grillage Steel	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
AC Line CT-0319	PT-0335	Pole Anchor & Anchor Bolts	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0330	Towers Steel	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0328	Conductors	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0329	Insulators	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0334	OPGW	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0331	Hardware & Fittings	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0333	Guy Wires & OHSW	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0332	Earthing Material	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0308	Foundations Grillage Steel	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
DC Lines	PT-0352	Pole Anchor & Anchor Bolts	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
25kV Construction Power	PT-0336	25 kV Transmission Line	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
25kV Construction Power	PT-0337	ADSS	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
25kV Construction Power	PT-0338	25 kV Transmission Line Conductor	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
25kV Construction Power	PT-0339	25 kV Transmission Line Insulator	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
25kV Construction Power	PT-0340	Wood Pole for 138/25 kV	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM

LOWER CHURCHILL Component 4 (Transmission) Material Responsibility Matrix for Execution Phase

Area & Installation Package #	Supply Package#	KEY E - Engineering CM - Construction Management FMM - Field Matl Mgmt A - Automated (CATIA) M - Manual (EMDS or ICA) SP - SLI Procurement (HO) VF - Vendor/Fabricator TC - Trade Contractor NA - Not Applicable	Identification Methodology for Detail Engineering			BOM Method	Engineering								Procurement								Warehousing								Construction Management Issue Strategy			Shortages/Surplus					
			Bulk Material Code (ICA)	Engineered Tag No.	Description	(Automated (CATIA) (Manual (EMDS or ICA) Equipment List	Specifications	Data Sheets	Drawings	Shop Detail Drawings	BOM in PM+	Construction review prior to issuing requisitions	PM+ Material Requisition (RFI=Request for Proposal)	Technical Evaluation	RFQ (Request for Quote) in PM+	Commercial Evaluation	Construction review prior to issuing purchase orders	PM+ Material Requisition (RFP=RFQ Request for Purchase)	Home office Purchase Order in PM+	Expediting in PM+	Shop Surveillance	Traffic & Logistics in PM+	Commercial Receipt	Technical Receipt in PM+	Non-Tech O,S&D	Tech O,S&D in PM+	Warehouse / Storage in PM+	Inventory Control in PM+	Material Planning/Buil Analysis in PM+	Pick Tickets/Material Request by Dwg	Pick Tickets by Commodity	Freq/Bulk Issue (Min/Max) in PM+	Identify Shortages	Approve Shorts (MR) in PM+	Procure Shorts (PO)	Identify Surplus in PM+	Dispose Surplus	Interface to Nalcor Asset Register
Soil Debris Pond	PT-0347	220kV Transmission Line	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0348	OHSW	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0349	220kV Transmission Line Conductor	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0350	220kV Transmission Line Insulators	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0351	Wood Pole for 220 kV	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
Electrode Lines	PT-0313	Electrode L Wood Poles	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0314	Electrode L Conductor	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0315	Electrode L Insulators	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0316	Electrode L Hardware,	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0317	Electrode L Earthing Materials	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM
	PT-0318	Electrode L Guy Wire & Anchor	E	NA	E	M	E	NA	E	VF	E	CM	E	E	SP	SP	CM	E	SP	SP	SP	SP	SP	FMM	TC	FMM	FMM	FMM	FMM	TC	TC	FMM	TC	FMM	SP	FMM	FMM	FMM