Boundless Energy



Award Recommendation

CH0032 – Supply and Install Powerhouse Hydro/Mechanical Equipment



SNC·LAVALIN EPCM consultant for Nalcor









Lower Churchill Project

RECOMMENDATION FOR AWARD

SUMMARY REPORT

CH0032: Supply/Install Powerhouse Hydro/Mechanical Equipment

	NAME	TITLE	SIGNATURE	DATE
PREPARED BY:	Robert Anderson	Contract Administrator	EDron	25 Oct 2013
REVIEWED BY:	Bruce Drover	Package Leader	BANK 2	25 047 203
REVIEWED BY:	Ed Over	Sr. Advisor –Commercial Strategies	Elman	25-Oct 2010
REVIEWED BY:	Frank Gillespie	Area Manager	+. allepu	25020-2013
REVIEWED BY:	Ed. Bush	Project Cost Controls Manager	du Bush	250472013
REVIEWED BY:	Scott O'Brien	Project Manager – C1	* A	25-04-203
REVIEWED BY:	Jason Kean	Deputy Project General Manager	The	31-047-2013
APPROVED BY:	Pat Hussey	Supply Chain Manager	Manzo	29 act 13
APPROVED BY:	Ron Power	General Project Manager	MM1 31	04-2012





1 INTRODUCTION

1.1 PACKAGE NO.: CH0032

1.2 PACKAGE TITLE:

SUPPLY/INSTALL POWERHOUSE HYDRO/MECHANICAL EQUIPMENT

1.3 PACKAGE SCOPE OF WORK BRIEF DESCRIPTION:

- Design, supply and installation of the spillway hydro-mechanical equipment;
- Supply and installation of mechanical and electrical auxiliaries, and architectural interior works for the spillway;
- Design, supply and installation of powerhouse intake hydro-mechanical equipment;
- Design, supply and installation of powerhouse draft tube hydro-mechanical equipment and handling equipment;
- Design, supply and installation of the trash cleaning system.

1.4 ESTIMATE:

CAD\$ 180 Million.

(DG3 BODGET) JRX.

1.5 CONTRACTING PARTIES:

Nalcor Energy and Andritz Hydro Canada Inc. (Contractor)

1.6 AGREEMENT TYPE:

Supply & Install

1.7 APPROVED BIDDERS LIST:

- ALSTOM Power & Transport Canada Inc.
- ANDRITZ Hydro Canada Inc.
- BLACK & MCDONALD/AFI/HATCH
- GANOTEC Inc./CANMEC Industriel Inc.
- KOREA Hydro & Nuclear Power Co. Inc./DAEWOO International Inc.
- HMI Construction/LAR/SUNNY CORNER



.



1.8 RFP KEY DATES AND VALIDITY:

Proposal Closing Date:

Issue RFP:

07 December 2012

- 19 February 2013
- Revised Proposal Closing Date 16 April 2013
 - RFP validity 120 DAYS (Extended to Oct. 31, 2013)

1.9 RFP ADDENDUMS AND BIDDER CLARIFICATIONS

During the RFP period all Bidders received a total of Qty 14 separate RFP Addendums and SLI / Nalcor responses to 185 Bidder's Technical and Commercial Clarifications.

2 EVALUATION OF PROPOSALS

2.1 EVALUATION LEADS

Following the receipt, opening and distribution of Proposals the SLI / Nalcor Integrated Evaluation Team commenced a detailed analysis of the Proposals in accordance with the Package approved Bid Evaluation Plan. Proposals were received from 4 of the 6 Proponents. Black & McDonald/AFI/Hatch and HMI Construction/LAR/Sunny Corner declined to submit a proposal.

The Technical Evaluation including an analysis of the Technical Scope of Work, Schedule, Execution Plan, QA-QC, Environment, Health and Safety was led by Bruce Drover with support from project discipline representatives from both the local project office and Montreal.

The Commercial Evaluation including Risk Assessment and Newfoundland & Labrador Benefits was led by Ed Over with support from Aidan Meade, (McInnis Cooper, Lawyers / Avocats), Robert Anderson (Contract Administrator), Maria Moran (Industrial Benefits Lead), J.D. Tremblay (Risk Manager) and Andrew Sinnott (Assistant Treasurer).

To maintain security of information during the evaluation process, all members of the evaluation team signed a Confidentiality Agreement and the four Bidders were assigned code names as follows:

Alstom – Habs

Andritz - Sens

Ganotec/Canmec - Leafs

KHNP/Daewoo - Jets

2.2 BIDDER CLARIFICATION MEETINGS

The KOREA Hydro & Nuclear Power Co. Inc./DAEWOO International Inc. proposal was evaluated and determined to be technically unacceptable. Efforts to obtain further information via clarifications were unsuccessful.







ALSTOM Power & Transport Canada Inc. proposed two separate contracts; one for the supply of equipment and a separate contract for the installation with their proposed installer. The combined value of the contracts was significantly higher (over \$300M) than the other bids and was not evaluated further.

Off Site Technical and Commercial Clarification Meetings were arranged with two Bidders, Andritz Hydro Ltd. and Ganotec Inc./Canmec Ind. Inc. as these companies submitted the two lowest cost proposals that met the technical and commercial evaluation criteria. During these meetings Senior Representatives were invited to deliver Technical and Commercial Presentations to support their respective Proposals:

- ANDRITZ Hydro : 29 May 2013
- GANOTEC Inc./CANMEC Industriel Inc. 31 May 2013

2.3 PREFERRED BIDDER STATUS

Following the Bidder Clarification Meetings, the evaluation was focused on one Bidder, Andritz Hydro Ltd. The remaining three Bidders were notified that a "Preferred Bidder" had been selected however their Proposals would remain open for acceptance if negotiations with above failed to materialise into a formal contract award.

2.4 PERFORMANCE SECURITY

Performance Bond for 50% of the contract price.

The RFP requested a cost for a 10% Letter of Credit until a Final Completion Certificate was issued and a 5% Letter of Credit during the Warranty Period.

After financial evaluation it was determined that a Letter of Credit for 10% of the contract price, up to Final Completion would be required. This resulted in a cost saving of \$174,830.

2.5 EVALUATION REPORTS

A complete set of Evaluation Reports are attached, please refer to Appendices for details.

In summary:

	An	dritz	Ganotec/	Canmec
	Points	%	Points	%
Commercial (60% Weighting)	5.67	95%	1.82	30%
Technical (27.5% Weighting)	2.48	90%	2.61	95%
Schedule Execution Plan (10% Weighting)	0.93	93%	0.93	93%
NL Benefits (2.5% Weighting)	0.12	5%	0.17	7%
Overall Result		92%		55%
Risk Management		Pass		Pass
Health & Safety		Pass		Pass
Quality Assurance		Pass		Fail
Environmental		Pass		Pass









3 SUMMARY OF FINAL BIDDER PRICES

	ANDRITZ HYDRO	GANOTEC/ CANMEC
Total Base Proposal Price Converted to CAD\$	\$226,292,168.00	\$283,892,126.00
Estimate for Trades Labour Travel & Costs	\$5,081,252.00 (incl in proposal cost)	\$7,724,000.00 (not incl. in proposal cost)
Total Base Proposal Price Converted to CAD\$	\$226,292,168.00	\$291,616,126
Less credits offered through negotiation	-\$25,906,154	-\$44,690,803
Additional Cost re Technical & Commercial Clarifications	\$ 4,222,593	
Total Cost CAD\$	\$204,608,607	\$246,925,323

4 RECOMMENDATION FOR AWARD

In consideration of the Evaluation Reports detailed in Section 5.0 including the summary of final proposal prices detailed in Section 3 above, the Evaluation Team recommend awarding a Supply & Install Contract to:

ANDRITZ Hydro Canada Inc. for the following fixed contract prices:

- CAD\$ 122,378,792
- Euros 61,046,633

All prices detailed above exclude HST

The Evaluation Team is recommending award of an interim Limited Notice to Proceed (LNTP) Agreement for a maximum three months period to enable commencement of engineering deliverables required to maintain project schedule. The total value of the LNTP will not exceed CAD \$2,000,000.00 and Euros 2,000,000. The identified costs for work completed under the LNTP will be applied to specific milestone payments and not paid as a single lump sum line item.



5





APPENDICES:

- Commercial Evaluation Reports
- Technical Evaluation Reports
- QA Evaluation Reports
- Health & Safety Evaluation Reports
- Environmental Evaluation Reports
- Schedule & Execution Plan Evaluation Reports
- Newfoundland & Labrador Benefits Evaluation Reports
- Risk Management Evaluation Reports
- Overall Evaluation Scoring Matrix Report

24-Oct-13

N/A

CH0032 - S/I Powerhouse Hydro-mechanical equipment

Estimated Contract Value and Comparison to Budget

The Lump Sum final value for this award is indicated in Table 1-Contract Value and Comparison to Budget 1 EUR=1.3475 CAD

Table 1-Contract Value and Comparison to Budget

Description (all amount in CAD)	Amount	
Contract Value (CAD section)	a1	\$ 122,378,792
Contract Value (EUR section)	a2	\$ 61,046,633
Total Contract Value (CAD)	а	\$ 204,639,130
Escalation (Note 1)	b	\$ -
Forecast Specific Growth Allowance (Note 2)	c	\$ 25,900,000
Forecast Non-specific Growth Allowance (Note 3)	d	\$ 19,584,000
Forecast Total Contract Value	e=a+b+c+d	\$ 250,123,130
Original Control Budget	f	\$ 101,525,168
Budget transfers and scope changes (Note 4)	g	\$ 73,633,628
DG3 Escalation allowance	h	\$ 2,716,907
Current Control Budget	i=f+g+h	\$ 177,875,703
Variance (Note 5)	j=e-i	\$ 72,247,427

Note 1: Escalation

 Contract value in 	cludes all	escalation
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	Sub Total Escalation	\$
Note 2:	Specific growth (i.e. Part of the scope not included in the	
	contract value but to be awarded later)	
	For details refer to attached sheet	
	 Support during operation of the Spillway through diversion 	\$ 400,000
	 Provision for Second stage concrete 	\$ 20,000,000
	 Intake gate hoist elevation 	\$ 500,000
	• Bonus	\$ 5,000,000
	Sub Total Specific	\$ 25,900,000
Note 3 :	Non-Specific growth (i.e. Additional scope that may or may	
	not be added to the contract at a later stage)	
	For details refer to attached sheet	
	 Provision for Site coordination and interface 	\$ 7,344,000
	 Provision for Site conditions 	\$ 2,010,000
	Provision for ECN's and Interference	\$ 10,230,000
	Sub Total Non-Specific	\$ 19,584,000

Note 4: Budget revisions

• Transfer of CH0046 scope to CH0032 : 52,899,185 (MNCP 0001)

Transfer of the Spillway electrical fro CH0031 : 3,163,963 (MNCP 0001)

Spillway LLO gates optimization : 8,500,000 PCN# 0055

- Transfer of Spillway and Intake secondary concrete from CH0007: 9,831,272 (CH0007 addendas)
- Transfer a portion of the air transportation to SM0709: (760,792)

Note 5: Variance

- . Growth : 45.5 M
- · Fabrication: (27.4) M
- Air Travel : 5 M
- Installation: 49.4 M (Andritz has a higher rate for his Manpower : there is a 92 \$/Hr difference between our budget and his price representing 75% over-run for 550,000 Hrs)

Conclusion:

The Forecasted Total Contract VCalue of \$ 250,123,130 inclusive of escalation, specified and un-specified growth, represents an over-run of \$ 72,247,427 compared to the Current Control Budget and should be retained as Authorised Fund Amount.

Note: Per discussions with Poul Hamington on 31-OCT-2013, the requisition for CH0032 to exclude Non-Spertic Growth (\$19.5 M). furtherve second stage concrete will likely full within toyet volve of CH 0007. Jete 3roct-2013



	CH0032 - S/I Powerhouse Hydro-mechan Basis of calculation	nical	equipment	Revised 24	Oct. 2013
Note 1:	Escalation			\$	
1.1	included in contract price		N/A		
Note 2:	Specified Growth Support during operation of the Spillway through diversion (estimated 2000 Hrs)	\$	400,000	\$	25,900,000
2.2	Second stage concrete (as per bid)	\$	20.000.000		
2.3	Intake gate hoist elevation (estimated)	\$	500,000		
2.4	Bonus (as per contract)	\$	5,000,000		
Note 3:	Non-specified Growth			\$	19,584,000
3.1	Provision for site coordination and interface to prioritise day to day work execution in case of HSE, schedule and other constraints based on 6% of the CAD portion of the contract (Installation) of 122.4 M\$	\$	7,344,000		
3.2	Provision for site conditions related to the owner's commitments towards the contractor such as camp availability, yards, construction power and others based on 1% of the contract value of 201 M\$	\$	2,010,000		
3.3	Provision for ECN's during fabrication and interference on site during installation based on 5% of the contract value of 204.6 M\$	\$	10,230,000		

Appendix 4 - Commercial Evaluation Report

Nalcor Energy-Lower Churchill Project

Commercial Evaluation Report

Package No./ Description: 505573-CH0032 SUPPLY/INSTALL POWERHOUSE HYDRO/MECH	ANICAL EQUIPMEN	т					Date: 25/Oct/2013			
							RECOMMENDED BIDD ANDRITZ HYDRO \$122,378,792 CAD + 61 Total Award Value \$CA	ER AND AWARD VALUE 046,633 EUR (EUR conv D - \$204,608,607	: verted to CAD @1.347 = \$8	2,229,814
Description	Andritz	Ganotec/Canmec	KHNP/Daewoo	Alstom	Notes					
BASE PROPOSAL VALUE Scope A&B - Intake & Draft Tube & Spillway (Converted to CAD	\$226,292,168.00	\$283,892,126.00	\$207,876,138.00	\$345,930,159.72	After initial evaluation, KHNP/I obtain technical information vi	Daewoo and Alstom's proposal a clarifications the KHNP/Daew	ls were not evaluated furthe voo bid was rejected on a te	er. Alstom's bid was not evechnical basis.	valuated for financial reason	ns. After failed attempts to
Travel Costs	incl.	\$7,724,000.00	\$4,745,695.00	\$8,256,993.53	Andritz Travel \$ was included	in their bid price. Travel \$ for G	anotec/Canmec's; KHNP/E	aewoo and Alstom were	extra.	
Base Bid	\$226,292,168.00	\$291,616,126.00								
LESS: Credits offered through negotiaton	-\$25,906,154.00	-\$44,690,803.00								
ADD: Additional Cost re Technical & Commercial Clarifications	\$4,222,593.00				1					
TOTAL AWARD VALUE (Converted to CAD\$)	\$204,608,607.00	\$246,925,323.00	\$212,621,833.00	\$354,187,153.25						
Currency / Currencies of Proposal	CAD/EUR	CAD	CAD/KRW	CAD/EUR/BRI /US	-					
DDP Site Muskrat Falls Incoterms 2010 (Yes / No)	Ves	Ves	Ves	Ves	-					
Point(s) of Origin	China/US/CAD	CAD	Korea	China/CAD/Brz/US/Germany	-					
% Content - Newfoundland/Other Canadian/Foreign	20%/32%/30%	54%/45%/1%	N/A	N/A						
Work & Milestone Schedule Compliance /Acceptance (Yes / No)	Ves	0470740707170	INIA	i interiori interiori interiori i interiori i interiori i interiori i interior	-					
Acceptable Execution Plan (Yes / No)	ves				-					
Collective Agreement Expiry Date	1				1					
Recommended Spares Info Supplied (Yes / No)	No	No	No	No	-					
Acceptance of T & C's (including Warranty & Guarantees etc, Yes / No)	Negotiated				Agreement Award Value:	\$204,608,607.0	0			
Acceptance of Terms of Payment (Yes / No)	Negotiated				Total Authorization Amount:					
Pricing Firm through Delivery & Installation (Yes / No)	Yes	No (Esc on Steel)	Yes	Yes	Project Budget:					
Financial Evaluation Acceptance (Yes / No)	Yes	Yes	Yes	Yes	Variance:		C	over Budget		
Technical Compliance / Acceptance (Yes / No)	Yes	Yes								
QA Compliance / Acceptance (Pass; must be > 60% Yes / No)	Yes	No			Approvals			Approvals		
Health & Safety Compliance / Acceptance (Pass; must be > 60 % Yes/ No)	Yes	Yes			Name	Signature	Date	Name	Signature	Date
Environmental Compliance (Pass; must be > 70 % Yes / No)	Yes	Yes			Robert Anderson Contract Administrator	Allace	act 28/13			
Risk Management Compliance / Acceptance (Pass; must be > 60% Yes / No)	Yes	Yes			Bruce Drover	N/2	- 79-0V T-2013			(a)
Any Changes to the Evaluation Plan (if applicable)						Se				
					Ed Over Sr. Advisor Commercial Strategies	Elve	00929/13			



Appendix 4 - Commercial Evaluation Report

Nalcor Energy-Lower Churchill Project

Nalco	or Energ	y-Lower Churchill Project			"AS BID and F	INAL	L COST" DE	TAIL	OPTION A&B	- Spil	llway, Intak	(e &	Draft Tube			
Package I	No./ Description	on: 505573-CH0032 SUPPLY/INSTALL POWERHOUSE HYDRO/MECHANICAL EQUIPMENT				_						<u> </u>				1
Item	Quantity	Description	_	Jets Total	SensTotal -Bid	Sei	insTotal - Final		Leafs Total	Habs	(Supply) Total	Hal	bs (Install) Total		Habs Total	Notes
				(KHNP/Daewoo)	(Andritz)		(Andritz)	(G	ianotec/Canmec)		(Alstom)		(Alstom)		(Alstom)	
AB-1	1	Mobilization	\$	18,004,317.00	\$ 1,098,245.00	\$	1,098,245.00	\$	4,621,759.00	\$	26,405.00	\$	2,052,736.51	\$	2,079,141.51	<u> </u>
AB-2	1	Management	\$	21,124,564.00	\$ 10,164,447.00	\$ 1	10,164,447.00	\$	27,717,128.00	\$	26,514,202.00	\$	21,355,771.44	\$	47,869,973.44	
AB-3	1	Employee Training	\$	224,076.00	\$ 97,912.00	\$	97,912.00	\$	221,920.00	\$	21,330.00	\$	593,617.12	\$	614,947.12	
AB-4	1	Health & Safety Requirements	\$	3,513,522.00	\$ 13,457.00	\$	13,457.00	\$	969,077.00		AB-2	\$	5,439,061.98	\$	5,439,061.98	
AB-5	1	Environmental Requirements	\$	1,926,572.00	\$ 5,046.00	\$	5,046.00	\$	-		AB-2	\$	1,772,818.84	\$	1,772,818.84	
AB-6	1	Quality Assurance/Quality Control	\$	3,513,522.00	\$ 1,601,026.00	\$	1,601,026.00	\$	1,827,725.00	\$	4,903,494.00	\$	3,856,004.44	\$	8,759,498.44	
AB-7	1	Letter of Credit (per Article 7 of Agreement)	\$	414,000.00	\$ 906,154.00	\$	$(\mathbf{u}_i) \in \mathbb{R}^{d_i} \setminus \mathbf{u}_i$	\$	-	\$	-	\$	363	\$	-	Jets -
		Revised Letter of Credit				\$	731,324.00									
AB-8	1	Parental Guarantee (per Article 7 of Agreement)	\$	-	\$ -	\$		\$		\$	609,510.00		incl	\$	609,510.00	
AB-9	1	Performance Bond (per Article 7 of Agreement)	\$	2,070,000.00	\$ 3,825,976.00	\$	3,825,976.00	\$	2,059,430.00	\$	2,437,274.00	\$	2,085,000.00	\$	4,522,274.00	
AB-10	1	Insurance (per Article 18 of Agreement)	\$	4,959,470.00	\$ 2,592,720.00	\$	2,592,720.00	\$	101,452.00	\$	1,980,440.00	\$	2,186,381.03	\$	4,166,821.03	Sens cost i
AB-11	1	Warranty (per Article 17 of Agreement)	\$	283,500.00	\$-	\$		\$	990,744.00	\$	2,444,888.00		incl	\$	2,444,888.00	
AB-12	1	Demobilization	\$	292,794.00	\$ 408,404.00	\$	408,404.00	\$	1,522,013.00	\$	26,405.00	\$	116,248.73	\$	142,653.73	
3.1	1	Phase A - Intake & Draft Tube Engineering	\$	871,781.00	\$ 1,275,037.00	\$	1,275,037.00	\$	2,668,951.00	\$	3,680,853.00	\$		\$	3,680,853.00	
3.2	1	Phase B - Intake & Draft Tube Fabrication & Supply	\$	39,045,573.00	\$ 42,023,212.00	\$ 4	42,023,212.00	\$	60,704,258.00	\$	85,870,032.00	\$	1. .)	\$	85,870,032.00	
		Add Hairpin Type Primary Anchors (Clarification #15)				\$	435,515.00									
		Add Intake Gate Hoist Wire Rope (Clarification #31)	1			\$	1,752,062.00			11						
1		Add Intake Gate MCC NEMA Enclosures (Clarification #68)				\$	75,624.00		118 C							
r		Add Intake Gate Slot Covers (Clarification #152)				\$	127,451.00					1				1
3.3	1	Phase C - Intake & Draft Tube Installation	\$	42,461,743.00	\$ 67,085,602.00	\$ 6	67,085,602.00	\$	76,518,351.00	\$	×	\$	66,422,266.86	\$	66,422,266.86	
		Delete Cost of Second Stage Concrete (option to be put back prior to Feb 2014)	1			-\$ 1	14,000,000.00	-\$	25,310,325.00							
3.4	1	Phase D - Intake & Draft Tube Commissioning	\$	2,294,545.00	\$ 3,269,479.00	\$	3,269,479.00	\$	1,740,969.00	\$	269,293.00	\$	4,620.00	\$	273,913.00	
4.1	1	Phase A - Spillway Hydro/Mechanical Engineering	\$	897,170.00	\$ 2,230,017.00	\$	2,230,017.00	\$	4,219,755.00	\$	3,027,945.00	\$	759,000.00	\$	3,786,945.00	
4.2	1	Phase B - Spillway Hydro/Mechanical Fabrication & Supply	\$	34,840,954.00	\$ 40,729,516.00	\$ 4	40,729,516.00	\$	50,087,082.00	\$	56,380,049.00	\$	241	\$	56,380,049.00	1
		Add Hairpin Type Primary Anchors (Clarification #15)				\$	186,649.00					1				1
		Add Spillway Gate Hoist Wire Rope (Clarification #20)	1		54r	\$	838,343.00					1				1
		Add Spillway Gate MCC NEMA Enclosures (Clarification #54)	+			\$	75,624.00					1				
4.3	1	Phase C - Spillway Hydro/Mechanical Installation	\$	28,646,001.00	\$ 49,285,150.00	\$ 4	49,285,150.00	\$	44,569,121.00	ŝ		\$	50,512,617.46	\$	50,512,617.46	
		Delete Cost of Second Stage Concrete (option to be put back prior to Feb 2014)	-			-\$	6,000,000.00	-\$	10,847,282.00			1				
4.4	1	Phase D - Spillway Hydro/Mechanical Commissioning	\$	2,492,034.00	\$ 2,273,408.00) \$	2,273,408.00	\$	3,352,391.00	\$	317,536.00	\$	264,359.31	\$	581,895.31	
		Negotiated Global Discount (\$ to be allocated to items later)	-	A 6	- <u></u>	-\$	5,000,000.00	-\$	8,533,196.00	1						1
		Reimburseable Travel Costs (est)	\$	4,745,659.00	\$ 5,081,252.00) \$	5,081,252.00	\$	7,724,000.00			\$	8,256,993.53	\$	8,256,993.53	Trave
	r	Total Cos	st \$	212,621,833.00	\$226,292,168.00	\$20	04,608,607.00		\$246,925.323.00	\$1	88,509,656.00	Ś	165,677,497.25	\$3	354,187,153.25	1
			<u>an</u> (121										1999 A. C.			
5.0	2	Spillway Hydro/Mechanical Alternate Supply						\$	7,399,178.00	ŝ	6,957,275.00	\$	157,131.35	\$	7,114,406.35	
			+			-		-				-				

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N
If require LC from Cdn bank then the cost is \$1,553,000
- Cost fo Insurance is for info only as this value has been distributed over various
tems in the did.
el in cost - Sens; Travel not in cost - Leafs/Habs/Jets

Appendix 4 - Commercial Evaluation Report

"AS BID" DETAIL OPTION A - Intake & Draft Tube (not evaluated further)

Nalcor Energy-Lower Churchill Project

Package N	lo./ Descriptio	n: 505573-CH0032 SUPPLY/INSTALL POWERHOUSE HYDRO/MECHANICAL EQUIPMENT											
Item	Quantity	Description	Jets	Total	 Sens Total		Leafs Total		Habs (Supply) Total		labs (Install)Total	Habs Total	Notes
			(KHNP/D	Daewoo)	(Andritz)	(0	anotec/Canmec)		(Alstom)	1	(Alstom)	(Alstom)	
A-1	1	Mobilization	\$	2	\$ 885,223.00	\$	3,128,886.26	\$	13,351.00	\$	1,817,024.04	\$ 1,830,375.04	
A-2	1	Management	\$	E.	\$ 9,045,039.00	\$	17,775,869.35	\$	17,881,300.00	\$	15,313,843.92	\$ 33,195,143.92	
A-3	1	Employee Training	\$	-	\$ 44,085.00	\$	214,066.53	\$	21,318.00	\$	551,201.77	\$ 572,519.77	
A-4	1	Health & Safety Requirements	\$		\$ 651	\$	602,487.95		incl in A-2	\$	5,011,745.38	\$ 5,011,745.38	
A-5	1	Environmental Requirements	\$	-	\$ 25	\$	7 4 1		incl in A-2		incl A-4	\$ -	
A-6	1	Quality Assurance/Quality Control	\$	2	\$ 797,149.00	\$	1,229,347.94	\$	3,610,854.00	\$	2,125,025.84	\$ 5,735,879.84	
A-7	1	Letter of Credit (per Article 7 of Agreement)	\$	×	\$ 453,077.00	\$:=:	\$			not proposed	\$ -	
A-8	1	Parental Guarantee (per Article 7 of Agreement)	\$	8	\$	\$	(F)	\$	365,824.00		included	\$ 365,824.00	
A-9	1	Performance Bond (per Article 7 of Agreement)	\$	-	\$ 1,912,988.00	\$	1,128,953.56	\$	1,462,807.00	\$	1,271,850.00	\$ 2,734,657.00	
A-10	1	Insurance (per Article 18 of Agreement)	\$	9	\$ 122	\$	72,964.44	\$	1,188,630.00	\$	1,406,381.03	\$ 2,595,011.03	
A-11	1	Warranty (per Article 17 of Agreement)	\$		\$ 39 7 3	\$	582,163.13	\$	1,335,129.00		included	\$ 1,335,129.00	19
A-12	1	Demobilization	\$	2	\$ 205,960.00	\$	1,077,529.24	\$	13,351.00	\$	116,248.73	\$ 129,599.73	
3.1	1	Phase A - Intake & Draft Tube Engineering	\$	5	\$ 1,275,037.00	\$	2,072,521.80	\$	3,758,950.00	\$	0	\$ 3,758,950.00	
3.2	1	Phase B - Intake & Draft Tube Fabrication & Supply	\$	2	\$ 42,023,212.00	\$	51,435,624.47	\$	87,515,640.00	\$	÷	\$ 87,515,640.00	
3.3	1	Phase C - Intake & Draft Tube Installation	\$		\$ 67,085,602.00	\$	78,077,510.57	\$	₹	\$	67,714,234.17	\$ 67,714,234.17	
3.4	1	Phase D - Intake & Draft Tube Commissioning	\$	-	\$ 3,269,479.00	\$	1,523,445.55	\$	269,293.00	\$	4,620.00	\$ 273,913.00	
		Total Cost			\$ 126,996,851.00	\$	158,921,370.79	\$	117,436,447.00	\$	95,332,174.88	\$ 212,768,621.88	
										1.11			

Appendix 4 - Commercial Evaluation Report

Nalcor Energy-Lower Churchill Project

"AS BID" DETAIL OPTION B - Spillway (not evaluated further)

Package I	No./ Description	on: 505573-CH0032 SUPPLY/INSTALL POWERHOUSE HYDRO/MECHANICAL EQUIPMENT										
ltem	Quantity	Description	Jets Total	Sens Total		Leafs Total	Ha	ibs (Supply)Total	Ha	abs (Install)Total	HabsTotal	Notes
			(KHNP/Daewoo)	(Andritz)	()	Ganotec/Canmec)		(Alstom)		(Alstom)	(Alstom)	
A-1	1	Mobilization	\$ -	\$ 213,022.00	\$	3,589,707.71	\$	13,054.00	\$	1,607,762.72	\$ 1,620,816.72	
A-2	1	Management	\$ -	\$ 7,473,249.00	\$	15,804,380.86	\$	14,545,360.00	\$	10,591,682.53	\$ 25,137,042.53	
A-3	1	Employee Training	\$ -	\$ 53,827.00	\$	236,329.81	\$	22,346.00	\$	579,303.47	\$ 601,649.47	
A-4	1	Health & Safety Requirements	\$	\$ 13,457.00	\$	563,896.35		Incl in B-2	\$	3,529,410.02	\$ 3,529,410.02	
A-5	1	Environmental Requirements	\$ -	\$ 5,046.00				Incl in B-2		incl in B-4	Incl in B-2	
A-6	1	Quality Assurance/Quality Control	\$ -	\$ 803,877.00	\$	817,174.68	\$	3,386,518.00	\$	2,254,765.16	\$ 5,641,283.16	
A-7	1	Letter of Credit (per Article 7 of Agreement)	\$-	\$ 453,077.00	\$	-	ľ	not proposed		not proposed	not proposed	
A-8	1	Parental Guarantee (per Article 7 of Agreement)	\$ -		\$		\$	310,430.00		included	\$ 310,430.00	
A-9	1	Performance Bond (per Article 7 of Agreement)	\$ -	\$ 1,912,988.00	\$	985,258.44	\$	1,241,444.00	\$	771,450.00	\$ 2,012,894.00	
A-10	1	Insurance (per Article 18 of Agreement)	\$ -		\$	59,107.78	\$	1,008,729.00	\$	926,381.03	\$ 1,935,110.03	
A-11	1	Warranty (per Article 17 of Agreement)	\$ -		\$	410,470.63	\$	1,423,073.00		included	\$ 1,423,073.00	
A-12	1	Demobilization	\$ -	\$ 202,524.00	\$	1,087,113.12	\$	13,054.00	\$	103,896.00	\$ 116,950.00	
4.1	1	Phase A - Spillway Hydro/Mechanical Engineering	\$ -	\$ 2,231,016.00	\$	4,001,737.46	\$	3,110,190.00	\$	759,000.00	\$ 3,869,190.00	
4.2	1	Phase B - Spillway Hydro/Mechanical Fabrication & Supply	\$ -	\$ 40,729,516.00	\$	50,415,081.74	\$	62,619,437.00	\$		\$ 62,619,437.00	
4.3	1	Phase C - Spillway Hydro/Mechanical Installation	s -	\$ 49,285,150.00	\$	52,978,229.07	\$	1078	\$	51,219,692.80	\$ 51,219,692.80	
4.4	1	Phase D - Spillway Hydro/Mechanical Commissioning	\$ -	\$ 2,273,407.00	\$	3,377,121.37	\$	317,536.00	\$	266,686.37	\$ 584,222.37	
		Total Cost		\$ 105,650,156.00	\$	134,325,609.02	\$	88,011,171.00	\$	72,610,030.10	\$ 160,621,201.10	
								24				
5.0	2	Spillway Hydro/Mechanical Alternate Supply	\$ -	\$ 9 ³	\$	÷.	\$	6,957,275.00	\$	157,131.35	\$ 7,114,406.35	

CH0032

Hydro Mechanical Bid Evaluation

T&C Scoring

		BIDDER Habs	BIDDER Sens	BIDDER Leafs	BIDDER Jets
Article 1	Interpretation	Not evaluated for commercial reasons- two contracts and cost	1/4	1/2	
Article 2	Contractor's Status		÷.	8	
Article 3	Contractor Obligations		1/4	-	
Article 4	Contractor's Design Obligations		-	-	
Article 5	Contractor's Personnel		1/4	1/4	
Article 6	Subcontracts		1/4	1 <u>1</u> 1	
Article 7	Performance Security		1/4	1/2	
Article 8	Policy on Ethics/Conflicts of Interest			-	
Article 9	Compliance with Laws		1/4	-	
Article 10	Company's Obligations		12) (1)	1/4	
Article 11	Role & Responsibilities of Engineer		1⁄4	-	
Article 12	Compensation & Terms of Payment		1/4	1/4	
Article 13	Taxes		Ξ.	-	
Article 14	Audit and Records		1	-	
Article 15	Health, Safety & Environmental Protection		1/4	-	
Article 16	Access and Quality		-	-	
Article 17	Warranty		1/2	1/2	
Article 18	Contractor Insurance		1/4	1/4	
Article 19	Workers Compensation		12.	100 M	
Article 20	Project Insurance		1/4	1/2	

		BIDDER Habs	BIDDER Sens	BIDDER Leafs	BIDDER Jets
Article 21	Indemnification		1/2	1/2	
Article 22	Site & Transport Route Conditions				
Article 23	Title and Risk		1/4	1/4	
Article 24	Completion and Delivery		1/4	1/4	
Article 25	Substantial & Final Completion			1/4	
Article 26	Changes in the Work		1/4		
Article 27	Public Communications		-	-	
Article 28	Confidentiality		1/4	-	
Article 29	Patents, Trademarks, Copyrights		1/4	-	
Article 30	Assignment			-	
Article 31	Force Majeure		1/4	1/4	
Article 32	Default and Termination		1/4	1/4	
Article 33	Bankruptcy, Insolvency, and Receivership		-	-	-
Article 34	Suspension		1/4	1/4	
Article35	Labour Relations		1/4	-	
Article 36	Liquidated Damages		1/4	1/4	
Article 37	Contractor's Representations, Warranties and Covenants		-	1/4	
Article 38	Entirety of Agreement, Non Waiver		(2	1/4	
Article 39	Dispute Resolution		-	-	
Article 40	Notices		-		
Articles 41	Notices		=	-	
Article 42	Enurement, Time, Survival of Provisions		1/4	 (rounded scores)	
Articles 43	Counterparts		inter inter		
			1/4		

1. I have assumed that the marking is out of "1" for each article.

2. I have deducted ¼ mark for each significant deviation from the wording proposed by the Company in the RFP form of Contract.

TK-2435 (14729497.1)



CONFIDENTIAL MEMO

Via Email

TO: ED OVER, SNC-LAVALIN; ROBERT ANDERSON, SNC-LAVALIN

FROM: ANDREW SINNOTT, ASSISTANT TREASURER

SUBJECT: CREDITWORTHINESS ASSESSMENT OF CH0032 BIDDERS

DATE: MAY 24, 2013

CC: SCOTT PELLEY, CORPORATE TREASURER; PAT HUSSEY, SUPPLY CHAIN COORDINATOR

Background:

- At the request of the Nalcor Energy Lower Churchill Project ("LCP"), Treasury and Risk Management ("TRM") conducted a financial analysis and credit worthiness verification of the following entities (the "Bidding Entities"):
 - Alstom Power and Transport Canada Inc. ("Alstom Canada") and Vytrell Engineering Limited ("Vytrell"), a Consortium
 - o Andritz Hydro Canada Inc. ("Andritz Canada")
 - o Ganotec Inc. and Canmech Industrial Inc., a partnership ("Ganotec-Canmech")
 - Korea Hydro & Nuclear Power Co. and Daewoo International Corporation, a partnership ("KNHP-Daewoo")
- The above-noted entities were all bidders on the recent RFP for CH0032 Powerhouse and Spillway Hydromechanical Equipment
- Our analysis was required by and conducted in accordance with the *Guidelines for Credit Worthiness Verification* (LCP-PT-MD-0000-FI-PR-0003-01 Rev B.2)

Contract Details:

• For the purpose of our analysis, and to calculate turnover score, we used an approximate contract value of \$200M CAD¹

1

¹ Based on discussions with Ed Over on May 23, 2013. While actual bids are above \$200M, using actuals would not change outcome of conclusions regarding turnover.

- The package is broken down into two major deliverables: (a) supply and install of the Spillway equipment, and (b) the supply and install of the power house equipment.
- Bidders were asked to submit separate prices for the two components of the package
- The contract will be approximately 50% materials cost and 50% on-site work, and involves a significant steel component. The equipment will be built at the contractor's manufacturing facility, shipped to the site, and assembled and installed on-site. There will be ability for Nalcor to do inspections and testing throughout the process.²

Performance Security General:

- Where the financial assessment and rating is based on the parent company, a guarantee from the parent company will be required.
- The financial security recommended is for:
 - Standby letter of credit, equal to 10% of the contract price, to remain in effect until end of the warranty period.³ The letter of credit security must be issued from a Schedule 1 Canadian Bank⁴.
 - Bonding, by way of a performance bond, with Nalcor Rider, in the amount of 50% of the contract price. The bond shall be issued by a surety which has a minimum credit rating of A- by Standard & Poor's, or equivalent rating by another rating agency approved by Company
 - We can consider waiving the 50% payment bond for a 10% holdback or 10% retention bond, if this strategy is sufficient to mitigate the risk of exposure to subcontractors.
- The performance security recommendation would have to be revisited if, during the course of negotiating with the successful bidder, the commercial team is considering agreeing to significant up-front and/or milestone payments.

Results – General

- The results of the creditworthiness assessment are outlined in Appendix 1 of this memo.
- The reader is cautioned that the conclusions outlined in Appendix 1 are based on the effective date of the financial information used in the analysis, and our conclusions are subject to change based on any new information published after that date.

Alstom Power and Transport Canada Inc. (Consortium with Tyrell Engineering Limited)

- Alstom Power and Transport Canada Inc. ("Alstom Canada") is incorporated under the CBCA and headquartered in Quebec.
- Alstom Canada is 100% owned by Alstom SA (France), a leading global manufacturer of transport and energy infrastructure.

² As per discussion with Ed Over on May 16, 2013

³ The 10% amount equals the liquidated damages cap, as per discussion with Ed Over on May 23, 2013

⁴ Royal Bank of Canada, Canadian Imperial Bank of Commerce, Bank of Montreal, TD Bank or Bank of Nova Scotia

- Alstom SA is publicly traded in France with a market capitalization of €8.9 billion (\$11.8 billion CAD). For the year ended March 31, 2013, Alstom had global sales of €20.3 billion (\$27.0 billion CAD) and net income of €802 million (\$1.07 billion CAD)⁵.
- Alstom SA is rated by S&P as BBB (Negative), and Baa2 (Negative) by Moody's, which are investment grade ratings, albeit with negative outlooks.
- Based on the parent company turnover ratio and 3rd party information, Alstom was given a
 preliminary rating of MEDIUM. A rating of HIGH would have been given with a better public
 rating and/or outlook from Moody's and S&P.
- In terms of the financial statement and ratio analysis, Alstom Canada did not provide any financial information, and opted to include financial statements for the parent company for the years ended March 31, 2010, 2011 and 2012. March 31, 2013 financial statements were obtained from Credit Risk Monitor. The weighted credit score for the parent, Alstom SA, is 68%.
- We have not been provided with any financial information on Tyrell Engineering Limited and thus cannot assess the creditworthiness of that company. Also, the consortium submitted two separate bids, and would not submit a joint bid when requested to do so.
- Therefore, while we would rank Alstom as MEDIUM/HIGH (based on the parent guarantee), we are unable to do a complete assessment on the Consortium, thus a final ranking of LOW.
- Consequently, the Alstom/Tyrell consortium is not considered creditworthy.

Andritz Hydro Canada Inc.

- Andritz Hydro Canada Inc. ("Andritz Canada") is a Canadian corporation headquartered in Peterborough, Ontario.
- Andritz Canada is 100% owned by Andritz AG (Austria), a global company that develops production systems and industrial process solutions, including turnkey electromechanical equipment and services for hydro power plants.
- Andritz AG is publicly traded in Austria with a market capitalization of €4.5 billion (\$6.05 billion CAD). For the year ended December 31, 2012, Andritz AG had sales of €5.2 billion (\$6.9 billion CAD) and net income of €243 million (\$323 million CAD)⁶.
- We have been provided with audited financial statements for Andritz Canada for the year ended December 31, 2012. The turnover ratio is 1.4 based on revenues of \$284 million CAD. And with no public ratings available, the preliminary rating would be LOW.
- A review of financial ratios results in a ratio score of 84%, as Andritz Canada shows good profitability, cash flow and a strong balance sheet. Overall, the final rating would be MEDIUM/HIGH.
- While the parent guarantee would be available if needed, security in form of a 10% letter of credit, 50% performance bond with Nalcor rider, and 10% holdback or retention bond would be sufficient to mitigate any risks. This would also avoid issues around enforceability of a guarantee from another jurisdiction.

⁵ Based on Bank of Canada noon rate of 1.3293 CAD per Euro, as at May 22, 2013

⁶ Based on Bank of Canada noon rate of 1.3293 CAD per Euro, as at May 22, 2013

Ganotec Inc. and Canmech Industrial Inc., a partnership ("Ganotec-Canmech")

- Ganotec Inc. is a Canadian company, owned by Peter Kiewit Infrastructure Co.
- Canmech Industrial Inc. is also a Canadian company, owned by Group Canmech Inc.
- Ganotec has a 75% share in the partnership, while Canmech has 25%. We have assigned the turnover and financial ratio scores based on this percentage.
- Audited financial statements for Peter Kiewit Infrastructure Co. have been received for the year-ended December 31, 2011; and internal September 30, 2012 have been reviewed. The turnover ratio is 9.7.
- Audited Financial statements for Group Canmech Inc. have been received for the year-ended December 31, 2011, and show a turnover ratio of 0.4. We will require December 31, 2012 yearend financial statements for Group Canmech Inc. prior to the award of any contract.
- The combined turnover score is 7.4, and based on lack of any 3rd party information the preliminary rating is MEDIUM.
- The financial ratio score is 100% for each entity, as both companies demonstrate strong cash flow and low debt levels. Overall, the final rating for the partnership is MEDIUM/HIGH.
- We will require parent guarantees from Peter Kiewit Infrastructure Co. and Group Canmech Inc., as well as confirmation that Ganotec and Canmech are jointly and severally liable.
- Recommended security is a 10% letter of credit, 50% performance bond with Nalcor rider, and 10% holdback or retention bond.

Korea Hydro & Nuclear Power Co. and Daewoo International Corporation, a partnership ("KHNP-Daewoo")

- This partnership is between two South Korean companies. KHNP is a subsidiary of Korea Electric Power Corporation ("KEPCO"), a government owned corporation. Daewoo is a majority owned by POSCO, one of the world's largest steel-making companies.
- KHNP is not publicly traded, but it is rated by S&P (A+ / Stable) and Moody's (A1 / Stable). They are covered by Credit Risk Monitor with a FRISK score of 7 (probability of bankruptcy 0.38-0.54%), and a Z-Score of 2.31 (Neutral risk).
- KEPCO is publicly rated by S&P (A+ / Stable) and Moody's (A1 / Stable).
- Daewoo is publicly traded in Korea with a market capitalization of 4.3 trillion Korean Won (\$4.0 billion CAD)⁷. Daewoo is not publicly rated but is covered by Credit Risk Monitor with a FRISK score of 7 (probability of bankruptcy 0.38-0.54%), and a Z-Score of 1.48 (Neutral risk).
- POSCO is publicly traded in Korea, with a market capitalization of 28 trillion Korean Won (\$26.0 billion CAD)⁵. The company is rated by S&P (BBB+ / Stable) and Moody's (Baa1 / Negative).
- We have been provided with financial statements for both of the bidding entities and turnover and ratio scores are pro-rated based on the 50/50 share in the partnership between KHNP and Daewoo. We have not assessed the parent companies.
- KHNP has a turnover ratio of 31.2, and Daewoo's ratio is 81.5 resulting in a combined turnover ratio is 56.4. Based on this score and the 3rd party information, the preliminary rating is HIGH.

⁷ Based on Bank of Canada noon rate of 1077.6 Korean Won per CAD, as at May 22, 2013

- KHNP has provided historical Audited financial statements for the last 3 years, and internal December 31, 2012 statements. The financial ratio score is 80%.
- Daewoo has provided historical Audited financial statements for the last 3 years. Financial statements for the year-ended December 31, 2012 are available on Credit Risk Monitor. The financial ratio score is 56%.
- The combined financial ratio score is 68%, which results in a final rating of MEDIUM/HIGH.
- Recommended security is a 10% letter of credit, 50% performance bond with Nalcor rider, and 10% holdback or retention bond. We would not recommend any parent guarantees.
- Also, while the partnership agreement states each party is jointly and severally liable, this
 must be confirmed prior to the final award of any contract.

Recommendations

- Alstom Canada
 - As outlined above, we are unable to do a complete assessment on the consortium, therefore have assessed a final rating of LOW, and would recommend excluding this bidder based on lack of creditworthiness.
- Andritz Canada
 - o Based on the final rating of MEDIUM/HIGH, Andritz Canada is creditworthy
 - Financial security as outlined on page 2
 - The Commercial Questionnaire states that bonding is available via Chubb Insurance. The parent is rated A+ (Stable) by S&P, and all Chubb subsidiaries are rated AA (Stable) which would be acceptable to Nalcor.
- Ganotec-Canmech partnership
 - o Based on the final rating of MEDIUM/HIGH, the partnership is creditworthy
 - The partnership agreement appears to indicate that the two partners are not joint and severally liable, which will be required prior to final award of any contract.
 - We require receipt of December 31, 2012 financial statements for Group Canmech Inc.
 - o Guarantees from Peter Kiewit Infrastructure Inc. and Group Canmech Inc.
 - Financial security as outlined on page 2
 - The Commercial Questionnaire states that bonding is available via Travelers Insurance Company of Canada, rated AA- (Stable) by S&P, which is acceptable to Nalcor.
- KNHP-Daewoo JV
 - o Based on the final rating of MEDIUM/HIGH, the joint venture is creditworthy
 - The liability of each partner must be joint and several, which is to be confirmed prior to final award of any contract.
 - Financial security as outlined on page 2
 - The Commercial Questionnaire states that bonding is available via four Korean companies all rated by S&P; Woori Bank (A- / Stable), Shinhan Bank (A / Stable), Korea Exchange Bank (A- / Stable) and Hana Bank (A / Stable). These would all be acceptable to Nalcor.

		CH0032 - Sup	Nalcor I Credit V ply and Install	Energy - Lo Northiness of Powerhou May	ower Churchill Project Assessment Summary se and Spillway Hydromechanical Equipment (24, 2013		
	Turnover	3rd Party Credit	Preliminary		Post-Balance Sheet and Ratio Analysis ⁽⁴⁾	Final Nalcor	(5)
Alstom Power and Transport Canada and Tyrell Engineering Limited, a Consortium ⁽⁶⁾	124.59x	No ratings available for Alstom Canada; Parent (Alstom SA) has very high turnover, and is rated BBB/Negative (S&P) and Baa2/Negative (Moody's). No financial information or ratings for Tyrell Engineering.	MEDIUM	68%	No historical financial information was provided for the Canadian subsidiary, however, risks mitigated given guarantee from the parent company (Alstom SA), who show ratio score of 68%. The bid was submitted as a consortium, with Tyrell Engineering Limited. Tyrell were unwilling to provide financial information and the consortium were unwilling to provide one joint bid. Therefore we cannot assess any further, and while Alstom would rank a MEDIUM/HIGH on their own, we are assessing LOW, in the absence of complete information for all bidders.	LOW	Not Creditworthy
Andritz Hydro Canada Inc.	1.42x	No ratings available.	(alw	84%	Strong weighted credit score with financially strong parent company. Tests 3 and 4 indicate <u>no concern</u>	MEDIUM/HIGH	Partially creditworthy - Letter of credit (10%), performance bond with Nalcor rider (50%) and holdback or retention bond (10%)
Ganotech-Canmech, partnership ⁽⁷⁾	7.36x	No rating available.	MEDIUM	100%	Weighted credit score of 100%, or HIGH. Tests 3 and 4 Indicate <u>no concern</u> , Final rating is MEDIUM/HIGH. This is assuming Joint and Several Hability and guarantees from Peter Kiewit Infrastructure Co. and Group Canmech Inc.	MEDIUM/HIGH	Partially creditworthy - Letter of credit (10%), performance bond with Nalcor rider (50%) and holdback or retention bond (10%). Parent guarantees from Peter Kiewit Infrastructure Co. and Group Canmech Inc.
KHNP-Daewoo, partnership ⁽⁸⁾	56.35x	Daewoo not rated, but publicly traded; KNHP is not pulicly traded, however is rated, A+ Stable (S&P) and A1 Stable (Moody's)	нтон	68%	Good weighted credit score, at the high end of MEDIUM/HIGH. Sovereign backing. Tests 3 and 4 indicate <u>no concern.</u> Overall, MEDIUM/HIGH rating	MEDIUM/HIGH	Partially creditworthy - Letter of credit (10%), performance bond with Nalcor rider (50%) and holdback or retention bond (10%)

(1) The minimum threshold for scoring above LOW on the turnover test is annual sales of at least 3.0x contract value. (See Test 1 - Guidelines for Credit Worthiness Verification)

(2) Reference to 3rd party ratings here means publically available credit rating reports from Standard and Poors, Moody's, Fitch, DBRS or Dunn & Bradstreet (See Test 2 -Guidelines for Credit Worthiness Verification), if available and/or applicable (i.e. if company is rated)

(3) Companies failing the turnover test receive a preliminary rating of LOW. For companies that pass the test, the preliminary rating is based on the magnitude of the turnover score and an assessment of any 3rd party credit

information, if available. For a company that passes the turnover test, the lack of third party information for a Company, or 3rd party information that causes concern, results in a preliminary preliminary rating of MEDIUM

(4) As outlined in the Guidelines for Creditworthiness Verification, a post-balance sheet review (Test 3) and a ratio analysis (Test 4) are used to refine the preliminary rating. The ratio analysis results in a weighted average credit score for the company, which serves as a measure of financial capacity

(S) The final rating is determined after the Ratio Analysis and Post-Balance Sheet review. Ratings are as per Evaluation Matrix in Guidelines for Credit Worthiness Verification - Page 14

(6) Alstom Canada provided financial information Alstom SA, the global holding company in France. Alstom is a investment grade company with significant financial capacity. The turnover and ratio score presented here are for Alstom. We do not have any financial information on Tyrell.

(7) Financial analysis of Ganotech performed on Peter Kiewit Infrastructure Co., the parent company. Financial analysis of Canmech performed on Group Canmech Inc., the parent company. Turnover and Ratio scores represent a weighted average of the individual scores for each company, 75% for Ganotechand 25% for Canmech; Therefore, the weighted average presented represents the financial capacity of the group as a whole, assuming joint and several Iliability

(8) Turnover and Ratio scores represent a 50:50 weighted average of the individual scores for each company. Therefore, the weighted average presented represents the financial capacity of the group as a whole, assuming joint and several liability

6

Appendix 14

Technical Evaluation Matrix

Package # 505573-CH0032 Package Description: S/I Powerhouse Hydro/Mechanical Equipment

Contract Administrator: R Anderson Lead Technical : Bruce Drover Lead Commercial: E. Over Area Manager: Luc Turcotte

NOTE: Each subsection is rated on a scale 1 - 10 (rating) then multiplied by the weighted value (weighting) for the item (within the evaluation subsection) to get the item value.



Diddex E	
bidder 5	
value Rating 0-10 item value Comments:	
00 = 0.00	
00 = 0.00	
00 = 0.00	
00 = 0.00	
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00 0.00 0.00	
XX	
3% 28%	
00 0.00	

JW14-JUN-2013

RFP CH0032	RFP Name:	S/I Powerhou	use Hydro-Me	chanical Equi	pment	
		Habs	Sens	Leafs	Jets	Bidder 5
Evaluation Plan Appendix 14a	Max Score	Score	Score	Score	Score	Score
A. Spillway Hydro-Mechanical						
1. Experience with design type & capacity	6.00	6	6	6	4	
2. Selection of material and components	8.00	7	5	8	6	
3. Proven design and reliability	8.00	7	8	8	6	0.000
4. Maintainability	2.00	2	2	2	1	
5. Spare parts availability	1.00	1	1	1.	0.5	
Score	25.00	23	22	25	17.5	0
6. Compliance with Specifications (Pass/Fail Multiplier)	(1 or 0)	1	1	1	0	1
Total Evaluated Score (Score x Multiplier)		23	22	25	0	
B. Spillway Electrical Building				_		
1. Experience with design type & capacity	5.00		5	4		2
2. Selection of material and components	6.00		5	5		
3. Proven design and reliability	6.00		6	4		
4. Maintainability	2.00		2	2		4
5. Spare parts availability	1.00		1	1		
Score	20.00	0	19	16	0	0
6. Compliance with Specifications (Pass/Fail Multiplier)	(1 or 0)	0	1	1	1	
Total Evaluated Score (Score x Multiplier)		0	19	16	0	-
C. Intake Hydro-Mechanical					ľ	T
1 Experience with design type & canacity	6.00	5	6	6	4	
2 Selection of material and components	8.00	7	5	8	6	
3. Proven design and reliability	8.00	7	8	8	6	1
4 Maintainability	2.00	2	2	2	1	
5 Spare parts availability	1.00	1	1 1	1 1	0.5	
Score	25.00	22	22	25	17.5	0
6. Compliance with Specifications (Pass/Fail Multiplier)	(1 or 0)	1	1	1	0	
Total Evaluated Score (Score x Multiplier)		22	22	25	0	1 1 at 51

14-06-2013

Appendix 14A recimical backup to weigh		cion criteri	u		Designed and the second second	
RFP CH0032	RFP Name:	S/I Powerhou	ise Hydro-Me	chanical Equ	ipment	
		Habs	Sens	Leafs	Jets	Bidder 5
Evaluation Plan Appendix 14a	Max Score	Score	Score	Score	Score	Score
D. Draft Tube Hydro-Mechanical					-	
1. Experience with design type & capacity	4.00	4	4	4	3	
2. Selection of material and components	4.00	4	2	4	3	
3. Proven design and reliability	4.00	4	4	4	3	
4. Maintainability	2.00	2	2	2	2	
5. Spare parts availability	1.00	1	1	1	0.5	= 0
Score	15.00	15	13	15	11.5	0
6. Compliance with Specifications (Pass/Fail Multiplier)	(1 or 0)	1	1	1	0	
Total Evaluated Score (Score x Multiplier)	2.2	15	13	15	0	
E. Trash Cleaner						
1. Experience with design type & capacity	4.00	4	4	4	4	
2. Selection of material and components	3.00	3	3	3	3	
3. Proven design and reliability	3.00	2	2	2	2	
4. Maintainability	4.00	4	4	4	4	
5. Spare parts availability	1.00	1	1	1	1	
Score	15.00	14	14	14	14	Ö
6. Compliance with Specifications (Pass/Fail Multiplier)	(1 or 0)	1	1	1	1	
Total Evaluated Score (Score x Multiplier)		14	14	14	14	
Score-Based Conclusion	100.00	N/C	90	95	N/C	???

14-06-2013

	Technical Bid Evaluation		Title Package No.:	Sup CH0	ply / Install Powerhous 0032	e and Proj	l Spillway Hydro-Mech ect Title:	anical I L	Equipment CP-MUSKRAT FAL	LS	Revision No.: 01 Rev. Date.: 2013-06-	13
		Bidder:	Tag No.: HABS	-	SENS	Clie	LEAFS	-	NALCOR Jets	-	Project No.: 505573	
m Imber	Description	Specified Value or Reference	Proposed	pliant	Proposed	pliant	Proposed	pliant	Proposed	oliant	Proposed	oliant
				Com		Com		Com		Com		Com
	GENERAL TECHNICAL REQUIREMENTS	100555										
	the bidder must acknowledge that there are no exceptions to the technical specifications (TS). The bidder must acknowledge that there are no exceptions to the	ACCEPT	4 of 8 S2 Stoplogs	K.	5 of 10 S4 Stoplage	K	5 of 10 S4 Stoplage	K	4 of 9 DET Stoplage	N	Missing Castions 2	
	scope of works (SOW).	AUGEFT	8 of 16 S3 Stoplogs 5 of 10 S4 Stoplogs		5 of 10 54 Stoplogs	154	4 of 8 DFT Stoplogs	IN	4 of 8 DF1 Stoplogs	N	Missing Sections ?	
	The technical requirements of the bid and subsequent execution of	ACCEPT	4 of 8 DFT Stoplogs Bidder agrees in	N	Bidder acknowledges the	N	Marked up SDRL	N	"We reviewed the	N	-	
	the SOW are summarized in the Supplier Document Requirements List (SDRL).		principle with this requirement. In general,		content of Exhibit 4 and is prepared during		provided. No statement made about bidders		Supplier Document			
			further discussion shall take place in order to		contract execution to supply all the		acceptance of SDRL.		Exhibit 4.			
			negotiate a timetable		documentation as listed		not marked up to be		review, We have no			
			beneficial to all parties		not in a position within		clarmed.		Supplier Document			
			invoivea.		supply the complete and				Requirements "			
					MDL – Master Document							
					List will be generated based on the							
					requirements of Exhibit 4 at the time of the							
					project execution after Contract Award within							
					the first few weeks.							
					demonstrated as part of							
					the execution of the other packages, its							
					understanding of SLi/Nalcor Energy							
					requirements and has shown its adherence to							
	The bidder shall make all necessary arrangements to undertake the	ACCEPT										1
	Milestone Schedule (MS) – Exhibit 9.											-
	GENERAL TECHNICAL QUESTIONNAIRE	ACCEPT				_						-
	that it describes the systems being provided. Information not provided shall be provided after Award as listed in the SDRL	NOOLI										
	SPILLWAY STOPLOGS											
	SPILLWAY UPSTREAM STOPLOGS (TEMPORARY) - EMBEDDE	D PARTS										
1	Weight of embedded parts (without anchors)	129 000 kg ea.	33039 kg	Y	17,640_kg	Y Y	217 475 kg WT / 233 mm/29 4X10^6	Y Y	53,600 kg	Y K	Per Bay?	
			seed remmpdari26mm		1/150mm/22+07mm	<u> </u>	mm4		Smith			
			testangular (Lunin & 206									
			mm)/ 61%0mm// 280973/mm4/M0008E									
			SECTION Contrain state)									
			170mm/Slandles steel									
			ment/ Buildinsen /									
			SECTION Carbon steel								1.1	
			195mm (Smin)Lise store).						and the second			
			Gertangular (11mm) x 209 mmu/ 26500mm /									
			166/08mm#						l traff			
2	Guide support humosr path profile/depth/moment of inartia	VTS	Sec 215	VTS	Rect /10 mm/31233mm	VTS	N/A / N/A mm/ N/A mm4	VTS	200/90mm/2 77x10/	VTS		
3	Guide support bumper pain promedepainmoment of menta	VIS		VIS	4	*13	NATIVATING INDEX AND A	VIG	6mm4	10		
4	Back guide/roller paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular (12,5 mm x 150 mm)	VTS	T/150_mm/1.6E+07mm ⁴	VTS	L / 200 mm/ 15.6X10^6 mm4	VTS	200/200mm/4.6x10/ 7 mm4	VTS		
			Stainless steel: rectangular (12,5 mm x									
			100 mm) / 40700 mm /									
-	Cide evidee wells (don't /memory of inertia	VTP	Cashan stack Library	VTC	4	VTS	ER (250	VTS	200/00mm/2 77x10/	VTS		
.5	Side guides profile/depth/moment of inertia	VIS	made of plates (19 mm	VIS	T/55_mm/1E+06mm*	VIS	mm/115.6X10^6mm4	VIS	6mm4	VIS.		
			x 150 mm, 150 mm x 19 mm, 16 mm x 150 mm)									
			Stainless steel: rectangular (10.0 mm x									
			150 mm) / 40700 mm / 42150094 mm4									
6	Sill beam profile/denth/moment of inertia	mm4	Carbon steel: Lbeam	Y	1/150 mm/1.05+07mm ⁴	Y	S/250 mm/51.4X10^6	Y	200/300mm/1.28x1	Y		
.0	Sin beam promovdepar/moment of menta	1003	(12x5-1/4) Stainless		1/150_mm/1.9E+0/mm		mm		0^8mm4			
			steel: rectangular (10 mm x 95 mm) / 13200				u					
.7	Lintel beam profile	N/A	mm / 113300000 mm4 Not applicable	N/A	there is no lintel beam	N/A	N/A	N/A	N/A	N/A		-
.8	Loaded support bumper path anchors/vertical spacing	450 mm A-307	22/mm (1) Billinger	к	26 mm IV SEPtem	к	32 mm 🛛 / 300 mm	Y	22. millio 51 /	600		
9	Guide support humper path anchors/vertical enaction	600 mm 4-307	See 3.1.11	Y	25 mm Ø/ 600 mm	Y	N/A mm □/ N/A mm	Y	nina 22. min. II.	Kon		-
10	Back rollor/auide asthe asst-statistics asst-	600 mm 4 007	22 mm /21 cm	V	25 mm (24 coo	v	25 mm / 600 mm	v	inun Im Inun	Koo		
īU	Back rollenguide paths anchors/venical spacing	800 mm A-307	∠2 mm છ/ 600mm		25_mm 2/_600_mm				inn Seann A. 1	000		
11	Side guides anchors/vertical spacing	600 mm A-307	22 mm Ø/ 600mm	Y	25_mm Ø/_600_mm	Y	22 mm ⊡/ 600 mm	Y	22_mm gi (main	600		
12	Sill beam anchors/ horizontal spacing	450 mm A-307	22 mm Ø/ 600mm	Y	25_mm Ø/_600_mm	Y	22 mm 🛛 / 600 mm	Y	28_mm (3) /	600		
13 14	Lintel beam anchors/ horizontal spacing Material specification of sealing faces	N/A A-240 SS-304	NA ASTM A276 type 304	N/A Y	20_mm Ø/_600_mm A276-304 or 00Cr19Ni or	N/A Y	mm ⊟/ mm A276, 304 L	N/A Y	N/A mm /N/A mm ASTM A276 Type	N/A Y		
15	Thickness of sealing faces	10 mm	Back roller faces 12.5	Y	equiv.	N	10 mm	Y	304 16mm	Y		-
.15		10 min	mm, Other faces: 12,5				- AMOUNT N					
16	Material specification of bumper tracks	300/350W	CSA G40.21-04 300 WT	Y	WARRANT OF WARR OF	N	CSA G40.21 - 300W	Y	ASTM A240 Type	Y		+
17	Thickness of bumper tracks	12 mm	125mm	к	10+10_mm	Y	10 mm	к	16mm	Y		-
18 19	Hardness of bumper tracks Material specification of backing members	92-107 BHN VTS	145 HB Not applicable	Y VTS	BHN170 A529Gr50 or Q345 or	Y VTS	100 – 140 BHN CSA G40.21 –	Y VTS	187 ASTM A36	Y VTS		
20	Second state concrete volumes	570 m3	122 m ³	Y	equival.	Y	300&350W	Y	150m ³	Y	Per Bav?	_
20		570 ma			[AH-Q6] [high?]		answer 132 m3 per temporary stoplog stol					
							Service & alobio a sion		PA 1944			
a a.1	SPILLWAY STOPLOGS (PERMANENT) - EMBEDDED PARTS Weight of embedded parts (without anchors)	30 500 kg ea	24,881 kg	Y	27,760 kg	Y	158 350 kg	Y	30,700 kg	Y	Per Bay? YES.	
100	A SALE OF THE ADDRESS OF A SALE OF A SALE OF THE ADDRESS OF THE ADDRESS OF A SALE OF A SALE OF A SALE OF A SALE				and the second s		the second data to the second s		1000 CT	-		

•)) S	NC+LAVALIN		Title	Sup	uply / Install Powerbous	e and	Spillway Hydro-Mech	anical	Equipment		Nalcor	_
	rechnical Bid Evaluation		Package No.:	CHC	0032	Proj	ect Title:	L	CP-MUSKRAT FAL	LS	Rev. Date.: 2013-06-13	£
	Le contra de la contra de	Bidder	HABS		SENS	Cilei	LEAFS		Jets		Project No.: 505573	
em umber	Description	Specified Value or Reference	Proposed	oliant	Proposed	pliant	Proposed	oliant	Proposed	oliant	Proposed	tin nt
				Com		Com		Com		Comp		ame o
a.2	Loaded support bumper path profile/depth/moment of inertia	mm4	DEFERENT SECTION:	к	I/150mm/2E+07mm ⁴	Y	WT / 204 mm/82 X10^6	Y	230/150mm/8/18x1	к		_
			Calibon scient Vietsmeident Berrin v				mm4		W/200804			
			170mm/Stamles.com)									
			remaing dar (18mm) x 200 mondy 55 70 mmi /									
			265073 mm # Milliple									
			SECTION Carbon size)									
			165 mm/Scalinitize strict									
			Hittangular (10mm x 200									
			mmij/stalimm /									
			SECTION Carbon steel									
			réclangelart Mannon a									
			remarkador «Tomme», 201									
			mm)/ (###@mm /									
			TRE-448mmed									
1a 3	Guide support humper path profile/depth/moment of inertia	VTS	Sec 2.12 5	VTS	Post (10 mm/31332mm	VTC	N/A / N/A mm/ N/A mm/	VTC	200/00mm/2 77v100	VTC		
14.0	Guide support bumper pain prome/depth/moment of mental	VIS	See 3.1a.5	VIS	4 4 4	VIS	N/A / N/A mm/ N/A mm4	VIS	6mm4	VIS		
1a.4	Back guide/roller paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular	VTS	T/150_mm/1.6E+07mm4	VTS	L / 200 mm/ 16 X10^6	VTS	200/200mm/4.6x10^	VTS		
			(12,5 mm x 150				mm4		7 mm4			
			rectangular (12.5 mm x									
			100 mm)/ 27800 mm /									
			157878 mm4									
1a.5	Side guides profile/depth/moment of inertia	VTS	Carbon steel: I-beam	VTS	T/55 mm/1E+06mm ⁴	VTS	FB / 250 mm/116 X10^6	VTS	200/90mm/2.77x10^	VTS		
			made of plates (19 mm x				mm4		6mm4			
			150 mm, 150 mm x 19 mm, 16 mm x 150									
			mm)Stainless steel:									
			rectangular (10,0 mm x						1			
			42150094 mm4									
						-						
1a.6	Sill beam profile/depth/moment of inertia	mm4	Carbon steel: I-beam	Y	I/150_mm/1.9E+07mm ⁴	Y	S / 250 mm/ 51 X10^6 mm4	Y	200/300mm/1.28x1 0^8mm4	Y		
			rectangular (10 mm x 95	* 								
			mm)/ 13600 mm /									
1a7	Lintel beam profile	N/A	113300000 mm4	N/A	there is no lintel heam	N/A	N/A	N/A	N/A	N/A		_
		1.175	0.0		there is no inter beam		1.574	1804				
la.8	Loaded support bumper path anchors/vertical spacing	450 mm A-307	22 mm (9) Second	к	25_mm Ø/600mm	Y	32 mm 1/600 mm	Y	25 mm 05/680mm	K		
a.9	Back roller/guide paths anchors/vertical spacing	600 mm A-307	22 mm Ø/ 600mm	Y	25_mm Ø/600mm 25_mm Ø/600mm	Y	22 mm []/ 600 mm	Y	All min co/debimen	ĸ		_
a.11	Side guides anchors/vertical spacing	600 mm A-307	22 mm Ø/ 600mm	Y	25_mm Ø/600mm	Y	22 mm 🗆/ 600 mm	Y	22_mm (2)/600imm	к		
a.12	Sill beam anchors/ horizontal spacing	450 mm A-307	22 mm Ø/ 600mm	Y	25_mm Ø/600mm	Y	22 mm □/ 600 mm	Y	22 mm 0/600mm	K		
14.10	cine beam ancions nonzontal spacing	N/A	INA	IN/M	20_mm @/600mm	INCO.	num sy min	1910	mm	N/A		
1a.14	Material specification of sealing faces	A-240 SS-304	ASTM A276 type 304	Y	A276-304 or 00Cr19Ni or	Y	A276, gr 304 L	Y	ASTM A276 Type	Y		
1a.15	Thickness of sealing faces	10 mm	Back roller faces: 12,5	Y	10/8_mm	N	10 mm	Y	16mm	Y		
			mm, Other faces: 10 mm	1								
1a.16	Material specification of bumper tracks	300/350W	CSA G40.21-04 300 WT	Y	ACCREASED OF D345 or	N	CSA G40.21 - 300W /	Y	ASTM A240 Type	Y		
					equival.		350W		304			
1a.17	Thickness of bumper tracks	12 mm	185mm	K V	10+10_mm	Y	100 - 140 BHN	N	16mm	Y		
1a.19	Material specification of backing members	300W	NA	N	ALTHOUSE ALTHOUSE	N	CSA G40.21 - 300 /	Y	ASTM A36	Y		
		070 - 0			populati.		350W		07-1	w.	Det Deuß	
1a.20	Second stage concrete volumes	378 m3	191m ²	ľ	[AH-Q5]	1	answer 94 m3 per	r	0/11-	1.	Fer day?	
							permanent stoplog slot					
2	PERMANENT)											
2.1	Number of stoplog sections - S1	10	10 (ten)	Y	10	Y	10	Y	10	Y		
2.2	Material specification	300001	CSA G40.21-04 350 WT	Y	A6296190 or crass m	N	350W	Y	C-527, 18940	ĸ		
2.3	Thickness of skin plate	25 mm	22,4mm	Y	15_mm	Y	29 mm	Y	22mm	Y		
2.4	Minimum thickness of structural parts	10 mm	12,5mm	Y	10_mm	Y	10 mm	Y	12mm	Y		
2.5	Weight of each Stoplog section	13 700 kg	15795kg	Y	16.300/16.600 kg	Y	16 050 kg	Y	16600kg	Y		
2.7	Material and type of seals	Elastomer Solid J	SBR/ Elasterment	N	SBR/Double-J	Y	RUBBER /DOUBLE	Y	GIRMUN (P	N		
2.8	Side seal distance between seal centres	10 900 mm	build T-seals	Y	10.70 m	Y	10.7 m	Y	10.815m	Y		_
2.9	Lintel seal Elevation – bottom seals compressed	N/A	Not applicable	N/A	no lintel seal	N/A	N/A	N/A	N/A m	N/A		
2.10	Overall width of Stoplogs	11 200 mm	11396mm	Y	11.10_m	Y	11.3 m	Y	11.18m	Y		
2.11	Load bearing guides centre distance	11 200 mm	11,2m	Y	1,640_mm 10.90_m	Y	11.1 m	Y	11.08m	Y		
2.13	Load bearing guides loading - normal operating conditions	VTS	205MPa	VTS	74 N/mm²	VTS	502 MPa (HERTZ	VTS	29MPa	VTS		
2.14	Load bearing guides loading - unusual operation conditions	VTS	217MPa	VTS	51 N/mm²	VTS	537 MPa (HERTZ	VTS	33MPa	VTS		-
0.15	Material specification of humpors	VTS	ASTNA RE94 C02200	VTS	A375 204 or 000r19Ni or	VTS	CONTACT STRESS)	VTS	ASTM B21	VTS		_
2.10	Material specification of bumpers	13	ASTW B384*C32300	110	equiv.	10	DITONZE	10	AGTIM DET	10		
2.16	Bumper loading - normal operating conditions	VTS	183MPa	VTS	2 N/mm²	VTS	N/A	VTS	0.4MPa	VTS		
2.17	Description of spring-loaded rollers	VIS	Not applicable	VIS	Rubber Spring	N	N/A	VIS	N/A	VTS		-
2.19	Material specification of Filling Valve	N/A	Not applicable	N/A	GGGs (cast steel) 52830	N	N/A	N/A	N/A	N/A		
2 20	Material specification of Filling Value seat	NI/A	Not applicable	NIA	or equi	N	N/A	N/A	N/A	N/A		-
2.21	Hoist load required to lift Stoplog:	17/5	and applicable	1 MA	States of States (National)				1.00			
2.21.1	At balanced pressure	19 000 kg	27000	Y	17,700 kg	N	20 000 kg	Y	26200kg	Y		
	A 2.0 m unerenual pressure	29 000 kg	33000		50,700_Kg	1	19/13	<u>^</u>	JUDUNY	1		
3	SPILLWAY UPSTREAM STOPLOGS - TYPE S2	0	and and one	N	0	v	8	V	9	V	Par Bay2 VEC. 0 h	
2.1	Invertible of stopping sections – 52	8	H (16H)	N	đ		3		0	1	8 sections.	
.2	Material specification	300WT	CAS G40.21-04 350 WT	Y	ASPERIES IN GRADIES	N	CSA G40.21 - 300 /	Y	CIEA CHO	к		
.3	Thickness of skin plate	19 mm	16mm	Y	12_mm	Y	22 mm	Y	20mm	Y		
3.4	Minimum thickness of structural parts	10 mm	12,5mm	Y	10_mm	Y	10 mm	Y	12mm	Y		
.5	Height of Stoplog sections (seals compressed)	2 900 mm	2900m	Y	2.90_m 12.450_kg	Y	2.9 m 14 635 kg	Y	2.9m	Y		_
1.7	Material and type of seals	Elastomer Solid J	SBR / Elastomeric bulb	Y	SBR/J-type	Y	RUBBER /SOLID BULB	Y	C.R/J , "I"	Y		
			J-seals				JSEAL		10.015			_
3.8 3.9	Side seal distance between seal centres	10 900 mm	10800mm Not applicable	Y N/A	10.70_m	Y N/A	10.7 m N/A	Y N/A	10.815m N/A m	Y N/A		
3.10	Overall width of Stoplogs	11 200 mm	11396mm	Y	11.10_m	Y	11.3 m	Y	11.108m	Y		-
3.11	Overall depth of Stoplogs (seal face to back of stoplog)	800 mm	1300mm	Y	1,521_mm	Y	1 145 mm	Y	1008mm	Y		
.12 L13	Load bearing guides centre distance	11 200 mm	11,2m	Y VTS	10.90_m 30 N/mm²	VTS	320 MPa (HERTZ	VTS	11.08m 11.5MPa	VTS		-
.13	Louid bearing guides loading - normal operating conditions	VIS	125WPd	15	30 N/IIII1-	15	CONTACT STRESS)	10	,a	10		-
.14	Load bearing guides loading - unusual operation conditions	VTS	140MPa	VTS	25 N/mm ²	VTS	346 MPa (HERTZ CONTACT STRESS)	VTS	15.5MPa	VTS		
.15	Material specification of bumpers	VTS	ASTM B584-C92300	VTS	A276-304 or 00Cr19Ni or	VTS	BRONZE	VTS	ASTM B21	VTS		
.16	Bumper loading - normal operating conditions	VTS	158MPa	VTS	2 N/mm ²	VTS	N/A	VTS	0.3MPa	VTS		
8.17	Bumper loading - unusual operation conditions	VTS	Not applicable *	N/A	19N/mm ²	N/A	N/A	N/A	0.65MPa	N/A		
.18	Description of spring-loaded rollers	VTS	Not applicable	N/A	Rincher Spring	VTS N/A	N/A N/A	N/A	N/A N/A	N/A		
	Internet opposition of thing addag	19/74	and applicable	1 MA	editor							
.3.20	Material specification of Filling Valve seat	N/A	Not applicable	N/A	A 283 M Equity	N/A	N/A	N/A	N/A	N/A		-

	Technical Bid Evaluation		Title	Sup	ply / Install Powerhous	e and	Spillway Hydro-Mech	anical	Equipment	-	Revision No.: 01	
			Package No.: Tag No.:	CH0	032	Proj Clie	ect Title: nt:	L	CP-MUSKRAT FAL NALCOR	LLS	Rev. Date.: 2013-06-13 Project No.: 505573	3
em	Description	Bidder Specified Value or	: HABS Proposed	ant	SENS Proposed	t	LEAFS Proposed	t	Jets Proposed	10	Proposed	ţ
umber		Reference		Complia		omplia		omplia		cilumo		omplia
3.21 3.21.1	Hoist load required to lift Stoplog: At balanced pressure	19 000 kg	21500		17.500 kg	Y	18 200 kg	v	22300kg	v		0
3.21.2	At 2.0 m differential pressure	36 000 kg	27500	0 Y	37.800_kg	Y	N/A	Y	66600kg	Y	Missing/High ? N/A	
			_				And Diversity				be removed under 2m WC pressure.	
4	SPILLWAY UPSTREAM STOPLOGS - TYPE S3	10	Tellina - Patient	N			10					
4.1	Material specification	300WT	CSA G40.21-04 350 WT	Y	16 25:296:59 (million or	N	16 CSA G40.21 - 300 /	Y Y	18 CSA 640	Y K		
4.3	Thickness of skin plate	29 mm	25mm	Y	1600_mm 16_mm ??	к	25 mm	Y	20mm	Y		
4.4 4.5	Minimum thickness of structural parts Height of Stoplog sections (seals compressed)	10 mm 1 422 mm	12.5mm 1600mm	Y Y	10_mm 12.80_m	Y Y	10 mm 1.6 m	Y Y	12mm 1.442m	Y Y		
1.6 1.7	Weight of each Stoplog section Material and type of seals	13 700 kg Elastomer Solid J	13530kg SBR/_Elastomeric bulb	Y Y	13,930_kg SBR/J-Type	Y Y	11 885 kg RUBBER /SOLID BULB	Y Y	10800kg C.R/"J" , "I"	Y Y		
1.8	Side seal distance between seal centres	10 900 mm	J-seals 10.8m	Y	10.70 m	Y	J SEAL 10.7 m	Y	10.815m	Y		
1.9 1.10	Lintel seal Elevation – bottom seals compressed Overall width of Stoplogs	N/A 11 200 mm	Not applicable	N/A Y	no lintel seal	N/A Y	N/A	N/A	N/A m	N/A		
.11	Overall depth of Stoplogs (seal face to back of stoplog)	1 400 mm	1910mm	Y	1,836_mm	Y	1478 mm	Y	1408mm	Y		
.13	Load bearing guides loading – normal operating conditions	VTS	262MPa	VTS	10.90_m 104 N/mm²	VTS	636 MPa (HERTZ	Y VTS	49MPa	Y VTS		_
.14	Load bearing guides loading - unusual operation conditions	VTS	275MPa	VTS	75 N/mm²	VTS	680 MPa (HERTZ	VTS	53MPa	VTS		
.15	Material specification of bumpers	VTS	ASTM B584-C92300	VTS	A276-304 or 00Cr19Ni or	VTS	BRONZE	VTS	ASTM B21	VTS		
.16	Bumper loading – normal operating conditions	VTS	170MPa	VTS	2 N/mm ²	VTS	N/A	VTS	0.6MPa	VTS		
.17	Description of spring-loaded rollers	VTS	Not applicable * Not applicable	VTS	19N/mm² Robber Soring	VTS VTS	N/A N/A	VTS VTS	0.8MPa N/A	VTS VTS		
.19	Material specification of Filling Valve	N/A	Not applicable	N/A	Gildi (camineel) A288(mriego	N/A	N/A	N/A	N/A	N/A		
.20	Material specification of Filling Valve seat Hoist load required to lift Stoplog	N/A	Not applicable	N/A	A283C or Equivalent	N/A	N/A	N/A	N/A 25000kg	N/A		_
.22	At balanced pressure	19 000 kg	23516kg	Y	15,500_kg (Low Limit)	K	14 800 kg	Y	line item missing	Y		
;	SPILLWAY LIFT BEAM FOR S1 S2 & S3 STOPLOSS	-+ 000 kg	and the source of the source o	No.	and terr moonly	NIP	and terr missify	I WA	Burger triang	IN/A		
5.1	Height of Lift Beam	1000 mm	2781mm	Y	1.80_m	Y	2 080mm OVERALL	Y	1.2m	Y		
5.2 5.3	Latching mechanism description	5 000 kg	6037kg Lifting Spec (from HNA)	Y VTS	2,200_kg Hook, engaged	Y VTS	3 070 kg TWO HOOKS	Y VTS	8500kg Balance Weight	Y VTS	Heavy ? YES.	
					mechanically		PERMANENTLY LINKED BY					
							CONNECTING RODS TO A RELEASE LEVER.					
							ACTIVATED BY THE LATCHING					
							MECHANISM LOCATED ON THE TRASH RACK	2				
		1					SYSTEM HOIST.					
i.	SPILLWAY DOWNSTREAM STOPLOGS - EMBEDDED PARTS											
.1	Weight of embedded parts (without anchors)	21 000 kg ea.	17015kg	Y	10,800_kg	Y	5 339 kg	Y	17700kg	Y	Low? YES. To be vrified	
3.2	Loaded support bumper path profile/depth/moment of inertia	mm4	Carlonn down restargellar	ĸ	I/150mm/1.5E+07mm ⁴	Y	L / 203 mm/18 X106 mm4	Y	206/25/ammi1.ek/iS/ Amanal	ĸ	in dotan booign.	
			Staintilisis stewi									
			2660 www.i / J 66000-more /									
6.3	Guide support bumper path profile/depth/moment of inertia	VTS	See 3.6.5	VTS	Rect./10_mm/31233mm	VTS	N/A / N/A mm/ N/A mm4	VTS	200/90mm/2.77x10/	^ VTS		
34	Back guide/roller paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular	VTS	4 T/150	VTS	L / 203 mm/18 X10^6	VTS	6mm4 200/200mm/4 6x10/	VTS		
	back goldennier paars prono departmenten er menta	10	(12,5 mm x 350 mm)	VIG	1/150_mm/1.6E+0/mm	10	mm4	10	7 mm4	VIG		
			Stainless steel: rectangular (10 mm x									
			110 mm) / 16000 mm / 177381 mm4									
6.5	Side guides profile/depth/moment of inertia	VTS	Carbon steel: I-beam made of plates (16 mm x	VTS	T/55_mm/1E+06mm ⁴	VTS	FB / 101 mm/ 3 X10^6mm4	VTS	200/90mm/2.77x10/ 6mm4	^ VTS		
			150 mm, 100 mm x 16									
			mm) Stainless steel:									
			rectangular (10,0 mm x 150 mm) / 16000 mm /									
			42150094 mm4									
6.6	Sill beam profile/depth/moment of inertia	mm4	Carbon steel: I-beam (12x5-1/4) Stainless	VTS	l/150_mm/1.9E+07mm ⁴	VTS	S / 250 mm/ 51 X10^6 mm4	VTS	200/300mm/1.28x1 0^8mm4	VTS		
			steel: rectangular (10									
			mm x 95 mm) / 14800 mm / 113300000 mm4									
5.7 5.8	Lintel beam profile Loaded support bumper path anchors/vertical spacing	N/A 450 mm A-307	Not applicable 22 mm Ø/ 600mm	N/A Y	no lintel beam 25_mm Ø/600_mm	N/A Y	N/A 32 mm ⊡/ 600 mm	N/A Y	22 mani (C) / Gkildowice	N/A K		_
5.9	Guide support bumper path anchors/vertical spacing	600 mm A-307	See 3.6.11	Y	25_mm Ø/600 mm	Y	mm 🕮 mm	Y	22 minute (Minute	к		
.10	Back roller/quide paths anchors/vertical spacing	600 mm 4-307	22 mm @/ 600mm	Y	25 mm Ø/600 mm	Y	22 mm 1 / 600 mm	Y	10 march the	K		
1970 1974		600 - 4 007		X	25 mm 0/000_mm	v		V	and a second second second	14		
.11	Side guides anchors/vertical spacing	000 mm A-307	∠2 mm ©/ 600mm	1	25_mm ≌/600_mm	1	om v mm	1	an a sharing (2020) - Friddermen	K		
.12	Sill beam anchors/ horizontal spacing	450 mm A-307	22 mm Ø/ 600mm	Ŷ	25_mm Ø/600_mm	Y	22 mm 🛛/600 mm	Y	202 oson (27) - Galiliman	К		
6.13 6.14	Lintel beam anchors/ horizontal spacing Material specification of sealing faces	N/A A-240 SS-304	Not applicable ASTM A 276 type 304	N/A Y	25_mm Ø/600_mm A276-304 or 00Cr19Ni or	N/A Y	mm/ mm A276, gr 304 L	Y Y	N/Amm / N/Amm ASTM A276 Type	Y Y		
\$ 15	Thickness of sealing faces	10 mm	10mm	v	equiv.	N	10 mm	X	304	v		
5.16	Material specification of bumper tracks	300/350W	CSA G40.21-04 350 WT	Y	A276-304 or 00Cr19Ni or	Y	CSA G40.21, 350W /	Y	ASTM A276 Type	Y		
6.17	Thickness of bumper tracks	12 mm	128.5mm	Y	equiv. 55_mm	Y	10 nm	N	16mm	Y		
6.18 6.19	Hardness of bumper tracks Material specification of backing members	92-107 BHN 300W	145 HB	Y N	BHN170 A5386450 or 11895 or	Y N	128 BRINELL CSA G40.21, 350W /	Y Y	187 ASTM A36	Y Y		
.20	Second stage concrete volumes	102 m3	20	Y	33 m ³ 165 m3 total /AH	Y	300W	Y	28 m ³	Y	Per Bay? YES	_
			50		Q8)		answer - 23m3 per downstream storiog slot					
							and toping order					
.1	SPILLWAY DOWNSTREAM STOPLOGS – TYPE S4 Number of stoplog sections – S4	10	S (five)	N	5/bay; 10 total	Y	10 Total: 1 Perma set of	Y	10	Y		_
					(AH-Q19)		5 + 1 Tempo set of 5 (Q20 Clarification)					
.2	Material specification	300WT	CSA G40.21 -04 350 WT	Y	Analastania) or QARA at. enuive	N	CSA G40.21 - 300 / 350W	Y	CSA 640	к		
.3	Thickness of skin plate	19 mm	12.5mm	Y	12_mm	Y	22 mm	Y	22mm	Y		
.5	Height of Stoplog sections (seals compressed)	2 180 mm	2180mm	Y	2.18_m	Y	2.2 m	Y	2.18m	Y		
.0 .7	Weight of each Stoplog section Material and type of seals	6 400 kg ?? Elastomer Solid J	SBR/_Elastomeric	Y Y	13,400_kg SBR/J-Type	Y	RUBBER /SOLID BULB	Y	C.R/ "J" , "I"	Y		-
.8	Side seal distance between seal centres	12 500 mm	bulb J-seals 12500mm	Y	12.4 m	Y	J SEAL 12.3 m	Y	12.3m	Y		-
.9	Lintel seal Elevation – bottom seals compressed	N/A	Not applicable	N/A	no lintel seal	N/A	11.1 m 12.8 m	N/A	N/A m	N/A		_
.11	Overall depth of Stoplogs (seal face to back of stoplog)	1000 mm	950mm	Y	2,248_mm. The stoplog	Y	1 454 mm. To be	ĸ	958mm	Y		
					54 will be supplied with a depth of 1,030 mm.		design.					
7.12	Load bearing guides centre distance	12 800 mm	12.8m	Y	12.5_m	Y	12.6 m	Y	12.6m	Y		-
	A REPORT OF	A SALE POTTER AND AND AND			· · · · · · · · · · · · · · · · · · ·			-	and the second			

•)) 3	Technical Did Evaluation		Title	Sup	nly / Install Powerhous	e and	Spillway Hydro-Mech	anical	Equipment		Revision No.: 01	
	Technical Bid Evaluation		Package No.: Tag No.:	CHO	032	Proj	ect Title: nt:	L	CP-MUSKRAT FAL	LS	Revision No.: 01 Rev. Date.: 2013-06-13 Project No.: 505573	3
em	Description	Bidder	HABS		SENS		LEAFS	-	Jets		Deserved	
umber		Reference	rioposed	moliar		mplian	Floposed	mplian	Proposed	molian	Proposed	
.13	Load bearing guides loading - normal operating conditions	VTS	66MPa	VTS	30 N/mm ²	VTS	313_MPa (HERTZ	VTS	11MPa	VTS		1
7.14	Load bearing guides loading - unusual operation conditions	VTS	75MPa	VTS	20 N/mm ²	VTS	CONTACT STRESS) N/A MPa (HERTZ	VTS	15MPa	VTS		-
7.15	Material specification of bumpers	VTS	ASTM B584-C92300	VTS	A276-304 or 00Cr19Ni or	VTS	CONTACT STRESS)	VTS	ASTM B21	VTS		-
16	Bumper loading - normal operating conditions	VTC	12040-	VTC	equiv.	1/TC	O.C.MD-	LITO.	0 4400-	LITO.		1
7.17	Bumper loading – unusual operation conditions	VTS	Not applicable * contact pressures need not to be verified under exceptional conditions	VTS	2 N/mm² 19 N/mm²	VTS	2.6 мга 3.4 МРа	VTS	0.6MPa 0.6MPa	VTS		
7.18	Description of spring-loaded rollers	VTS	Not applicable	VTS	Rubber Spring	VTS	N/A	VTS	N/A	VTS		
.19	Material specification of Filling Valve	N/A	Not applicable	N/A	Editi (cast meet) A283 or editav.	N/A	N/A	N/A	N/A	N/A		
.20	Material specification of Filling Valve seat	N/A	Not applicable	N/A	A283C or equily-	N/A	N/A	N/A	N/A	N/A		-
.21.1	At balanced pressure	11 000 kg	13000kg	Y	14,700_kg (To be optmized during detail	к	20 800 kg (MOBILE CRANE)	Y	27000kg	Y		
.21.2	At 2.0 m differential pressure	22 000 kg	19500kg	N/A	design) 33,100_kg	N/A	N/A	N/A	61000kg	N/A	Missing / High ? N/A because not specified to be removed under 2m	
1	SPILL WAY LIFT BEAM FOR TYPE S4 STOPLOGS										WC pressure.	
š.1	Height of Lift Beam	500 mm	3154mm	Y	2.20_m	Y	2.2 m	Y	1.2m	Y		
8.2 8.3	Weight of Lift Beam Latching mechanism description	5 000 kg	2078kg Lifting Spec (from HNA)	Y Y	2,500_kg Hook, engaged mechanically	Y Y	3200 kg COUNTER-WEIGHT MECHANISM TO ENGAGE HOOKS A NYLON ROPE TO DISENGAGE MANITALLY	Y	9300kg Balance Weight	Y	Heavy ?	
	SPILLWAY GATES											
K	SPILLWAY GATE											
.1	Material specification	300W	CSA G40.21-04 350 WT	Y	AS296-BU or OB45 or	N	CSA G40.21 - 300 / 350W	Y	0.5A 040	к		
.2	Thickness of skin plate	29-25 mm	25mm	Y	24/16/12_mm	Y	22 mm	Y	30mm	Y		
.3	Minimum thickness of structural parts Height of Spillway Gate (seals compressed)	10 mm 23 000 m	12.5mm 23000mm	Y	10_mm	Y	10 mm	Y	12mm 23000mm	K		
.5	Number of gate sections	5 - 6	7 (seven)	Y	6	Y	5	Ŷ	5	Y		
.6 .7	Lintel seal Elevation Overall width of gate	N/A 11 500 mm	Not applicable 11952mm	N/A Y	no lintel seal 11.300 mm	N/A Y	N/A 11 670 mm	N/A Y	N/A m 11550mm	N/A Y		
.8	Overall depth of gate (seal face to back of gate)	1 500 mm	1573mm	Y	1,650_mm	Y	1570 mm	Y	1496mm	Y		
9 10	Side seal distance between seal centres Material specification of wheel and BHN	ASTM A504-C 321/363 BHN	10750mm ASTM A504 Classe C, 321 363 HB	Y	10,600_mm (limit) ASTM A-504 Class C_321 BHN	Y	10 720 mm ASTM A504, CLASS C, 321 TO 363 BHN	Y Y	ASTM A504,Class C and 363	N Y		
.11	Wheel path centre distance	11 000 mm	11120mm	Y	11,050_mm	Y	11 120 mm	Y	11100mm	Y		-
.12	Number of wheels each gate section	2 to 6	4 (7x4 total)	Y	4 (6x4 total)	Y	#1:4/ #2:4/ #3:4/ #4:2/ #5:0 (14 TOTAL) 813 mm	Y	22 762mm	Y Y		_
.10		000 1111	/30000		Wheel not acceptable)	14			/ OZIMIN			
.14 .15	Wheel shaft diameter Wheel bearing make/model number	240 mm TIMKEN/SKF	280mm SKF 32056 X/DF	Y Y	280_mm SkF or enuity (24148 CC/W33 (Robercha) roller Boaring nocarceptablic)	Y N	260 mm SKF /32052	ĸ	260mm FAG / 23152-MB			
1.16	Wheel loading - normal operating conditions	125 000 kg	1 67054kg	N	215,000 ke (Wheel need to be equilible imaged)	N	195 275 kg	Y	1600990g	N		
.17	Wheel loading - unusual operation conditions	130 000 kg	180278kg	Y	275,400 kg	Y	236 415 kg	Y	208000kg	Y		
.18	Material specification of bumpers	VTS	ASTM A514 Gr. F	VTS	ASTM A473 Type 420 or	VTS	BRONZE	VTS	ASTM B21	VTS		
.19	Bumper loading - normal operating conditions	VTS	277 MPa	VTS	aquiv. 30kN	VTS	N/A	VTS	8MPa	VTS		-
.20	Bumper loading – unusual operation conditions	VTS	Not applicable **contact pressures need not to be verified under exceptional conditions	VTS	795kN	VTS	N/A	VTS	11MPa	VTS		
I.21 I.22	Static weight of gate with seals Maximum hoist load required to open gate	178 000 kg 300 000 kg	172614kg 275000kg	Y Y	169,800_kg 235.000_kg 11,ow, 10 be revised during detail	Y K	153 000 kg 214 500 kg (Low, to be revised during	Y K	227000kg 320000kg	Y Y		
.23	Maximum exceptional hoist load (with gate jammed)	VTS	605000kg	Y	decages) 170,300 kg (Low, Holfse renared Stanlag defail advant	ĸ	detail design) 637 525 kg	Y	960000kg	Y		
.24	Maximum load applied to hoist during emergency closure	VTS	196065kg	N	295.000_kg	ĸ	153 000 kg	Y	240000kg	ĸ		
1.26	Lift pin diameter	VTS	200mm	VTS	160_mm	VTS	300 mm	VTS	260mm	VTS		1
1.27	Material and type of seals	Elastomer PTFE	Sides:SBR 60-70 Shore A/ Elastomeric bulb J seals with PTFEBottom (between sections):SBR 60-70 Shore A/ Elastomeric bulb J seals Bottom (sill):SBR 50 Shore A/ Elastomeric flat cel	Y	SBR+PTFE J-Type	Ŷ	SINGLE STEM, SOLID BULB, PTFE COATED	Ŷ	C.H and 131, 11	N		
1.28 1.29	Maximum hydrostatic load on gate Force required to start gate	3 000 000 kg 270 000 kg	271 275000kg	VTS Y	33,000kN 235,000_kg	VTS Y	230.5 kPa 214 500 kg	VTS Y	266kPa 960000kg	VTS N		
.1	SPILLWAY GATE - EMBEDDED PARTS Weight of primary embedded anchors and template steel/gate	VTS	13471 kg	Y	50.000_1.5.00#ining.past	N	7000 kg	Ŷ	2500 km d 2 000 kg	N		
					type asshert not att cptable)				Constant of			
.2	Number of embedded anchors per lower lined side guide	VTS VTS	1202	N	300	Y	4760 kg	Y	1049	Y		
.4	Number of embedded anchors per sill beam	VTS	102	Y	60	Y	1080 kg	Y	108	Y		
.5 .6	Number of embedded anchors per lintel beam Weight of embedded parts (without anchors) per pate	N/A 71 500 kg	Not applicable 92773 kg	Y	50,000 kg	N/A Y	N/A 83 900 kg	Y	N/A 78500kg	Y		
.7	Loaded roller paths profile/depth/moment of inertia	mm4	Carbon steel: I-beam made of plates (57mm x 250mm, 300mm x 25mm, 31,5mm x 260mm) / 40500mm /	Y	I/300mm/2.6E+08mm ⁴	Y	WT / 528 mm/ 2214X10^6 mm4	Y	2204660mms2-3693 97 9mm4	К		
1.8	Guide roller paths profile/depth/moment of inertia	VTS	692835850mm4	VTS	1/150mm/1.7F+07mm ⁴	VTS	N/A / N/A mm/ N/A mm4	VTS	200/90mm/2.77x10/	VTS		
2.9	Back guide paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular (25mm x 150mm) Stainless steel: rectangular (10mm x	VTS	-	VTS	L / 203 mm/18 X 10^6 mm4	VTS	6mm4 200/300mm/1.2x10/ 8 mm4	VTS		

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	Technical Bid Evaluation		Title Package No.:	Sup CH0	ply / Install Powerhous 032	e and Proj	Spillway Hydro-Mecha ect Title:	anical L	Equipment CP-MUSKRAT FAL	LS	Revision No.: 01 Rev. Date.: 2013-06-13	
	1es 1.1e	Bidder:	HABS		SENS	Cilei	LEAFS		Jets		Project No.: 505573	
em umber	Description	Specified Value or Reference	Proposed	pliant	Proposed	pliant	Proposed	pliant	Proposed	pliant	Proposed	pliant
(a) set of 1				Com		Com		Сот		Com		Сот
.2.10	Side guides profile/depth/moment of inertia	VTS	LOWER SECTION Carbon steel: I-beam made of	VTS	1/100_mm/4.5E+06mm ⁴	VTS	WT / 345 mm/170 X 10^6 mm4	VTS	200/90mm/2.77x10/ 6mm4	VTS		
			plates(31,5mm x									
			220mm, 140mm x 25mm, 19mm x									
		5	220mm)Stainless steel:									
			rectangular (10mm x 200mm)/ 40500mm /									
			49094623mm4HIGHER									
			SECTIONCarbon steel:									
			220mm)Stainless steel:									
			rectangular (10mm x 200mm)/ 11500mm /									
			129540mm4									
									1			
0.11	Cill beam profile/doublement of instite						0.1050		0000000			
2.11	Sin beam promote promotent of menta	11004	(10x4-5/8) Stainless	T	I/150_mm/1.7E+07mm"	ľ	mm4	Y	0^8mm4	Ŷ		
			steel: rectangular (10mm									
			/ 51400000mm4									
2.12	Lintel beam profile	N/A	Not applicable	Y	Transfile (bonded white)	N/A	N/A	Y	N/A	Y		_
01/Acos			Not applicable		T DATA THE SAME HERE BEENEN				1873			
2.13	Loaded roller path anchors/vertical spacing	450 mm A-325		к	Stumm 27/608, mm	N	38 mm ⊡/ 300 mm	Y	22 mm CV Stamma	к		
					acceptable, to be							
.14	Guide roller path anchors/vertical spacing	600 mm A-307		ĸ	rewsed] 30 mm ②/500 mm	к	mm 🗇/mm	Y	22 mm (57 50000	К		
4.5	Deale suide askttt	000			1 and 1							
.15	Back guide path anchors/vertical spacing	600 mm A-307		ĸ	30_mm Ø/600_mm	к	25 mm/ 600 mm	Y	29 mmilius/ Sikimini	К		
.16	Side guides anchors/vertical spacing	600 mm A-307		к	30_mm Ø/500_mm	к	25 mm 🛛 / 600 mm	Y	22 mm /07 900mm	к		
.17	Sill beam anchors/horizontal spacing	450 mm A-307		ĸ	30 mm Ø/500 mm	к	22 mm □/ 600 mm	Y	22 mm 37 480000	к		
140									NUA			
2.18	Lintei beam anchors/ horizontal spacing	N/A	Not applicable	Y	30_mm Ø/600_mm	к	25 mm ⊡/ 600 mm	Y	N/A mm / N/A mm	Y		
2.19	Material specification of sealing faces	A-240 SS-304	ASTM A276 type 304	Y	A276-304 or 00Cr19Ni or	Y	A276, gr 304 L	Y	ASTM A276 Type 304	Ŷ		
2.20	Thickness of sealing faces	A-240 SS-304	10mm	Y	10_mm	Y	10 mm	Y	13mm	Y		
2.21	Material specification of wheel tracks	ASTM A514-F/Q	ANTEN ACOS UNE 538 H	N	ASTM A240 UNS S41500	Y	A514, gr. Q	Ŷ	ASTM A504,Grade F or Q	Y		
					will be A514 grade F as							
2.22	Width of wheel tracks	VTS	230	Y	specified. 220 mm	Y	145 mm	Y	250mm	Y		
2.23	Thickness of wheel tracks	VTS	38.1mm	Y	15_mm	N	80 mm	Y	35mm	Y		
2.24 2.25	Hardness of wheel tracks Material specification of backing members	235 - 270 BHN 300W	380-450 HB Not applicable	N N	BHN275 A529Gr50 or Q345 or	Y N	271 TO 315 CSA G40.21 - 300 /	Y Y	ASTM A36	N Y		
			(SECONDERVICE)		equiv.		350W					
2.26	Second stage concrete volumes	1 148 m3	210 m ³	Y	275_m ³ /bay; 1275 m ³	Y	2 956 m ² - Q7 clarification answer - 240	Y	112m ³	Y	Per Bay? YES.	
					(AH-Q7)		m3 per spillway gate slot					
2												
3.1	Overall height	VTS	2335mm	VTS	~2.50_m	VTS	2.1 m	VTS	3m	VTS		
3.2	Overall length	VTS	13146mm	VTS	~14.00_m	VTS	12.5 m	VTS	13.5m	VTS		
3.3 3.4	Total weight of hoist (inc. ropes and sheave blocks)	27 500 kg ea.	114885kg	Y	30,000_kg 48600 kg (Q2	Y	76800 kg (Q1	Y	90000kg	Y	Different Need details	
					Clarification)		Clarification confirmed weight)		S. S. S. S. S.		Spillway gate hoist	
			12 30 32 30 10								Increased from 30 T to	
					- ANDER REI				1.		Gear: 37,8 T Motor and	
25	Pated especify	300 000 kg	NEDBOLIC	N	~375000 b~ (070	v	225 000 kg (021	v	320000kg	v	E 5 T Popo: 4.1 T	
0.0	naled capacity	300 000 kg		18	Clarification - Rated Cap	ι «ç	Clarification - Rated Cap	*	beooding	10		
			Construction of the local distribution of th		(incl. Kh) = 260 MT		2 445 KN of 249 000 kg)					
3.6 3.6.1	Rope Drums Material	300W	CSA G40.21 Gr 300W	Y	Seat	к	50W	Y	CSA G40	к		
3.6.2	Number of ropes per rope drum	2	2	Y	2	Y	4 (2X2)	Y	8 +8	Y		
3.6.3 3.6.4	Diameter to bottom of grooves Rope drum length	30 x Rope diam. VTS	2092mm 3848mm	Y VTS	1404_mm 4039_mm	Y VTS	1492 mm 9690 mm	Y VTS	1583mm 5000mm	Y VTS		
3.6.5	Grooved length (Left hand & right hand)	VTS	1734mm	VTS	1992_mm	VTS	3807/3807 mm	VTS	4,884(2,442+2,442)	VTS		
3.6.6	Type of bearings	VTS	23068 CC/W33	VTS	Zollern ZHP4.34	VTS	Sperical Roller	VTS	Oilless Metal	VTS		
3.6.7	Bearing capacity	VTS CSA G4 M	4550 kN	VTS	Load plus safety	VTS	1.780 kn (Static)	VTS	24000	VTS		
3.7.1	Type of material	IPS Galv. w/SFC	IPS galv. fiber core	Y	steel 1960N/mm ² zinc	Y	Galvanized Steel	Y	CSA-64	к		
370	Country of manufacture		Canada	v	coated	v	England		KOBEA	Y		
		EIO E LO CILLO A LO CILLO A	callaud	X	-0	10		V	5.52	V	Record Access	
3.7.3 3.7.4	Construction	6 x 19 - 6 x 37	6,2 6 x 19	Y	6x19FC	Y	6 X 19 Fibre Core	Y	6 x 19	ĸ	NOTAR AND SO	
3.7.5	Rope diameter	VTS	41mm (1 5/8")	VTS	26_mm (Q20	Y	32 mm	Y	33 8mm	N	Rope diam revised.	
					Diameter: 32 mm)							
3.7.6	Breaking load	VTS	97100kg	Y	44,546_kg (Q20 -	Y	70000 kg	Y	1857700.Hog	N		
					Revised Rope to 32 mm)							
3.7.7	Number of falls	VTS	2 x 2 x 6	VTS	8	VTS	4 X 8	VTS	16 + 16	VTS		
5.7.8	wire Hope Dead Ends	4	open speiter socket	VIS	WLL12.000kg	VIS	inte item missing	VIS	Line item missing	VIS		
3.9	Hoist drive	60 KW @ 00-1		V	Electric Motor+gear	v	44 75 HM	Y	N TO DO N	N		
3.9.2	Motor rated full load speed	1200 rpm	880rpm	Y	~1180_rpm	Y	1170 rpm	Y	1185rpm	Y		20
3.9.3	Motor rated emergency lower speed	2400 rpm	1760rpm N	Y	~2400_rpm	NV	3510 rpm	Y	N/A rpm	N	Shall be 3510 rpm	B
5.3.4		5/5V/3F/bUHZ	337 V / 3PN / 60 Hz		J/J/J/J/U_V/Ph/Hz			Vinn	000 0 0 00 00 00 00 00 00 00 00 00 00 0	North Contraction		
.9.5	Starting current Rated full load current	VTS	100 A	VTS	A 68.6_A	VTS	TBC A	VTS	130.7A	VTS		
.9.7	Motor manufacturer	VTS	Reuland / US Motor	VTS	WEG	VTS	Reuland	VTS	HYOSUNG	VTS		
9.8	INITION CLASS	VTS	Squirrel cage	Y	IEZ/EPACT	VIS	que 180%-210%)	VIS	11-44	VIS		
9.9	Locked-rotor current	VTS	200 ± 10%	Y	419A V	VTS	TBC	VTS VTS	979.8 H	VTS	200 ± 10% specified	
.9.11	Design letter	Design B	C modified	Y	BC	Y	TBC C Modified	Y	В	N		20
9.12	Rated temperature rise	Class B	70°C	Y	80°C	Y	B	Y	80 F	Y		00
.9.13	Rated ambient temperature	40 Degree C	-40°C / 40°c	Y	(-20°C +40°C) -20°C -	Y	+40 deg. 6 -20 C -	Y	40	N		
0 15	Time ration	Continuous	continuous	Y	+40°C	V	+46 C	Y	100%ED	Y		
9.9.15 3.9.16	Secondary volts/# phase/full load current (for wound-rotor induction	VTS	N/A	N/A	575/3_V/Ph/A	VTS	TBC V/Ph/A	VTS	335/3/	N/A		
.9.17	motor) Motor Thermally protected (Yes or no)	VTS	Yes	Y	Yes	Y	YES	Y	202.7V/Ph/A Yes	Y		
.9.18	Motor Space Heater- rated voltage/#phase/watts	120V/1P/VTS	120 V / 1 Ph / 150 W	Y	No Yes	Y	240/1/125 V/PhAW	Y	220/1/	к		
3.9.19	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	120 V / 1 Ph / 500 W	Y	No	к	240/1/50 V/Ph/W	к	N/A V/Ph/W	N		
.9.20	Motor full load efficiency	Premium high	± 94 %	Y	93.60%	Y	твс	К	92%	Y		21
9.21	Power factor	VTS	N/A	N/A	0.86	VTS	TBC	VTS	0.88	N/A		
.9.22 .9.23	Service factor Enclosure type	1,15 TEFC	1,15 TEFC	Y	9.4.26 TEFC	Y	TEFC	Y	Totally Enclosed	Y		X
.9.24	NEMA Frame type	NEMA MG-1	444T	N/A	404/5T	VTS	405T 365T	VTS	58XX	N/A		
3.9.25 3.9.26	Inverter Duty (yes/no)	VTS	Yes	N/A	Yes	N/A	No	N/A	N/A	N/A		
.3.10	Gearbox		1									

	Technical Bid Evaluation		Title	Sup	ply / Install Powerhou	se and	Spillway Hydro-Mech	anical	Equipment		Revision No.: 01	
			Package No.: Tag No.:	CH	0032	Proj	ect Title: nt:	1	CP-MUSKRAT FAI	LLS	Rev. Date.: 2013-06-1 Project No.: 505573	13
tem	Description	Bidder Specified Value or	HABS Proposed	t	SENS Proposed	ti	LEAFS Proposed	1	Jets Proposed	t	Proposed	
lumber		Reference		milia		mplia		allum		molia		land
3.10.1	Gearbox manufacturer	SEW EUR (Equiv.)	SEW	Y	Zollern	ර Y	COH	ĸ	WOORIM	S V	COH Geathor	ć
3.10.2	Gearbox drive ratio	Fully enclosed	965:01:00	Y	i=738	Y	778.6	Y	1 : 720	Y	CONT COLIFOR	
3.11 3.11.1	Holding brake manufacturer	ELEVANJA	Johnson Elevania	Y	SHB	Y	Mondel	Y	CHANGWON	Y		
3.11.2	Holding brake type	Magnetic Drum	Spring set DC magnet	Y	drum brake	Y	Shoe Type	Y	Drum Type	Y		
3.11.3	Holding brake rated torque	VTS	1,487 kN-m	VTS	0.2-1.6_kN-m	VTS	0.542 kN-m	VTS	1.37kN-m	VTS		
3.11.4 3.11.5	Fan Brake Fan brake manufacturer	SHELDONS	Sheldon Engineering	Y	See below Sheldors Engineering	VTS Y	Sheldon	VTS Y	LATER	VTS N		-
3.11.6	Fan brake rated torque	VTS	0,29kN-m	VTS	0.32_kN-m	VTS	162@2340RPM	VTS	LATTER AND	N		
3.11.7	Fan brake speed during emergency lower	2 400 rpm	1760rpm	VTS	2400_rpm	VTS	2340 rpm	VTS	LATERIAN	N		
3.12	Controls	3 600 rpm	2600rpm	V15	>2400_rpm	VIS	3510 rpm	VIS	T WINE IS ADDA	N		+
3.12.1	PLC (Programmable Logic Controller) (Make)	Schneider	Refer to Vytrell Proposal (*not in Vytrell Proposal)	N)	Omron Schneider Electric	Y	SCHNEIDER ELECTRIC	Y	SIEMENS	к		
140.0			(not in vya ch i roposa)		CARCOLIC							
3.12.2	PLC (Programmable Logic Controller) (Model)	Modicon Quantum	Refer to Vytrell Proposa (*not in Vytrell Proposal))	GPM-CPU33 Quantum	Ŷ	QUANTUM 140CPU65150	Y	S7-300 SIPNUS	ĸ		
3.12.3	HMI (Human Machine Interface) display (Make)	Nematron	Refer to Wytrell Proposa	IN	CAMPEN Nomatron	v	SCHNEIDER ELECTRIC	v	SIEMENS	K		
			(*not in Vytrell Proposal))	Combin Acculation		OOT IN EIDEN ELEOTTIC		DIEMENO	1		
3.12.4	HMI (Human Machine Interface) display (Model)	VTS	Refer to Vytrell Proposa	I N	NS10	к	HMIPCCP172CB46T14	Y	MP377 PRO 15"	к		-
			(*not in Vytrell Proposal))			N	Ĩ				
3.12.5	Rotary limit switch manufacturer and model	VTS	Gemco #1980-1208	N/A	Stromag GETS Series	VTS	Stromag RLS51-75-SP	VTS	schneider/XCM	N/A		-
3.12.6	Control cabinet manufacturer	VTS	ТВА	N/A	Gantner	VTS	Hoffman-Junction	VTS	D2145L PROTECH	N/A		-
3.12.7	Control power	dual 125 Vdc pwr supplies	120/1/60	N	24V-DC Dual 125 V dt	Y	410/1/60 V/Ph/Hz WPb/Hz Dual 175 V do	Y	110 / 1 / 60	N		
8.12.8	General Arrangement drawing of the hoist assembly.	VTS	TBA	N/A	See drawings	VTS	See attached	VTS	DWG : B-M-07	N/A		
3.12.10	Details of motor	VTS	ТВА	N/A	-	VTS	Custom Motor details	VTS	DWG : B-M-07	N/A		1
8.12.11	Details of holding brake operation	VTS	ТВА	N/A	-	VTS	only after PO placed Mondel Std. catalog for	VTS	DWG : B-M-07	N/A		+
3.12.12	Extreme upper limit switch make and model	VTS	Telemecanique	N/A	Stromag GETS	VTS	MBE Brake Square-D 9007CLS1	VTS	schneider/XCM	N/A		-
3.12.13	Details of drum dogging device limit switch	VTS	XF9 F1152	N/A		VTS	Turk Induction Type	VTS	D2145L schneider/XCM	N/A		
12 14	Continuous position indicator make and model	VTC	Rittmouer MCINA	NUA	Stromag CETE / Kith	VTO	Limit Switch	VTO	D2145L	NI/A		-
1.12.14		VIS	Ritimeyer MGIW	IN/A	Stromag GETS / Kubler	VIS	S10G1212T120PRL	VIS	200			
.12.15	Maintenance upper limit switch make and model	VIS	Allen Bradley 802T	N/A	Stromag GETS	VIS	Switch above	VIS	D2145L	N/A		
.12.16	Hoist load cell make and model	VTS	PIAB LKUE 16	N/A	W&H SB Series	VTS	Strainsert SPA-75	VTS	BONGSHIN and CCDM-50T	N/A		
.12.17	Slack rope detection make and model	VTS	Allen Bradley 802T	N/A	Bernstein GC-SU1Z	VTS	Will use the hoist cel	VTS	schneider/XCM D2145L	N/A		
.12.18	Unbalance wire rope load detector make and model	VTS	Allen Bradley 802T	N/A	W&H 5B Series	VTS	Can use the load to	VTS	KUMSUNG and	N/A		
12 19	Hom make and model	VTS	TRA		WERMA 64580075	VTS	load if required	VTS	KUMSUNG and KH	NI/A		-
.12.13		13	IDA	NA	WERIVIA 04580075	VIS	Edward 670 P	VIG	33.5	INA		-
	SPILLWAY GATE HEATING CONTROL											
.1	Heating control panel manufacturer	VTS	Bucan Electric Heating Device Inc. –model BCP-XXX (Fina	s VTS	Siemens	VTS	HAMMOND	VTS	PROTECH	VTS		
			part number issued with the order)	e								
.2	Temperature controller make and model	VTS	RKC Instruments model MA series, OMRON or others CSA	VTS	Siemens 7PX	VTS	WATLOW, PM6C1FA	VTS	AUTONICS and TK4M-B4CC	VTS		
.3	TRIAC make and model	VTS	US Approved Cristal Controls CCS	VTS	Siemens	VTS	WATLOW, DC21	VTS	WISE and WM2-XR	VTS		-
	Make and model of temporature spaces located inside the pale	VTC	Series	VTO	S	VTC	HONEYAVELL	VTC	KONICE and SL4	VITE		
.4	Make and model of temperature sensor located inside the gate	VIS	or K Type Temperature	eVIS	Siemens QAA2071	VIS	T678A1163	VIS	KUNICS and SL4	115		
E	Make and model of temperature concertion embedded part	VTO	Sensor	VTC	Siemers 0402012 150	VTO	HONEYWELL	VTC	KONICS and SI 4	VTO		-
.5	make and model of temperature sensor for embedded part	V15	Approved	s v i a	Siemens QAP2012.150	VIS	T678A1163	VIS	KONICS and SL4	VIS		
4.6	Make and model of temperature sensor for heating element	thermocouple	Bucan Model RTD, J Type	e K	Siemens QAM2171.040	к	WIKA, TR10/TW15	ĸ	AUTONICS and TK4M-B4CC	к		
			Sensor	-								
4.7	Blower/heater type/description	VTS	Gate Body Heater model BGB XXXX (final part numbe	VIS	Ziehl-Abegg FV/Carlo- Loysch	VTS	CALORITECH, MXG	VTS	LATER	VTS		
			issued with the order									
1.8 1.9	Heater Rating (each) Blower air flow rate (each)	VTS	60,5 kW, 2 per gate ~ 2500 CFM	VTS	40_kW 1.12 L/s	VTS	61 kW TBC L/s	VTS	LATER kW	VTS		-
.10	Number of Blower/heaters	minimum two (2)	1	N	4/gate	Y	2 / Gate	Y	2/6 Unit	Y		
5	SPILLWAY HOIST HOUSE - OVERHEAD CRANE											
5.1 5.2	Rated capacity Description	1 000 kg min. Electric Overhead -	3000kg Underhung ceiling	Y	3000_kg Winch type, local contro	Y	10000 kg 3000 kg SGUR	Y Y	5000 kg WIRE WINDING	Y Y		-
		Double Brake	mounted single girde	r			en al facilità de la Marian		TYPE			
			bridge crane									
) 1	SPILLWAY GATE MOTOR CONTROL CENTRES	VTS	Faton	v	Eston	Y	ABB Inc	Y	PROTECH	Y		-
5.2	Model No.	VTS	Freedom	Ŷ	Freedom MCC2100	Y	MNS-MCC	Y	N/A	N/A		
5.3 5.4	Rated Voltage Rated Bus Current	600 V/3P/60Hz 800 A minimum	600V 800	Y Y	600 V 800 A	Y Y	600 V 800 A	Y Y	180A	Y N		
6.5	Enclosure Type	Indoor CSA 1	NEMA 1A	к	Nema-14	N	MERINA 128	N	UNIVERSAL	к		
		Class 1 Type B							LINGEOGONE			
	Pup Proving	(Suitable for installed enviroment)	cella.		13.14		1014	N.	RKA	N		-
5.7	Disconnecting Means (Fused Switch or Circuit Breaker)	42kA Feeder-MCCB, MCP	65kA Circuit Breaker	Y	42 kA Circuit Breaker	Y	42KA Circuit Breakers	Y	MCCB	K		-
6.8	Overload relay Type	VTS	Solid State	Y	Later Electronic	Y	Electronic	Y	EOCR	Y		
1	SPILLWAY GATE - DOGGING DEVICES											
.1 .2	Dogging devise weight - each Dogging devise quide Weight - each	VTS VTS	808kg Not applicable	Y VTS	450_kg 200 kg	Y VTS	200 kg N/A	Y VTS	3000kg 1500kg	Y VTS	How is it operated?	-
7.3	Dogging beam profile/depth/moment of inertia	VTS	I-beam made of plates	s VTS	I/Later mm/Later mm ⁴	VTS	W/ 310mm/128 X 106	VTS	300/400mm/1.33x1	VTS		
			(19mm x 250mm 1300mm x 12,5mm	1 7	7		1004		0.0111114			
			19mm x 250mm) /	/								
			6420759833mm4									
.4	Block-out profile	VTS	Not applicable	N/A	No block out, HILTI	N/A	N/A	N/A	N/A	N/A		
.5	Locking mechanism	VTS	Mechanical	Y	Mechanically, by pin	Y	MANUALLY PINNED	Y	Manual	Y		
.6	Operation description	VTS	Manual	Y	by cranking system	Y	INE DOGGING BEAM	Y	MANUAL(HINGE)	Y		
							A.SHAFT					
4	SPILLWAY HOIST HOUSE ELECTRICAL DISTRIBUTION	VTO								NUA		
.1.1	Manufacturer	VTS	Eaton	N/A	Eaton	VTS	ABB Inc.	VTS	LATER	N/A		
.1.2	Model No. Bated Voltage	VTS 600 V	Freedom	N/A	Freedom MCC 2100	VTS	MNS-MCC	VTS	Later 600V	N/A		
.1.4	Rated Bus Current	800 A	800A	N/A	800 A	Y	1600 A	Y	400 A	N/A		
.1.5	Enclosure Type Bus Bracing	VTS 42 kA	NEMA 1A 65kA	N/A	Nema IA 42 KA	Y	NEMA 1A	Y Y	NEMA 1 42 kA	N/A N/A		
.1.7	Disconnecting Means (Fused Switch or Circuit Breaker)	CB	Circuit Breaker	N/A	Circuit Breaker	Y	Circuil Breakers	Y	CIRCUIT BREAKEP	R N/A		
.1.8	Overload Relay Type	VTS	Solid State	N/A	Later	VTS	ELECTRONIC	VTS	Later	N/A		
.2	Dry Type Distribution Transformer		*Note: Two (2) 600-									
			be provided for lighting									
2.1	Manufacturer	VTS	loads Rex	Y	Rex	VTS	ABB	VTS	WESTINGHOUSE	Y		-
.2.2	Model No.	VTS	BJ Series	Y	various	VTS	See attached	VTS	Later			
3.2.3	INumber per Hoist House	7	11 (5 total)	IY	12	IVTS	See attached	IVTS	HOIST 1 ~ 5	Y		1

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		2:11	Tag No.:	CIN	0002	Clier	it:	L	NALCOR	LS	Project No.: 505573	
em	Description	Specified Value or	Proposed	tue	Proposed	ant	LEAFS Proposed	ant	Jets Proposed	3	Proposed	ant
Imber		Reference		ilumo		ompli		omolis		- I amo		omplia
1.2.4	Enclosure Type	CSA C 22.2, No. 94,	NEMA 4	Y	Nema 1	ĸ	See attached	VTS	NEMA 1	ĸ		ú
3.2.5	Voltage Ratio	600-208/120V, 600- 600/347V (Lighting)	600:120/208 V	Y	600-208/120 V	VTS	See attached	VTS	600/347 V	Y		
3.2.6	Rated Capacity Distribution Panelhoards	30 kVA minimum	30kVa	Y	30 kVA	VTS	See attached	VTS	30 kVA	Y		
			600/347V Transforers wi be provided for lighting	ſ								
.3.1	Manufacturer Madel No.	VTS	Eaton	Y	Eaton	Y	ABB Eaton	Y	WESTINGHOUSE	Y		
.3.3	Number per Hoist House	7	POW-R-Line sa	Y V	2	VIS	Line	VIS		N/A		
.3.4	Enclosure Type	Suitable for installed	NEMA 1	ĸ	Nema 1	K	See attached Nema 1	K	NEMA 1	K		-
.3.5	Voltage Ratio	208/120V 3P, 4W (distribution)	120/208V	Y	208/120 V	VTS	See attached	VTS	600 / 347V	Y		
		600/347V 3P, 4W (lighting)										
.3.6	Rated Capacity	100 A (42 cct) minimum	100A	Y	30 kVA	VTS	See attached	VTS	30 kVA	Y		
3.7 3.8	Lighting Fixtures Manufacturer	VTS VTS	ТВА	N/A N/A	See below Later	VTS VTS	not answered ABB	VTS VTS	not answered SURFACE	N/A N/A		
3.9	Model No.	VTS	тва	N/A	Later	VTS	See attached	VTS	MTD	N/A		
3.10 3.11	Number per Hoist House	VTS VTS	ТВА	N/A	Later	VTS	See attached	VTS	HOIST 1 - 5	N/A		
3.12	Lamp Output	VTS	ТВА	N/A	Later_W	VTS	See attached	VTS	250 W	N/A		
4 4.1	Manufacturer	VTS	CCI Thermal	Y	Chromalox	VTS	TBD	VTS	LATER	N/A		
4.2 4.3	Model No. Number per Hoist House	VTS 12	OK3 12 total	Y Y	Star-F 3	VTS VTS	TBD TBD	VTS VTS	LATER HOIST 1~5	N/A N/A		
4.4	Voltage	600V/3P/60Hz	600V	Y	600 V	Y	TBD	ĸ	347V	N/A		
		TORV	JORW		13.3 KW		150	K.	TINV	IN/M		
1	Overall towar beight	VTC	20.04	V	20.00	V	05.5	V	00.100 -	V	One and he life distance	
		VIS	23,34M	T	26.00_m	1	23.5 M		20.130 M	Y	EI.45.5 to service base	
.2	Tower width (c/c columns)	VTS	2,7 (stairs) / 2,1 (centra	Y	2.50_m	Y	1.7/2.8 m	Y	T 400 m	N	of date?	
.3	Tower depth (c/c columns)	VTS	towers) m 3,8m	Y	4.00_m	Y	4 m	Y	3.650 m	Y		
.4 .5	Overall hoist house length Hoist house depth (inside)	79.5 m VTS	77,1m ~ 5.1m	VTS VTS	12.00_m 4.50 m	VTS VTS	72.5 m 4.5 m	VTS VTS	79.390 m 3.700 m	VTS VTS	Narrow ?	
.6	Hoist house height (inside)	VTS 660,000 kg	~ 3,0m	VTS	4.50_m	VTS	2.6 m	VTS	4.100 m	VTS	Low for overhead	
.8	Material specification of steel	300WT	300WT or 350 WT	Y	A52/06150 pr.13345 en	Ň	350WT	Y	155A 640	ĸ		_
.9	Number of embedded anchors per tower	6 min	24	VTS	2x4x4 = 32	VTS	4	VTS	14	VTS	Check detail ?	
.10	Maximum length of embedded anchors Weight of embedded anchors per tower	3 m approx. VTS	1,35m 2600kg	VTS VTS	1_m ~400 kg	VTS VTS	2.5 m 4000 kg	VTS VTS	9/600/m =50.kg	N N		_
.12	Main steel columns profile (columns)	VTS	W310 x (179, 129 or 118)	VTS	HEB500 or equivalent	VTS	W310x158	VTS	300 x 150	VTS		
.13	Typical steel profile (horizontal members)	VTS	W310 x 74 (Towers) ,	/ VTS	HEA340 or equivalent	VTS	W250x89	VTS	300 x 150	VTS		
			Custom Welded Profile (bridge)	e								
.14	Typical steel profile (bracing members)	VTS	2L (various dimensions)	VTS	HEA260 or equivalent	VTS	HSS152x152x12.7	VTS	130 x 130	VTS		
.15	Minimum thickness of structural parts	8 mm	8mm	VTS	6 11m	N	10 mm	VTS	Plate 10 mm	VTS		
.10	Maximum tower compression road (start gate opening) Maximum tower exceptional compression load (gate jammed)	VTS	767000 kg	VTS	453,600_kg	VTS	305 000 kg	VTS	960,000 kg	VTS		
	Load reacions on deck level	VTS										
_	INTAKE TRASHRACK - EMBEDDED PARTS											
.1	Weight of embedded parts (without anchors)	90 000 kg ea. bay	13834kg Carbon steel: rectangula	Y	37,140_kg	Y	231 648 kg	Y	33500kg	Y	Different, clarify	
.2	coaded support bumper pair prone/depremomon of menta	11114	(12,5mm x 173mm) Stainles steel: rectangular (10mm	s	C/S90mm/9E+08mm		mm4		Oversine.			
			60mm) / 47700mm 92602mm4	/								
.3	Guide support bumper path profile/depth/moment of inertia	VTS	See 5.1.4	VTS	Integral part of 5.1.2	VTS	N/A / N/A mm / N/A mm4	VTS	200/16mm/6.83x10/	^ VTS		
.4	Side guides profile/depth/moment of inertia	VTS	Carbon steel: rectangula	r VTS	Integral part of 5.1.2	VTS	L / 178 mm / 19 x 10^6	VTS	4mm4 200/16mm/6.83x10/	^ VTS		
			(12,5mm x 130mm) Stainles steel: rectangular (10mm	s x			mm4		4mm4			
			123398mm4	1								
.5	Sill beam profile/depth/moment of inertia	mm4	I-beam (10 x 4	- VTS	1/140mm/1W+07mm ⁴	VTS	W/ 206mm / 53 x 10^6 mm4	VTS	200/270mm/2.05x1 0^7mm4	VTS		
.6	Loaded support bumper path anchors/vertical spacing	450 mm A-307	mm4 22mm-20/ 500 mm	к	70 min: /2/686mm	ĸ	25 mm 🛛/600 mm	Y	22mm 0/ %49 mm	к		-
					Anicher Type net							
-		000 4 007		14		1X		v	Second Second Second	12		
./	Guide support bumper path anchors/vertical spacing	600 mm A-307	2.5mm 7.7_300 mm	`	Anither Type wat	R.	N/A mm ⊔/iwA mm	, Y	Element statement	Ň		
					compliant, criste revision							
.8	Side guides anchors/vertical spacing	600 mm A-307	22 mm S/_300 mm	к	20	к	25 mm ⊟/600 mm	Y	22mm C/ 100xmm	ĸ		
.9	Sill beam anchors/ horizontal spacing	450 mm A-307	22mm (2)_ 500 mm	к	20_mm-2/600_mm	к	22 mm 🗆/600 mm	Y	22mm #H_3oft min	к		
1.10	Material specification of embedded parts	300W	Carbon steel plates: CS/	AY	A5296050 of CB45 of	N	CSA G40.21 300W / 350	Y	ASTM A276 Type	Y		
			G40.21-04 300 WT Cat. Carbon steel I-beam: ASTN	2 /	estativ,		W		304, ASTM A36			
1 11	Second stade concrete volumes	1 232 m3	A36 Stainless steel: ASTM A 276 type 304	v	100 million 1705 m ³	Y	1.247 m ³ . 09	Y	126m ³	Y		
		LOL MO	191 11		total	ľ.	clarification answer -					
					(AH-Q9)		slot.		2. 2. 2. 1. 6	-		
2	INTAKE TRASHRACKS		10	K	16.7 May be suited to 9	K	0 × 9	K	9	v	-	
	Number of itasinack sections per water passage	o			x3 during detail design	K	5.4.5	17.	0	3		
.2	Material specification - trashrack bars	300W/350W	CSA G40.21-04 350 WT	Y	A5296-150 of Q345 W	N	CSA G40.21 300W	Y	C SAGAR	к		
.3	Material specification - trashrack frame	300W	CSA G40 21-04 350 WT	Y	A529Gr50 or O345 or	N	CSA G40.21 300W /	Y	Travisio	к		
4		EP Dend 1	1 W UCC PU.Z 1-04 050 W I		equival.		350W	X		N		
.4	Frome of trashrack bars	гы Hounded edge.	nose nose	ľ	rectangular with rounded nose	,	at both ends		CHURF	N		
.5 .6	Thickness of trashrack bars Depth of trashrack bars	10-16 mm 100-150 mm	12,5mm 110mm	Y Y	20_mm 120_mm	K Y	13 mm 110 mm	Y Y	12mm 120mm	Y Y		
.7	Spacing between trashrack bars	> 100 mm	100mm	Y	100_mm	Y	100 mm	Y	112mm	N		
	rivergin or each upper trasmack section	10 000 Kg	and the second	1/	reduce operation				io, rooky	1		
.9	Weight of each lower trashrack section	15 000 kg	7583kg	к	sequence 5,450_kg	к	7 1875 kg	к	13,000kg	Y		
.10	Height of each upper trashrack sections	3 700 mm	2987mm	Y	1,805_mm	ĸ	2 985 mm 3 222 mm	Y	3495mm 3625mm	Y		
.12	Hoist load required to lift Trashrack top section	18 000 kg	11400kg	Y	6,000_kg	к	12 595 kg	Y	16,100kg	Y		
.13 .14	Hoist load required to lift Trashrack lower section Bumper loading – normal operating conditions	18 000 kg VTS	10500kg 23MPa	Y VTS	6,000_kg 20_N/mm ²	K VTS	N/A	Y VTS	16,000kg 0.6 MPa	Y N/A		
.15 .16	Maximum Passage Obstruction (MAX) Maximum Unsupported distance of bars (mm)	26.7%	ns ine ken no ine ken	NN	30%	Y	ne line tem-	NN	no line lam	N N	Missing ? Missing ?	
.17	Maximum Head Loss thru trash racks at rated load (mm)	50 mm	no les lien	N	60	Y	noline-item	N	nci line illimi	N	Missing ?	
	INTAKE TRASHRACK - LIFT BEAM											
3.1 3.2	Height of Lift Beam Weight of Lift Beam	500 mm 3000 kg	2367mm 2043kg	Y Y	1.70_m 2,800_kg	Y Y	2,2 m 2 900 kg	Y Y	1.2m 3000kg	Y		

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			Package No.: Tag No.:	CHO	0032	Proj	ect Title: nt:	L	CP-MUSKRAT FAL	LS	Rev. Date.: 2013-06-1 Project No.: 505573	3
m	Description	Bidder	HABS	t	SENS	1	LEAFS		Jets	-	Proposed	1 -
mber	2000 pilon	Reference	riopuaeu	moliar	Froposed	npliar		nplian	Proposed	nolian	Proposed	nnlian
.3	Latching mechanism description		Lifting Spec (from HNA)	Ö	Hook apgraged	Co	automatic latching under	Cor	Balancowoicht	Cor V	<u></u>	Loc Loc
			citting spec (nom HNA)	1	mechanically		the weight of the lift	1	Balanceweight			
							rope (manually					
	INTAKE BULKHEAD GATE - EMBEDDED PARTS						auwarau					-
.1	Weight of embedded parts (without anchors)	104 000 kg ea. bay	26953kg	Y K	23,500_kg	Y	11931 kg	Y	53200kg	Y		
	course support sumpor pair promotospannionent or merca	10014	SECTION Carbon meal	Ĩ.	1/150_mm/1.2E+0/mm	3E	10^6mm4	4	47x10^7mm4			
.3	Guide support bumper path profile/depth/moment of inertia	VTS	_See 5.4.5	VTS	T/120_mm/3.4E+06mm ⁴	VTS	/mm/ mm4	VTS	200	VTS		1
.4	Back guide/roller paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular	VTS	T/120 mm/2 45:06mm ⁴	VTS	1 / 152 mm/ 8 X 10^6	VTS	m4 200 /	VTS		1
	Second Se		(12,5mm x 150mm) Stainless steel: rectangular (12,5mm x	s	1/120_mm/3.4c+06mm	10	mm4	VIG	200mm/3.69x106m	VIG		
			100mm) /21510mm / 157878 mm4	8					104			
.5	Side guides profile/depth/moment of inertia	VTS	Carbon steel: U-beam (6 x 2)	VTS	T/100_mm/3.4E+06mm ⁴	VTS	FB / 203 mm/ 27 X 10^6	VTS	200/	VTS		+
			Stainless stell: rectangular (12.5 x 150mm 49200 mm /				mm4		200mm/3.69x10^6n m4	1		
.6	Sill beam profile/depth/moment of inertia	mm4	288000 mm4 Carbon steel: I-beam (12 x 5 – %) Stainless steel: rectangular	VTS	T/150_mm/1.8E+07mm ⁴	VTS	S/250mm/51 X 10^6	VTS	200/294mm/1.32	VTS		1
			(10,0 mm x 110mm) (9250mm / 11330000mm4)	2		101104		x1097mm4			
.7	Lintel beam profile	mm4	Carbon steel: rectangular	VTS	I-shape, bended plate	VTS	WELDED ASSEMBLY	VTS	DWG.N0. A-M-02	VTS		-
			(12,5mm x 650mm) Stainless steel: rectangular (10,0mm x	s K								
			150mm)									
.8 .9	Loaded support bumper path anchors/vertical spacing Guide support bumper path anchors/vertical spacing	300 mm A-307 600 mm A-307	22 mm 07_640 mm See 5.4.11	K Y	25_mm Ø/600_mm 25_mm Ø/600_mm	K Y	32mm □/300 mm mm □/mm	Y Y	22 mm Ø/600 mm	K Y		-
.10	Back roller/guide paths anchors/vertical spacing	600 mm A-307	22 mm Ø/_600 mm	Y	25_mm Ø/600_mm	Y	22mm □/600 mm	Y	22 mm Ø/600 mm	Y		
.12	Side guides anchors/vertical spacing Sill beam anchors/ horizontal spacing	450 mm A-307	22 mm Ø/_600 mm 22 mm Ø/_600 mm	Y Y	30_mm Ø/400_mm 25_mm Ø/600_mm	Y Y	22mm 🗆/600 mm	Y	22 mm Ø/600 mm 22 mm Ø/600 mm	Y		-
13	Lintel beam anchors/ horizontal spacing	450 mm A-307	22 mm Ø/_600 mm	Y	25_mm Ø/600_mm	Y	22mm 1/600 mm	Y	22 mm Ø/600 mm	Y		
.14	material specification of sealing faces	A-240 SS-304	ASTM A-276 type 304	Y	A276-304 or 00Cr19Ni or equ.	Ŷ	A276, gr 304L	Y	304	Y		
.15	Thickness of sealing faces	10 mm	Back roller faces: 12,5	Y	10_mm	Y	10 mm	Y	16mm	Y		
16	Material specification of bumper tracks	300/350W	ASTM A36	Y	A276-304 or 00Cr19Ni or	Y	CSA G40.21 300W /	Y	ASTMA276Type	Y		-
.17	Thickness of bumper tracks	12 mm	Smm	N	equ. 55 mm	Y	350W	к	304 16mm	Y		-
18	Hardness of bumper tracks	92-107 BHN	120-160 HB	Y	BHN170	Y	128 BHN	Y	187 ASTMAGE	Y		
.13	material operindation of backing members	30010	Not applicable	15	equiv.	VIS	350W	10	NO TIVIMOO	115		
.20	Second stage concrete volumes	956 m3	202 m³	Y	157_m ³ / bay; 1884 m ³	Y	174 m ³ - Q4 Clarifications answer -	Y	179m ³	Y		
					(AH-Q10)		93 m ³ per bulkhead gate					
	INTAKE BUI KHEAD GATES						SKA SK2					_
.1	Number of bulkhead gate sections	5	8 (eight)	Y	6	Y	6	Y	6	Y		
2	Material specification	300W	CSA G40.21-04 350 WT	Y	A5296cSO at 21395 of	N	CSA G40.21 300W / 350 W	Y	CSAGAD	к		
3	Thickness of skin plate	29 - 25 mm	16mm	Y	25_mm	Y	19 mm	Y	28,34,36mm	Y		1
.4 .5	Minimum thickness of structural parts Height of top bulkhead gate section (seals compressed)	10 mm 4 150 mm	12,5mm 2715m	Y Y	10_mm 3.65 m	Y	10 mm 4.3 m	Y	3.6m	Y		-
.6	Height intermediate bulkhead gate sections (seals compressed)	4 000 mm	2715m	Y	3.65_m	Y	3.5 m	Y	3.6m	Y		_
8	Height of bottom bulkhead gate sections (seals compressed) Weight of each top bulkhead gate section	4 000 mm 21 000 kg	2715m 12255kg	Y Y	3.65_m 19,150 kg	Y	3.2 m 13 675 kg	K	20,900 kg	Y		
.9	Weight of each intermediate bulkhead gate section	20 500 kg	11592kg	Y	19,110_kg	Y	12 516 kg	K	18700kg	Y		
.10 .11	Weight of each bottom bulkhead gate section Material and type of seals	20 500 kg Elastomer Solid J	11600kg sbr/ Elastomeric bulb J-	Y	19,110_kg SBR/J-Type	Y Y	12 819 kg RUBBER SOLID BULB	K Y	21500kg CR/ "J", "I"	Y		-
			seals				J SEAL/FLAT SEAL					
.12	Side seal distance between seal centres	6 800 mm	6650m	Y	6.60_m	Y	6.8 m	Y	6.7m	Y		1
.13	Lintel seal Elevation – bottom seals compressed Overall width of bulkhead gate	17.81 m 7 100 mm	18,1m	K N	17.81_m 7.00 m	Y	21.6 m Height 7.2 m	Y Y	21.55m 7.24m	Y		-
.15	Overall depth of bulkhead gate (seal face to back of stoplog)	1 200 mm	1345mm	Y	2,100_mm A gate	Y	1 532 mm	Y	1359mm	Y		
					be confirmed without							
					any change to the							
.16	Load bearing guides centre distance	7 100 mm	6850m	Y.	6.84_m	Y	7.1 m	Y	7.1m	Y		-
.17	Load bearing guides loading – normal operating conditions	VTS	229MPa	VTS	52N/mm ²	VTS	560 MPa (HERTZ CONTACT STRESS)	VTS	13.8MPa	VTS		
18	Load bearing guides loading – unusual operation conditions	VTS	241MPa	VTS	37N/mm ²	VTS	576 MPa (HERTZ CONTACT STRESS)	VTS	14.7MPa	VTS		
19	Material specification of bumpers	VTS	ASTM B584-C92300	VTS	A276-304 or 00Cr19Ni or	VTS	N/A	VTS	ASTM B21	VTS		
.20	Bumper loading - normal operating conditions	VTS	198MPa	VTS	1N/mm²	VTS	N/A	VTS	0.7 MPa	VTS		
.21	Bumper loading – unusual operation conditions	VTS	Not applicable **Contact pressures need not to be		20N/mm ²	VIS	N/A	VIS	тмРа	VIS		
			verified under	r								
			exceptional conditions									
.22	Description of spring-loaded rollers	VTS	Not applicable	VTS	Robber Series	к	LEAF SPRING	VTS	N/A	VTS		
					Section 201		(UPSTREAM/DOWNST REAM)					
23	Material specification of Filling Valve	VTS	ASTM A106 Gr. B	VTS	GGG (cast steel) A283C		300W/ A53/ 55 30H	VTS	ASTM A536	VTS		
24	Material specification of Filling Valve seat	VTS	ASTM A-276 type 304	VTS	A283C or equiv.		BRONZE	VTS	ASTM B584	VTS		
.25	Hoist load required to lift bulkhead gate sections: At balanced pressure	24 000 kg	21000kg	Y	21,000 kg	Y	19 125 ka	Y	31000kg	Y		
.25.2	At 2.0 m differential pressure	41 000 kg	25000kg	Y	30,000_kg	Y	N/A	Y	45000kg	Y		
	INTAKE BULKHEAD GATE - LIFT BEAM											
.1	Height of Lift Beam	500 mm	2736m	Y	1.50_m	Y	2.3 m	Y	1.2m	Y	Heavy	
.3	Latching mechanism description	3000 kg	Lifting Spec (from HNA)	Y	Hook, engaged	Y	TORGUE MOTOR	Y	Balance weight	Y	neavy	-
			and an Plat Plan Plan Area and Area a		mechanically		DRIVEN CABLE RELEASE					
							MECHANISM.					
							ENGAGE					-
	INTAKE BULKHEAD GATE - DOGGING DEVICES				100		P4 (5)	N MARKAN DE	10001-			
.1 .2	Dogging devise Weight - each Dogging devise guide Weight - each	VTS VTS	38kg Not applicable	VTS	400_kg 200_kg	VTS	ol kg N/A	VTS	500kg	VTS		-
.3	Dogging beam profile/depth/moment of inertia	VTS	Rectangular (57mm x 57mm)	VTS	R/80mm/1.3E+06mm ⁴	VTS	HSS/ 152 mm/11 X 106	VTS	50/60mm/9x10^5m	VTS		1
4	Block-out profile	VTC	Height: 265mm Wildel	VTO	Rectangular	VTC	N/A	VTS	N/A	VTS		
-7	leron on hume	10	615mm (direction of	f	needellang	10	2.005(0)	10				
			panel span) Depth: 500mm (direction of	: f								
			flow)				100/15/1		Di- t			
.5	Locking mechanism	VTS	Mechanical	Y	Cantilever Beam, rotated	Y	LOCK PIN	Y	Pin type	Ŷ		
'.6	Operation description	VTS	Manual	Y	Pivot beam is engaged in	Y	SLIDING BEAM	Y	manual(hinge)	Y		
					endpl.		EXENDED OR					
							POSITIONS					
	INTAKE GATE											-
1	Material specification	300W	CSA G40.21-04 350 WT	Y	A529(4)50 dr 3345 m	N	CSA G40.21 - 300 / 350W	Y	Gasa Cat.	к		
2	Thickness of skin plate	32-29 mm	22,4mm	Y	22_mm	Y	25,4 AND 28,6 mm	Y	30mm	Y		
5.3 3.4	Minimum thickness of structural parts Height of Intake Gate (seals compressed)	10 mm	12,5mm 20230mm	Y	10_mm 20.130_mm	Y	20 450 mm	Y	20300mm	Y		-
			a second s									

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		Didde	Tag No.:	one	0510	Clie	nt:		NALCOR	1.5	Project No.: 505573	,
tem lumber	Description	Specified Value or Reference	Proposed	Compliant	Proposed	Compliant	Proposed	Compliant	Jets Proposed	Compliant	Proposed	Compliant
3.5 3.6	Number of gate sections	4 - 5	8 (eight)	Y	5	Y	5	Y		Y		
B.7	Overall width of gate	7 500 mm	7952mm	Y	14.05_m 7.500_mm	Y	7683 mm	Y Y	EL.(+)14.05m 7500mm	Y Y		-
.8	Overall depth of gate (seal face to back of gate)	1 200 mm	1570mm	¥.	1,850_mm. A gate depth of 1,600mm can be confirmed without any change to the offered	Y	1550 mm	Y	1065mm.	к		
.9	Side seal distance between seal centres	6 800 mm	6750mm	Y	price. 6.600_mm Will be increase to fit seals with SS path	к	6700 mm	Ŷ	6700mm	Y		
.10	Material specification of wheel and BHN	ASTM A504-C 321/363 BHN	ASTM A504 Classe C, 321 363 HB	Y	ASTM A-504 Class C_321 BHN	Y	ASTM, A504, CLASS C, 321 TO 363 BHN	Y	ASTM A504,CLASSC and	Y		
.11	Wheel path centre distance	7 100 mm	7120mm	Y	7.400_mm	Y	7120 mm	Y	7200mm	Y		
13	Wheel diameter	500 mm	4 (four) 750mm	Y Y	4 200 mm (Flat-Ron Whited is not accomplisity)	Y N	#1:8/ #2:8/ #3:4/ #4:4/ #5:4 (24 TOTAL) 813 mm	Y	30 800mm	Y Y		
14	Wheel shaft diameter	000										
15	Wheel bearing make/model number	TIMKEN/SKF	SKF 32056 X/ DF	Y	SKE or equily 728%52 CT /W XS (Sphermal bearing-are not	N	SKF/32052	Ŷ	FAG / 23040-E1	Y		
16	Wheel loading - normal operating conditions	100 000 kg	149205kg	Y	an reptable) 439 708 kg (Wheels & No oncolo charged)	N	197 869 kg	Y	TOCOOK	N		
17 18	Wheel loading – unusual operation conditions Material specification of bumpers	105 000 kg VTS	175235kg ASTM A514 Gr. F	Y VTS	460 000 kg ASTM A473 Type 420 or	N VTS	242 938 kg N/A	Y VTS	ASTM B21	N VTS		
19	Bumper loading - normal operating conditions	VTS	400MPa	VTS	equiv. 30kN	VTS	N/A	VTS	10.6MPa	VTS		
.20	Bumper loading – unusual operation conditions	VTS	Not applicable **contact pressures need not to be verified under exceptional conditions	VTS	194kN	VTS	N/A	VTS	14.2MPa	VTS		
.21 .21.1	Weight of each gate section with seals Lower Section (Sill)	VTS	**8 sections 1 - 15312,13_kg 2 - 15554,13kg 3 - 15830,13kg 4 - 16151,13kg 5 - 16529,13kg 6 - 16943,13kg 7 - 17508,13kg 8 - 22933,09kg	VTS VTS	26000kg	VTS VTS	21 400 kg	VTS VTS	44,300 kg	VTS VTS		
21.2	Intermediate Section 1	VTS		VTS	25000kg	VTS	19 300 kg	VTS	32,300 kg	VTS		
21.4	Intermediate Section 3	VTS		VTS	25000kg	VTS	21 600 kg	VTS	21,500 kg	VTS		
21.5	Upper Section (Top) Combined static weight of gate	VTS 125 000 kg	136761kg	VTS Y	24000kg 125,500_kg (May be raised during detail design)	VTS K	23 100 kg 102 700 kg (Q13 - Gate weight : 108 000 kg - Sheave blocks weight :	VTS Y	21,500 kg 152,000kg	VTS Y		
23	Maximum hoist load required to open gate	290 000 kg	2250000g	Y	220,000_kg (May be raised during detail design)	к	108 kN) 181 700 kg (Q12 - 2024 kN = 206 500 kg)	Y	920, 309kg	N		
24 25	Maximum exceptional hoist load (with gate jammed) Maximum load applied to hoist during emergency closure	VTS VTS	4950000kg 136761kg	K Y	440,000_kg 220,000 kg	K K	579 400 kg 102 700 kg	Y Y	630,000kg 50,000kg	Y N		
26	Minimum residual closing force during emergency closure	VTS	7825Hkg	ĸ	930 hg (this enough and	Ň	30 650 kg	к	25,000kg	Y.		
2728	Lift pin diameter Material and type of seals	VTS Elastomer PTFE	200mm Lintel: SBR 60-70 shore A/Elastomeric bulb J- stem bulb seals with PTFESides:SBR 60-70 shore A/Elastomeric bulb J-seals with PTFEBottom (between sections):SBR 60-70 shore A/Elastomeric bulb J- sealsBottom (between sections):SBR 50 shore A/Elastomeric flat seal	Y	180_mm SBR+PTFE/J-Type	Y	356 mm SINGLE/DOUBLE STEM, SOLID BULB, PTFE COATED	Ŷ	220mm DRa, 11, 10	Y N		
29 30	Maximum hydrostatic load on gate Force required to start gate opening	5 000 000 kg 260 000 kg	S18kPa 2250tMtg	VTS K	0.663_N/mm ²	Y K	502 kPa Ten 700 kg	Y K	4500kPa 630000kg	N N		
			Suma Substantion		(ladign)							
.1	INTAKE GATE - EMBEDDED PARTS Weight of primary embedded anchors and template steel/gate	VTS	9855kg	Y	42,800_kg. Q3 Clarifications - The primary anchors for the Intake Gate: 9,500 kg, Intake Bulkeads: 5,400 kg, Intake Trashrack: 6,500 kg, All are per bay.	Y	5800 kg Q2 Clarifications - 15 500 kg per intake bay.	Y	2400kg	Y		
.2	Number of embedded anchors per lower lined side guide	VTS	1650	N	33,600_kg	Y	413	Y	490	Y		
i	Number of embedded anknors per upper side guide	VTS	58	Y	24	Y	36	Y	40	Y		
5	Number of embedded anchors per lintel beam Weight of embedded parts (without anchors) per cate	VTS 85 000 kg	58 69033kg	Y Y	24	YN	36 63 620 kg	Y Y	21 72500kg	Y Y		
7	Loaded roller paths profile/depth/moment of inertia	mm4.	Carbon steel: I-beam made of plates(57mm x 250mm, 300mm x 25mm, 25mm x 260mm)Stainless steel: rectangular (35mm x 230mm)/ 29080mm / 607813465mm4	Y	y Affiliant & 12 Hamm" (Some not large chrody in be replaced ouring detail design)	К	W1/500 mm/1887X106 mm4	Ŷ	300/540mm/3.28x1 0^8mm4	Y		
8	Guide roller paths profile/depth/moment of inertia	VTS	See 5.9.10	VTS	T/150mm/1.7E+07mm ⁴	VTS	N/A/N/A mm/ M/A mm4	VTS	200 /90mm/3.49x10^6m	VTS		
9	Back guide paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular (25mm x 150mm) Stainless steel: rectangular (10mm x 200mm) / 29080mm / 611436	r VTS		VTS	L/203mm/18 X10^6 mm4	VTS	m4 200 / 294mm/1.32x10^7m m4	VTS		
10	Side guides profile/depth/moment of inertia	VTS	Carbon steel: I-beam made of plates (25mm x 150mm, 120mm x 22,4mm, 225mm x 150mm) Stainless steel: rectangular (10mm x 130mm) / 51580mm / 36397405mm4	VTS	l/120mm/4.5E+06mm ⁴	VTS	WT/300 mm/136 X10^6 mm4	VTS	200 /90mm/3.49x10^6m m4	VTS		
.11	Sill beam profile/depth/moment of inertia	mm4	Carbon steel: I-beam (10 x 4-5/8) Stainless steel: rectangular (10mm x 148,8mm) / 9120mm / 51400000 mm4	VTS	l/150mm/1.7E+07mm ⁴	VTS	S /2500 mm/62 X10^6 mm4	VTS	200/270mm/2.05x1 0^7mm4	VTS		

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			Package No.: Tag No.:	СНО	032	Proj Clier	ect Title: nt:	L	CP-MUSKRAT FAL NALCOR	LS	Rev. Date.: 2013-06-1 Project No.: 505573	3	1
Item	Description	Bidder Specified Value or	Proposed	iant	SENS Proposed	iant	LEAFS Proposed	iant	Jets Proposed	iant	Proposed	ant	
NUMBER		hererence		Compl		Compl		Compl		Compl		Compl	
5.9.12	Lintel beam profile	mm4	Carbon steel: rectangular (16mm x 650mm) Stainless	VTS	I-shape, bended plate	VTS	FLAT BAR	VTS	DWG. No. A-M-03	VTS			1
		(1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	steel: rectangular (10,0mm s 150mm)	K									
5.9.13	Loaded roller path anchors/vertical spacing	300 mm A-325	22mm 201 Stahrm	N	(output tyle ani 52° ana (2),000° ana	N	Sprink (250 mm	к	12mm (77 630mm	N			
5914	Guide roller neth anchors/vertical spacing	600 mm A 207	22mm @1.500mm	K	compliant. to be revised	K	and the second second	K	22 - Cl 522	16			
5.9.15	Back guide path anchors/vertical spacing	600 mm A-307	22mm Ø/ 500mm 22mm Ø/ 500mm	K	30_mm Ø/500_mm 30_mm Ø/600_mm	ĸ	25mm /SDD Time	ĸ	22mm Ø/ 600mm 22mm Ø/ 600mm	ĸ			
5.9.16	Side guides anchors/vertical spacing Sill beam anchors/horizontal spacing	450 mm A-307	22mm Ø/ 500mm 22mm Ø/ 500mm	ĸ	30_mm Ø/400_mm 20_mm Ø/600_mm	K	22mm □/600 mm	к Ү	22mm Ø/ 600mm 22mm Ø/ 600mm	K K			
5.9.18 5.9.19	Lintel beam anchors/ horizontal spacing Material specification of sealing faces	450 mm A-307 A-240 SS-304	22mm Ø/ 500mm ASTM A276 type 304	к Y	20_mm Ø/600_mm A276-304 or 00Cr19Ni or	K Y	25mm ::./600 mm A276 gr 304L	Y Y	22mm Ø/ 600mm ASTM A276 Type	K Y			
5.9.20	Thickness of sealing faces	A-240 SS-304	10mm	Y	equiv. 10 mm	Y	10 mm	Y	304 16mm	Y			
5.9.21	Material specification of wheel tracks	ASTM A514-F/Q	ARTNI ARRE Type Sed H 975	N	ASTM A240 UNS S41500 or equ. Track material will be AS14 grade F as	Y	A514, gr. Q	Y	ASTM A514,Grade F or Q	Y			
5.9.22	Width of wheel tracks	VTS	230mm	Y	200_mm	Y	135 mm	Y	320mm	Y			
5.9.23 5.9.24	Hardness of wheel tracks	235 - 270 BHN	38,1mm 380-050 HB	Y N	15 mm BHN 275	N Y	80 mm 271 TO 315	Y Y	20mm 413	Y			
5.9.25	Material specification of backing members	VTS	Not applicable	VTS	A529Gr50 or Q345 or equival.	VTS	CSA G40.21 - 300 / 350W	VTS	ASTM A36	VTS			
5.9.26	Second stage concrete volumes	1 343 m3	362 m³	Y	119_m³ /bay; 1428 m³ total (AH-Q11)	Y	2076 m ³ - Q11 clarification answer - 108m3 per intake gate slot	Y	150m ³	Y			
5.10	INTAKE GATE - DOGGING DEVICES												
5.10.1 5.10.2	Dogging devise Weight - each Dogging devise guide Weight - each	VTS VTS	562,28kg Not applicable	Y VTS	400_kg 300_kg	Y VTS	200 kg N/A	Y VTS	3000kg 1500kg	Y VTS		-	
5.10.3	Dogging beam profile/depth/moment of inertia	VTS	I-beam made of plates, (19mm x 200mm, 900mm x 12,5mm, 19mm x 200mm) / 2791mm/ 2364769533mm4	VTS	l/300mm/3.0E+08mm ⁴	VTS	W/310mm/128 X10^6 mm4	VTS	300/400mm/1.33x1 0^8mm4	VTS			
5.10.4	Block-out profile	VTS	Not applicable	N/A	Rectangular	N/A	N/A	N/A	N/A	N/A			
5.10.6	Operation description	VIS	Manual	VTS	Mechanical Pin Cranking System	VTS	THE DOGGING BEAM IS RETATING AROUND A SHAFT	VTS	N/A Manual	VTS			
5.11	INTAKE GATE - HOISTS												
5.11.1 5.11.2	Overall length	< 8000 mm	3,35m ទាំមិញ	Y N	~2.5_m ~8.0_m	Y	3.11 m 7.11 m	Y Y	3100m 8306m	Y N			
5.11.3 5.11.4	Overall width Total weight of hoist (inc. ropes and sheave blocks)	< 3200 mm 25 000 kg	65000kg	N Y	~4.0_m 35000_kg	Y Y	65000 kg	K Y	43.53m 70,000kg	N Y		-	
5.11.5	Rated capacity	290 000 kg	275000kg	Y	2 62500_kg (Q31 Clarification - Rated Cap (incl. Kh) = 250 MT	Y	198000 kg (Q14 Rated Cap : 232 300 kg)	Y	210.00084	ĸ			
5.11.6.1	Material	300/350W	350W plate rolled	Y	Steel S235/S355	Y	50W	Y	GSNG40	к		-	
5.11.6.2 5.11.6.3	Rope drum length	30 x Hope diam. VTS	2492mm 2310mm	Y	1994_mm 2080_mm	Y	1924 mm 4009 mm	Y Y	2362mm 2000mm	Ŷ			
5.11.6.4	Grooved length (Left hand/ right hand)	VTS	2085mm	VTS	2080_mm	VTS	2305/2305 mm	VTS	3600(1800+1800)m m	VTS			
5.11.6.5 5.11.6.6	Bearing capacity	VTS	5400 KN	VTS	Load plus Safety	VTS	1,780 KN (Static)	VTS	20000kg	VTS			
5.11.7 5.11.7.1	Wire Ropes Type of material	CSA G4-M IPS Galv. w/SFC	Cold Drawn Galv. Steel	Y	steel 1960N/mm² zinc	Y	Galvanized Steel	Y	OBAGR	к			
51172	Country of manufacture	CANADA/US/EUB	(Fiber core)	N	coated	Y	not answered - CANADA	Y	KOREA	Y		-	
5.11.7.3	Factor of safety	5/0.5 to Design Load	Normal = 8,15	Y	5.2	Y	/US-?? COH 8.0:1 at nominal CAP	Y	5.13	Y			
5.11.7.4 5.11.7.5	Construction Rope diameter	6 x 19 - 6 x 37 mm	6 x 19 57,2mm	Y Y	6x19FC 36_mm (Q31 Clarification - Rope	Y Y	6 X 19 Fibre Core 32 mm	Y Y	6 x19 Stimm	Y N			
5.11.7.6	Breaking load	kg	181346kg	Y	85,423_kg Rope revised	ĸ	70000 kg	Y	SHANDONE.	N			
5.11.7.7	Number of falls	VTS	Total = 16	Y	to 2" 8	Y	2 X 12	Y.	8+8	Y		-	
5.11.7.8 5.11.8	Wire Rope Dead Ends Hoist drive	2]	VTS		VTS	no line item	VTS	no line item	VTS			
5.11.8.1	Motor rating	75 kW @ 1.2 m/min	61,1kW	Y	55_kW	Y	41 kW May be revised during detail design	к	75 kW	Y			
5.11.8.2 5.11.8.3	Motor rated full load speed Motor rated emergency lower speed	1200 rpm 2400 rpm	890rpm MVA	Y N	~1180_rpm ~2400_rpm shall be 3600	D K	1170 3510 rpm	Y Y	1160 rpm	Y Y		-	
5.11.8.4	Rated voltage/# phase/frequency	575V/3P/60Hz	575 / 3 / 60V/Ph/Hz	Y	rpm 575/3/60 V/Ph/Hz	Y	600/3/60V/Ph/Hz	Y	600/3/ 60	Y			
5.11.8.5	Starting current	VTS	N/A	N/A	A	VTS	твс	VTS	V/Ph/Hz 620.2 A	VTS			
5.11.8.6 5.11.8.7	Rated full load current Motor manufacturer	VTS VTS	N/A N/A	N/A N/A	68.6_A WEG	VTS VTS	not answered Reuland	N/A VTS	91.2 A HYOSUNG	VTS VTS			
5.11.8.8 5.11.8.9	Motor Class	VTS VTS	F	N/A	IE2 Nema EPACT 419A	VTS N/A	CMM"B"Service TBC	VTS N/A	IP44 620	K N/A		-	
5.11.8.10	Code letter	G Design B	N/A	N/A	V	N/A	TBC	N/A	Н	N/A		_	1
5.11.8.12	Rated temperature rise	Class B	N/A	N/A	80°C	Y	B	Y	80 deg C	Y			
5.11.8.13	Rated ambient temperature	40 Degree C	N/A	N/A	F (- 20°C +40°C) -20°C -	Y	+10 deg C -20 C -	Y	40 deg C	ĸ			
5.11.8.15	Time rating	Continuous	N/A	N/A	+40°C 6 0 min/fi Continuous	Y	Continuous	Y	60min	к			
5.11.8.16	Secondary volts/# phase/full load current (for wound-rotor induction motor)	VTS	N/A	N/A	Later_V/Ph/A	VTS	not answered	VTS	322/ 3 /144.8 V/Ph/A	к			
5.11.8.17 5.11.8.18	Motor Thermally protected (Yes or no) Motor Space Heater- rated voltage/#phase/watts	VTS 120V/1P/VTS	N/A N/A	N/A N/A	Yes Ne Yes	Y K	YES 240/1/125 WPh/W	Y Y	Yes 220/ 1 /200	Y K			
5.11.8.19	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	N/A	N/A	No	к	240/1/50 V/Ph/W	к	V/Ph/W 600/ 3 /3000	к			
5.11.8.20	Motor full load efficiency	Premium high	N/A	N/A	93.60%	Y	твс	к	91%	Y		-	
5.11.8.21	Power factor	VTS	N/A	N/A	0.86	VTS	TBC	VTS	0.87	Y			1
5.11.8.23	Enclosure type	TEFC	TEFC	Y	TEFC	Y	TEFC	Y	Totally Enclosed	Y			
5.11.8.24 5.11.8.25	NEMA Frame type	VTS	N/A N/A	N/A	404151 B/C	Y	C Modified	Y	B	N			
5.11.8.26 5.11.9	Inverter Duty (yes/no) Gearbox	VTS	IN/A	N/A	Yes	N/A	No	N/A	NO	N/A			
5.11.9.1 5.11.9.2	Gearbox manufacturer Gearbox drive ratio	SEW EURODRIVE Fully enclosed	Brevini 800	Y Y	Zollern 983	Y Y	COH 222 736.1	Y Y	WOORIM 1 / 1000	Y Y		-	1
5.11.10	Brakes Holding brake manufacturer	ELEVANIA	Mondel	Y	SHB	Y	Mondel	Y	CHANGWON	Y			1
5.11.10.2	Holding brake type	Magnetic Drum	Electromechanical Drum	Y	drum brake	Y	Shoe type	Y	Drum Type	Y			1
5.11.10.3	Fan Brake	Power absorption	0,704KIN*ITI	VTS	See below	VTS	not answered	VTS		VTS			1
5.11.10.5 5.11.10.6	Fan brake manufacturer Fan brake rated torque	VTS	Sheldon Engineering 0,271kN-m	VTS	0.32_kN-m	VTS	.162 @ 2340 RPM_kN-	VTS	Later Kitem	N			
5.11.10.7	Fan brake speed during emergency lower	2 400 rpm	1800rpm	VTS	~2400_rpm	VTS	m 2340 rpm	VTS	CARELINES	N			
5.11.10.8 5.11.11	Fan brake maximum rated speed Controls	3 600 rpm	2700rpm	VTS	>2400_rpm	VTS	3510 rpm	VTS	Easter Nam:	N			
5.11.11.1	PLC (Programmable Logic Controller) (Make)	Schneider	Schneider / Modicon	Y	Omron Schrieider Electric	Ŷ	SCHNEIDER ELECTRIC	Y	SIEMENS	к			
5.11.11.2	PLC (Programmable Logic Controller) (Model)	Modicon Quantum	Quantum 140 Series	Y	CIZW) - CPU 33 Quantum	Y	QUANTUM 140CPU65150	Y	S7-300 SIPLUS	к			1
5.11.11.3	HMI (Human Machine Interface) display (Make)	Nematron	Schneider / Telemecaniq	Y	Omron Schoeider Electric	Y	SCHNEIDER ELECTRIC	Y	SIEMENS	к			V

•)) S	NC·LAVALIN		Bid Evaluation Plan Ap	pend	x 5						Nalcor	
	Technical Bid Evaluation		Package No.:	CH	1032	Proj	ect Title:	anical L	CP-MUSKRAT FAL	LS	Revision No.: 01 Rev. Date.: 2013-06-1	3
tom	Description	Bidder	HABS		SENS	Cile	LEAFS		Jets		Project No.: 505573	
tem lumber	Description	Specified Value or Reference	Proposed	Compliant	Proposed	Compliant	Proposed	Compliant	Proposed	Compliant	Proposed	Compliant
5.11.11.4	HMI (Human Machine Interface) display (Model)	VTS	Magelis XBTGT6340	Y	NS10	VTS	HMIPCCP172CB46T14 N	VTS	MP377 PRO15	ĸ		
.11.11.5	Rotary limit switch manufacturer and model	VTS	Gemco #1980-1208	Y	Stromag GETS Series	VTS	Stromag RLS51-75-SP	VTS	SCHNEIDER / XCMD2145L	Y		
.11.11.7	Control power	dual 125 Vdc owr	130 / 1 / 60\//Pb/Hz	N/A	Gantner	VIS	Hoffman (Junction Box)_	VIS	PROTECH	Y		
5.11.11.8	General Arrangement drawing of the hoist assembly.	supplies VTS	TBA	-	See attachment		V dc See attached	<u> </u>	V/Ph/Hz DWG.No.A-M-09			
5.11.11.9	Details of fan brake	VTS	TBA		-		3120		Later			
5.11.11.11	Details of holding brake operation	VTS	TBA				3120		DWG.No.A-M-09			
.11.11.13	Details of drum dooging device limit switch	VTS	TRA	N/A	Stromag GETS Series	VIS	3120	VIS	D2145L	N/A		
.11.11.14	Continuous position indicator make and model	VTS	Rittmever MGIM	N/A	Stromag GETS	VTS	3120 Posital	VTS	D2145L WONILLEVELAWIG	N/A		
		10	intellevel main	1960	Series/Kübler	10	OCDS101G1212T120P	VIS	200	IN/A		
6.11.11.15	Maintenance upper limit switch make and model	VTS	Allen Bradley 802T	N/A	Stromag GETS Series	VTS	Obtained by use of rotary limit-3120	VTS	SCHNEIDER/XCM D2145L	N/A		
5.11.11.16	Hoist load cell make and model	VTS	PIAB LKVE Custom	N/A	W&H SB Series	VTS	Strainsert SPA-75-3120	VTS	BONGSHIN LOADCELL/CWFK-	N/A		
i.11.11.17	Slack rope detection make and model	VTS	Allen Bradley 802T	N/A	Bernstein GC-SU1Z	VTS	Through use of hoist	VTS	30 SCHNEIDER/XCM	N/A		
5.11.11.18	Unbalance wire rope load detector make and model	VTS	Allen Bradley 802T	N/A	W&H SB Series	VTS	load cell-3120 Through use of hoist	VTS	D2145L N/A	N/A		
11 11 10	Hom make and model	VTS					load cell-3120 If Required		na lina itawa			
: 10		V13					not answered		no ine item			
5.12.1	Manufacturer	VTS	Eaton	Y	Eaton	Y	ABB Inc	Y	PROTECH	к		
i.12.2 j.12.3	Model No. Rated Voltage	VTS 600V/3P/60Hz	Freedom 600V	Y Y	Freedom MCC 2100 600 V	Y Y	MNS-MCC 600 V	Y Y	N/A 600V	N/A Y		
5.12.4 5.12.5	Rated Bus Current Enclosure Type	800 A min Indoor CSA 1 Gasketted Enclosure Class 1 Type B (Suitable for installed	NEMA 1A 65	K Y	1200 A Nom6-14	Y K	800 A MEMA TA	Y K	180A Universal Enclosure	N N/A		
i.12.6	Bus Bracing	enviroment) 42kA	Circuit Breaker	Y	42 kA	Y.	42	Y	8 kA	N		
5.12.7 5.12.8	Disconnecting Means (Fused Switch or Circuit Breaker) Overload relay Type	MCCB, MCP VTS	Solid State O	Y	Circuit Breaker	Y N/A	Circuit Breakers Electronic	Y Y	MCCB EOCR	Y Y		
3	POWERHOUSE DRAFT TUBE											
5.1	POWERHOUSE DRAFT TUBE STOPLOGS - EMBEDDED											
5.1.1	PARTS Number of stoplog sections	N/A	a Houri	N	16	Y	4 x 4 (Q19 Clarifiaction)	Y	4.000	N		
.1.2	Weight of embedded parts (without anchors)	69 500 kg ea.bay	23727kg	Y	23,000_kg	Y	6245 kg 22500 kg (Q3	Y	26,600kg	Y		
			Haar Astronomics (2014) v. 2000mi (Standens stati verstängular (10070 v 2007/vml)/6042mm / 405/483 mm4kil(stati SECTURN-carbon (stati (2010m)/contest stati (2010m)/contest s				T T T T		eesta eesta an			
5.1.4	Guide support bumper path profile/depth/moment of inertia	VTS	_See 6.1.6	VTS	T/120mm/3.5E+06mm	VTS	N/A/N/Amm/ N/A mm4	VTS	200 /90mm/3.49x10^6m	VTS		
3.1.5	Back guide/roller paths profile/depth/moment of inertia	VTS	Carbon steel: rectangular (12.5mm x 300mm) Stainless steel: rectangular (10mm x 250mm) /33950mm / 259505 mm4	VTS	T/120_mm/3.6E+06mm ⁴	VTS	L/203 mm/16 X10^6 mm4	VTS	m 9 200 / 200mm/3.69x10^6m m4	VTS		
3.1.6	Side guides profile/depth/moment of inertia.	VTS	Carbon steel: U-beam (4	VTS	T/100_mm/3.6E+06mm ⁴	VTS	FB/203mm/ 27 X10^6	VTS	100 /15mm/5.63x10^4m	VTS		
5.1.7	Sill beam profile/depth/moment of inertia	mm4	131000mm4 Carbon steel: I-beam (15 x 5 1/2) Stainless steel: rectangular (10mm x 110mm) /14463mm / 185800000mm4	Y	T/150_mm/2.0E+07mm ⁴	Y	S/250 mm/ 51 X10^6 mm4	Y	m4 200/ 294mm/1.32x10^7m m4	Y		
1.1.8	Lintel beam profile	mm4	Carbon steel: rectangular (12,5mm x 600mm) Stainless steel: rectangular (10mm x	Y	l-shape, bended plate	Y	FLAT BAR	Ŷ	D109 G. 100. AMH-94	N		
5.1.9	Loaded support bumper path anchors/vertical spacing	600 mm A-307	200mm) 22mm (37_500mm)	к	25 Jahr 127600 may avenue Type not compliant, to be revised	N	32 mm ⊡/300 mm	Y	22mm (7/ 690mm)	N		
.1.10	Guide support bumper path anchors/vertical spacing	600 mm A-307	Sec 6 1.12	к	25_mm Æ/600_mm	к	mm ⊡/ mm	Y	22mm Ø/ 600mm	Y		
.1.11	Back roller/guide paths anchors/vertical spacing Side guides anchors/vertical spacing	600 mm A-307	22/mm.02/_500/mm 10/mm.07/_stylener	K K	30_mm Ø/500_mm	ĸ	22 mm 🗆/600 mm mm 🗆/ mm	Y Y	22mm Ø/ 600mm	Y Y		
.1.13	Sill beam anchors/ horizontal spacing	450 mm A-307	22mm Cl. SD0mm	ĸ	20_mm Ø/600_mm	K	22 mm 0/600 mm	Y	22mm Ø/ 600mm	Y		
.1.14 .1.15	Material specification of sealing faces	450 mm A-307 A-240 SS-304	ASTM A-276 TYPE 304	Y	20_mm Ø/600_mm A276-304 or 00Cr19Ni or	Y	22 mm 1/600 mm ASTM A276, gr 304L	Y	22mm Ø/ 600mm ASTM A276 Type	Y		
.1.16 .1.17	Thickness of sealing faces Material specification of bumper tracks	10 mm 300/350W	10mm ASTM A36	Y Y	equiv. 10_mm A276-304 or 00Cr19Ni or	Y Y	10 mm CSA G40.21 300W /	Y Y	304 16mm ASTM A276 Type	Y Y		
6.1.18	Thickness of bumper tracks	12 mm	Snum	N	15_mm	Y	10 mm (To be revised to	к	16mm	Y		
6.1.19	Hardness of bumper tracks	92-107 BHN	120-160 HB	Y	BHN 170	Y	12 mm) 128 BHN	Y	187	Y		
5.1.20	Material specification of backing members	300W	Not applicable	N	Mazelshifer (2345 m equivel.	N	CSA G40.21 300W / 350W	Y	ASTM A36	Y		
5.1.21	Second stage concrete volumes	388 m3	152m ³	Y	151_m³ /bəy; 1812 m³ total (AH-Q12)	Y	170 m² - Q12 clarification answer - 62m3 per draft tube stoplog slot	Y	167m³	Y		
.2	POWERHOUSE DRAFT TUBE STOPLOGS	400.00			10	v		V	-			
5.2.1a 5.2.1	Material specification	4 ea. bay 300W	CSA G40.21-04 350 WT	Y	A5296130 可设备带。而	N	CSA G40.21 300W /	Y	CSA LING	K		
5.2.2	Thickness of skin plate	22 - 55 mm	25mm	Y	Pittiwel 24_mm	Y	350W 29 mm	Y	28 mm	Y		
5.2.3 5.2.4	Minimum thickness of structural parts Height of top gate sections (seals compressed)	10 mm	12,5mm 2,596m	Y	10_mm 2.625 m	Y Y	10 mm 3 m	Y Y	10 mm 2.6m	Y Y		
5.2.5	Height of intermediate gate sections (seals compressed)	2 600 mm	2.596m	Y	2.625_m	Y	2.5 m	Y	2.6m	Y		
5.2.7	Weight of top gate sections (seals compressed)	13 500 kg	25558kg	Y	26,000_kg	Y	20 635 kg	Y	26600kg	Y		
5.2.8 5.2.9	Weight of intermediate gate section Weight of bottom gate section	13 000 kg 13 000 kg	25558kg 25558kg	Y Y	26,000_kg 26,000_kg	Y Y	19 290 kg 19 705 kg	Y Y	27400kg 32800kg	Y Y		
5.2.10	Material and type of seals	Elastomer Solid J	_SBR/_Elastomeric bulb J seals	Y	SBR_/_J-Type_	Y	RUBBER /BULB J- SEAL/FLAT SEAL FOR	Y	CR/ "J", "I"	Y		
6.2.11	Side seal distance between seal centres	11 500 mm	11822m	Y	11.42_m	Y	SILL CONTACT 11.6 m	Y	11.5125m	Y		- 1
6.2.12	Lintel seal Elevation – bottom seals compressed	-17.08 m	-17,08m	Y	-17.08_m	Y	10.4 m HEIGHT	K	10.35m	N		
		1 1 1 00 min		1	1			1	Concentration 11	1	,	1

	Technical Bid Evaluation		Title Package No 1	Su	pply / Install Powerhous	e and	Spillway Hydro-Mech	anical	Equipment	19	Revision No.: 01	3	
			Tag No.:	Сп	0032	Clier	nt:	L	NALCOR	LS	Rev. Date.: 2013-06-1 Project No.: 505573	3	1
ltem	Description	Bidder Specified Value or	HABS Proposed	1	SENS Proposed	Int	LEAFS Proposed	t	Jets Proposed	nt	Proposed	t	
Number		Reference	<i>i</i> ,			mplia		molia		mplia		mplia	
6.2.14	Overall depth of gates (seal face to back of stoplog)	1 400 mm ??	1982 2 Genvery	K	2 580 mm 1470 mm	ů v	1 535 mm	ů v	1559mm	ů v		ŝ	
		1 100 100 12	A SALES IN THE		(Q33 Clarifications - We		1 555 1111		15531111				
					confirm that we can accomodate this final								
					depth of the stoplogs								
0045			Section and the		adjustment)							_	
6.2.15	Load bearing guides centre distance Load bearing guides loading – normal operating conditions	11 700 mm VTS	12088m 272MPa	VTS	11.790_m 67 N/mm²	VTS	11.8 m 652 MPa (HERTZ	Y VTS	12.112m 19.2MPa	Y VTS		-	
6.2.17	Load bearing guides loading - unusual operation conditions	VTS	286MPa	VTS	70 N/mm ²	VTS	CONTACT STRESS) 708 MPa (HERTZ	VTS	22.5MPa	VTS		-	
6.2.18	Material specification of bumpers	VTS	ASTM B584-C92300	VTS	A276-304 or 00Cr19Ni or	VTS	CONTACT STRESS) BRONZE	VTS	ASTM B21	VTS			
0.010					equiv.								
6.2.20	Bumper loading – normal operating conditions Bumper loading – unusual operation conditions	VTS	286MPa Not applicable**contac		20 N/mm ²	VTS	N/A N/A	VTS	1.1 MPa 1.4 MPa	VTS VTS		-	
			pressures need not to be	e	-22								
			exceptional conditions										
6.2.21	Description of spring-loaded rollers	VTS	Not applicable	VTS	Rubber Spring	VTS	LEAF SPRINGS	VTS	N/A	VTS			
6 2 22	Hoist load required to lift top stoplog section:						REAM)						
6.2.22.1	At balanced pressure	18 000 kg	40000kg	Y	28,100_kg	Y	26 770	Y	41000kg	Y			
6.2.22.2 6.2.23	At 2.0 m differential pressure Hoist load required to lift heaviest gate section	32 000 kg 32 000 kg	46000kg	Y Y	49,000_kg 28,100_kg	Y	N/A 26 770	Y	57000kg	Y			
6.2			10000mB		10,100_NB	Ĺ				Ĩ			
6.3.1	Height of Lift Beam	1000 mm	2945m	Y	1.50_m	Y	2,2 m	Y	1.2m	Y		-	
6.3.2	Weight of Lift Beam	5 000 kg	6067,2kg	Y	3,000_kg (Q4	Y	3250 kg	Y	9200kg	Y			
6.3.3	Latching mechanism description		Lifting Spec (from HNA)	Y	Hook, mechan. engaged	Y	TORGUE MOTOR	Y	Balance weight	Y			
							RELEASE						
							MECHANISM. COUNTER-WEIGHT TO						ľ
							ENGAGE					-	
6.4	POWERHOUSE DRAFT TUBE STOPLOGS – DOGGING / STORAGE DEVICES												
6.4.1	Dogging devise Weight - each	VTS	83,3kg	Y	510_kg	Y	60 kg	Y	2000kg	Y			
6.4.3	Dogging beam profile/depth/moment of inertia	VTS	Rectangular (63mm)	xY	1/260mm/5x10E07mm ⁴	Y	HSS_/_152_mm/14 X	Y	300/200mm/7.23x1	Y		-	
			63mm) / 582mm /	/			10^6 mm4		0^6mm4				
6.4.4	Block-out profile	VTS	Height: 365mm Width		no block out, HILTI	VTS	N/A	VTS	N/A	VTS			
			680mm (direction or	f									
			500mm (direction o	f									
6.4.5	Top support mechanism	VTS	flow) Trestle	VTS	Stoplogs are standing	VTS	SLIDING BEAM WITH	VTS	N/A	VTS			
					free		LOCK PIN						
6.4.6	Operation description	VTS	Manual	VTS	Cradles, no operation	VTS	SLIDING BEAM LOKABLE IN BOTH	VTS	manual(hinge)	VTS			
							EXTENDED OR						
							POSITION					-	
6.5	POWERHOUSE DRAFT TUBE OVERHEAD CRANE	- 1150 mm	ALL DE PRINT OF	N	1.0	v	1.9 m 11E0mm OK	X	1.1	V			
6.5.1	Overall height (from top of rail)	< 1150 mm	d. 590000	N	Andritz to comply with	Y	1.8 m 1150mm OK	Y	1.1m	Y			
					the 1150 mm)		an and the second						
6.5.2	Overall length	VTS	7.800m	Y	8.3 m	Y	9.480 m	Y	11.084m	Y			
6.5.3	Overall width	VTS	8.500m	Y	~_8.0_m	Y	8.194 m	Y	8.5m	Y			
6.5.5	Total weight of crane (inc. trolley, ropes and sheave blocks)	24 000 kg	15000kg	Y	7.8_m ~15,000_kg	Y	30800 kg	Y Y	13000kg	Y			
6.5.6 6.5.7	Total weight of trolley (inc. ropes and sheave blocks) Bated canacity	VTS 32.000 kg	5681kg	Y	~5,000_kg	Y Y	19300 kg 34800 kg	Y	10000kg	Y			
		SE SOO NG	TOODOKE		Clarification - Crane Cap		04000 Ng						
6.5.8	Rope drum(s)		-	-	= 30 MT + Kh)							-	
6.5.8.1	Material	300W	Steel	к	\$355	K	Steel A106 Gr. B	Y	ASTM A36	Y			
6.5.8.3	Rope drum length	VTS	TBA	VTS	5000_mm	VTS	4862 mm	VTS	2000mm	VTS			
6.5.8.4	Grooved length (Left hand/ right hand) Type of bearings	VTS VTS	TBA	VTS	2000/2000_mm	VTS	2224/2224 mm Spherical Boller	VTS	1500(750+750)mm Ball bearing	VTS			
6.5.8.6	Bearing capacity	VTS	ТВА	VTS	1000046 N	VTS	515 KN(Static)	VTS	52245 kg	VTS			
6.5.9 6.5.9.1	Wire ropes Type of material	CSA G4-M IPS Galv, w/SFC	Steel	N	1960N/mm2 galvanized	Y	Galvanized Steel	Y	CSA G4	Y			
6 5 9 9	Country of many factors	CANADA UTO			Pil	X	TRO	N	KODEA	v			
0.0.9.2		GANADA / US / EUR	USA	r.	EU	e Ve	1DG	1	AUREA 5.40	1			
6.5.9.3 6.5.9.4	Construction	6 x 19 - 6 x 37	5/1 6PD x 9/16	Y Y	4 Revised to 5 or + veropower8 or similar	Y	6 X 19 Fibre Core	Y	6 x 19	Y			
6.5.9.5	Rope diameter	VTS	9/16 mm	Y	20_mm	Y	16 mm (Q17 - 22mm	Y	30mm	Y			
6.5.9.6	Breaking load	VTS	321000g	N	400.3_kN Revised to	к	17,900 kg (Q17 - 32 200	Y	52960kg	Y			
6507	Number of follo	C Jamese			larger rope diam.	X	6x19 wire rope)		4.4	V		-	
ບ.ວ.ສ./	NUMBER OF FAILS	VIS	2 X 4	r	There are 2 ropes with 8		2 A D	1	++4	1			
6510	Hoist drive		-		falls each.								
6.5.10.1	Motor rating	20 kW @ 3 m/min	22,5kW	Y	30_kW	Y	22.4 kW	Y	BOKM	N		-	
6.5.10.2	Motor rated full load speed Bated voltage /# phase/frequency	1200 rpm 575V/3P/60Hz	1150rpm	Y	1800_rpm	Y	1750 rpm 600/3/60 V/Pb/Hz	Y	1160rpm 600/3/60	Y		1	2
65104	Starting current	1/TP	TBAA	VTC	301 14 4	VTS	TBC	NIA	V/Ph/Hz	VTC			X
6.5.10.5	Rated full load current	VTS	31A	VTS	47.8_A	VTS	твс	N/A	112A	VTS		-	1
6.5.10.6	Motor manufacturer	VTS	Reuland	Y	Siemens, ABB, GH, Leroy	VTS	Marathon	VTS	HYUNDAI	Y			
					somer or equivalent		er og salat						
6.5.10.7 6.5.10.8	Motor Class Locked-rotor current	VTS VTS	TBA TBA	N/A	F/B 419A	VTS	CMAA"B" TBC	VTS VTS	IP44 680	K VTS			
6.5.10.9	Code letter	G	ТВА	N/A	G	Y	TBC	VTS	к	к			
6.5.10.10 6.5.10.11	Design letter Rated temperature rise	Design B Class B	TBA B	N/A Y	324T 100	N/A Y	IBC B	N/A Y	B 80 deg C	Y Y		-	
6.5.10.12	Insulation system class	Class: F	н	Y	F/B	Y	F	Y	F	Y			
6.5.10.13 6.5.10.14	Time rating	40 Degree C Continuous	40 30 min	ĸ	45	K	40 DEG. C Continous	Y	40 deg C 30min	Y K			
6.5.10.15	Secondary volts/# phase/full load current (for wound-rotor induction	VTS	N/A	N/A	no V/Ph/A	N/A	TBC	N/A	600/3/112V/Ph/A	N/A			
6.5.10.16	Motor Thermally protected (Yes or no)	VTS	Yes	Y	yes	Y	Yes	Y	Yes	Y			
6.5.10.17	Motor Space Heater- rated voltage/#phase/watts	120V/1P/VTS	No	к	120V/1Ph/40W	VTS	240/1/100 V/Ph/W	VTS	600/3/3000 V/Ph/W	к			
6.5.10.18	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	No	к	defined during detail	VTS	240/1/50 V/Ph/W	VTS	600/3/3000 V/Ph/W	к			1
6.5.10.19	Motor full load efficiency	Premium high	ТВА	N/A	90%	Y	твс	к	74%	к			
6.5.10.20	Power factor	VTS	TBA	N/A	0.86	Y	TBC	VTS	65%	к			ĺ.
5.5.10.21 5.5.10.22	Enclosure type	1.15 TEFC	1,0 TENV	N Y	1.15 totally enclosed (IP54)	Y	TEBC	Y	TENV	Y			
6.5.10.23	NEMA Frame type	NEMA MG-1	ТВА	N/A	324T	N/A	286 TD	N/A	A193 Gr.2H	N/A			
5.5.10.24 5.5.10.25	INEMA Design Inverter Duty (yes/no)	VTS VTS	B Yes	N/A	MG1 yes	N/A	Yes	N/A N/A	B	N/A N/A			
3.5.11	Gearbox		70140		cu c	V	000 222	K		v			-
0.0.11.1	Gearbox manuacurer	SEW EUH. (Equiv.)	LEWAR	1	on, siemens, Nord SEW or equiv.		CON 111	N.	TUNDAI				4
6.5.11.2	Gearbox drive ratio	Fully enclosed	ТВА	VTS	~264	VTS	186.9	VTS	1/100	VTS			1 1
6 E 40	Brakas									_			4

2.8	Technical Bid Evaluation		Title	Sup	ply / Install Powerhous	e and	Spillway Hydro-Mecha	nical	Equipment		Revision No.: 01	
			Package No.: Tag No.:	CHO	032	Proje	ect Title:	L	CP-MUSKRAT FAL	LS	Rev. Date.: 2013-06	i-13
		Bidder	HABS		SENS	oner	LEAFS		Jets		Froject No.: 50557	
em umber	Description	Specified Value or Reference	Proposed	pliant	Proposed	pliant	Proposed	pliant	Proposed	hiant	Proposed	tucil
				Com		Com		Com		E Com		and of
.12.1	Holding brake manufacturer	ELEVANJA	ZENAR	Y	Siebre, Stromag, Antec or equiv.	Y	Mondel	Y	BANDOHOISTCRA NE	Y		
5.12.2	Holding brake type	Magnetic Drum	SHOE	VTS	electrohydraulic disc	VTS	Electromechanical shoe	VTS	DC	VTS		
.12.3	Holding brake rated torque	VTS	тва	VTS	5.5_kN-m	VTS	0,203 kN-m	VTS	2.8kN-m	VTS		-
5.13 5.13.1	Gantry drives Gantry travel speed	30 m/min	30m/min	v	15 months	N	30 m/min	v	20m/min	×		
.13.2	Number of gantry drives	4	2	Y	2	Y	2	Y	2	Y		
.13.3	Motor rating Motor rated full load speed	VTS	2 x 7,5kW	VTS	2,0_kW ~1800_rom	VTS	2.24 1750 rom	VTS	2.2kW	VTS		
.13.5	Rated voltage /# phase/frequency	575V/3P/60Hz	575 / 3 /60V/Ph/Hz	Y	575/3/60_V/Ph/Hz	Y	600/3/60 V/Ph/Hz	Y	600/3/60	Y		+
13.6	Starting current	VTS	тва	N/A	5,3_A	N/A	Sew Eurodrive	N/A	V/Ph/Hz 30A	N/A		
13.7	Rated full load current	VTS	8,5A	N/A	3,0_A	N/A	TBC	N/A	5A	N/A		
.13.0	Motor manufacturer	VIS	Reuland	N/A	SEW, Nord, Flender	N/A	IBC	N/A	CRANE	N/A		_
13.9 13.10	Motor Class Locked-rotor current	VTS VTS	TBA	N/A	IE1 26A	N/A	TBC	N/A N/A	IP44 30	N/A N/A		_
13.11	Code letter	G	ТВА	N/A	not defined	N/A	твс	N/A	M	N/A		
.13.12	Rated temperature rise	Class B	B	N/A Y	CSA C22.2 60°C	N/A K	B	N/A Y	B 80 deg C	Y Y		
13.14	Insulation system class	Class: F	н	Y	F/B	Y	F	Y	F	Y		
13.15	Time rating	40 Degree C Continuous	40 30 min	ĸ	-40 – 30°C S3, ED 60	K K	40 Deg. C 60 min.	к К	40 deg C 30min	ĸ		-
13.17	Secondary volts/# phase/full load current (for wound-rotor induction	VTS	N/A	N/A	no_V/Ph/A	N/A	TBC	N/A	600/ 3 /60 V/Ph/A	N/A		
13.18	Motor Thermally protected (Yes or no)	VTS	Yes	Y	Yes	Y	Yes	Y	Yes	Y		
.13.19	Motor Space Heater- rated voltage/#phase/watts	120V/1P/VTS	No	ĸ	120V/1Ph/40W	Y	240/1/50 V/Ph/W	к	600/ 3/2200 V/Ph/W	ĸ		
13.20	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	No	к	no	к	240/1/50 V/Ph/W	к	600/ 3/2200	к		
13.21	Motor full load efficiency	Premium high	ТВА	N/A	90%	Y	твс	N/A	74%	к		-
13.22	Power factor	VTS	ТВА		0,86		TBC		64%			-
13.23	Service factor Enclosure type	1.15 TEEC	1,0 TENV	N	1,15 IP 54	Y	1.1 TBC	N N/A	1.0/30min TENV	N		_
13.25	NEMA Frame type	NEMA MG-1	ТВА	N/A	not defined	N/A	DR 100	N/A	A193 Gr.2H	N/A		
13.26	NEMA Design	VTS	B	Y N/A	not defined	N/A	TBC	N/A	B	Y N/A		
13.28	Gearbox manufacturer	SEW EUR. (Equiv.)	ZENAR	Y	SEW, Flender Nord	Y	Sew Eurodrive	Y	BANDO HOIST	Y		+
13.29	Gearbox drive ratio	VTS	ТВА	VTS	~100	VTS	55.27:1	VTS	CRANE 1/22	VTS		
13.30	Wheel diameter/spacing	VTS	431 mm Ø/mm	VTS	315_mm Ø/mm	VTS	305 mm ⊡/1524 mm	VTS	600mm Ø/1000mm	VTS		
13.31 13.32	Wheel flange height	VTS	TBA	VTS	80_mm 15_mm	VTS	90 mm 19 mm	VTS	20mm	VTS		
13.33	Number of wheels per corner	VTS	1	VTS	1	VTS	2	VTS	8	к		
13.34 13.35	Maximum vertical load per wheel Maximum lateral load per wheel	VTS	ТВА	VTS	21000_kg 5000 kg	VTS	11900 kg 1200 kg	VTS	3(5)kg 300kd	к К		
13.36	Maximum braking load per wheel	VTS	TBA	VTS	47000_kg	VTS	BETH104	VTS	SOUND	к		
13.37	Required gantry rail size Gantry rail centres	Beth 175# 7800mm	CR104 7800mm	VTS Y	A65	VTS N	not answered 7800	VTS Y	50 7800mm	VTS Y		-
13.39	Allowable rail centre tolerance	VTS	+/9,5mm	VTS	+/5_mm	VTS	+/-12	VTS	+/-1mm	VTS		
13.40 14	Gantry spacing End Stops	VTS	TBAmm	VIS	8500_mm	VIS	TBC	VIS	9184mm	VIS		_
14.1	End Stops mounting length along crane beam	VTS	TBAmm	VTS	~300_mm	VTS	1750 mm	VTS	350mm	VTS		
.14.2	End stop description/mounting details	VTS	тва	VTS	Steel profile attached to	VTS	Bolted	VTS	DWG. No. A-M-12	VTS		
.15	Power conductor											
.15.1	Construction Type	Busbar	TBA	N/A	insulated bus bar	Y N/A	Box Type AKAPP	Y	Trolley Bus bar	Y		
.15.3	Length	VTS	TBAm	N/A	160_m		155 m		155.8m			
15.4	Incoming cable size	VTS	TBA	N/A	4x16mm ²	_	TBC		4x16			_
.16.1	Control type	Pendant	VFD	к	frequeny inverter Yes	Y	TBC	к	Remote	к		
.16.2	Rotary limit switch manufacturer	VTS	GEMCO	N/A	SEW, Nord Flender	N/A	Stromag-RLS51-75-SP	N/A	BANDO HOIST	N/A		
.16.3	Control cabinet manufacturer	VTS	ТВА	N/A	Rittal or equivalent	N/A	Eurobex	N/A	BANDO HOIST	N/A		
.16.4	Control power	VTS	120V/Ph/Hz	N/A	24 or 110_V/Ph/Hz	N/A	110/1/60 V/Ph/Hz	N/A	100/1 /60	N/A		-
16.5	General Arrangement drawing of the hoist assembly.	VTS	Supplied	N/A	acc. attachment	N/A	See attached	N/A	V/Ph/Hz DWG. No. A-M-12	N/A		
.16.6	Details of motor	VTS	ТВА	N/A	ABB, SEW, Nord	N/A	Eurodrive Std. catalogue	N/A	DWG. No. A-M-12	N/A		
.16.7	Details of holding brake operation	VTS	Shoe Brake	N/A	Siebre, Stromag, Antec	N/A	Mondel Std. catalogu	N/A	DWG. No. A-M-12	N/A		
.16.8	Extreme upper limit switch make and model	VTS	ТВА	N/A	or equiv. SEW, Siemens, Schneider	N/A	Allen Bradley-802 ATP	N/A	BANDO HOIST	N/A		
							4		CRANE LS-I,IIA			_
16.9	Details of drum dogging device limit switch	VTS	Geared	N/A	N/A	N/A	Turck	N/A	BANDO HOIST CRANE	N/A		
16.10	Normal upper limit switch make and model	VTS	Geared	N/A	SEW, Siemens, Schneider	N/A	Stromag-RLS51-75-SP	N/A	BANDO HOIST CRANE	N/A		
.16.11	Lower limit switch make and model	VTS	GEMCO	N/A	SEW, Siemens, Schneider	N/A	Stromag-RLS51-75-SP	N/A	Kg auto/ KG-L001	N/A		
16 12	Hoist load cell make and model	VTC	ТВА	NVA	Tersis	NI/A	Omena- BI SS1 75 CD	N/A	Kg auto/ KG-L001	N/A		
.16.13	Slack rope detection make and model	VTS	TBA	N/A	Not defined yet	N/A	Omega- RLS51-75-SP	N/A	BANDO HOIST	N/A		-
.16.14	Unbalance wire rope load detector make and model	VTS	TBA	N/A	Tecsis	N/A	Load cell if required	N/A	CRANE BANDO HOIST	N/A		
16 15	Proximity switches make and model (for end of travel)	VTS	TBA	N/A	Siemens telemechanic	N/A	Flip Flop Switch see	N/A	CRANE BANDO HOIST	N/A		
		10	, or	NOA	Schneider or equivalent		spec sheet		CRANE			
.16.16	Overspeed detector make and model	VTS	ТВА	N/A	SEW, Nord	N/A	TBC	N/A	BANDO HOIST	N/A		-
			-						CRANE			
	TRASH CLEANING SYSTEM											_
	TRASH CLEANER											
	Max. Intake Face Water Flow Velocity Max. Side Velocity at Back Bare' Face	1.1 m/s										
.1	Weight of trash cleaner	100 000 kg	~165000kg	Y	~165,000_kg	Y	165,000 kg	Y	165,000kg	Y		
2	Gantry structure rail centre distance	9 050 mm	9,05m	Y	9.05_m	Y	9.05 m	Y	9.05m	Y		_
4	Length of gantry structure at downstream rail	VTS	~13,50m		~13.50_m		13.5 m		13.5m			
5	Height of machinery deck above gantry rails	VTS	~10,00m		~10.00_m		10 m		10m			
7	Depth of extended trash rake below gantry rails	EL3.70	5,00m	к	-2 프 H	к	2.2 m	к	-2.2m	к		
В	Depth of extended trash buckets below gantry rails at 10 m	EL, -3.70	-7.200	к	2.20_m	к	2.8m	к	ā (Pm.	к		
)	Rated debris load of trash rake at 10 m upstream of Intake	2 500 kg	~3500kg	Y	~3,500_kg	Y	3500 kg	Y	3500 kg	Y		
10 11	Hated debris load of trash buckets at 10 m upstream of Intake Cycle; water surface to trashrack base to water surface	2 500 kg	~3500kg ~260sec	Y Y	~3,500_kg ~260_sec	Y	3500 kg 260 sec	Y Y	3500 kg 260 sec	Y		
12	Cycle: water surface to debris trap to 10 m upstream and back to	20 min	~270sec	Y	~270_sec	Y	270 sec	Y	270 sec	Y		
13	water surface Cycle: water surface to trash receptacle to water surface	5 min	~100sec	Y	~100_sec	Y	100 sec	Y	100 sec	Y		-
.14	Height of trash cleaner arm above gantry rails when raised	VTS	~32,00m	Y	~32.00_m	Y	32 m	Y	32 m	Y		_
.10	ciearier rake manufacturer/model no./Width	MUTH M-7000	7000/_~2400mm	ľ	7000/~2,400mm	1	WIGHT/WI-7000/2.4 m		/2,400mm	1		
.16	Cleaner rake capacity	600 mm - 5 000 kg	_1,00/_3500m3/kg	Y	1_/_3500_m ³ /kg	Y	1.00/3500 m3/kg	Y	1/3500m3/kg	Y		
.17	Cleaner clam bucket manufacturer/model no./width	2 m W x 1.2 m D	_Kinshofer /_D27H / 2142mm or similar	Y	Kinshofer/D27H/2412m m or equivalent	Ŷ	Kinshofer/D27H/2142 mm or similar	Y	Kinshofer/D27H/2,1 42mm(or similar)	Y		
18	Cleaner clam bucket capacity	5 000 kg	_0,80/_3500m3/kg	Y	0.80_/_3,500_m ³ /kg	Y	0.80/3500 m3/kg	Y	0.8/3500m3/kg	Y		
19	Cleaner closed bucket manufacturer/model no./width	2.4 m W	_Terex/_TMG08/_2520	Y	Terex/TMG08/2520mm	Y	Terex/ TMg08/ 2520 mm	Y	Terex/TMG08/2,520	Y		
20	Cleaner closed bucket capacity	5 000 kg		Y	0.80/ 3.500 m ³ /kg	Y	0.08/3500 m3/ka	Y	0.8/3500m3/ka	Y		
21	Machinery deck rotation speed	1 rpm	~0 - 1rpm	Y	~0-1rpm (variable)	Y	~0-1 rpm, variable	Y	0 - 1 rpm,	Y		
22	Minimum radius of trash cleaner retracted	VTS	~11,00m	Y	~11.00_m	Y	~11.00 m	Y	variable 11m	Y		
23	Radius of trash cleaner counterweight	VTS	~8,00m	Y	~8.00_m	Y	~8.00 m	Y	8m	Y		
.25	Maximum radius of trash cleaner 5000 kg load	10 m	16m	Y	16_m	Y	16 m	Y	16m	Y		
.26	Maximum radius of trash cleaner 9000 kg load	N/A	11m	Y	11_m	Y	11 m	Y	11m	Y		

	rechnical Bid Evaluation		Package No.:	СНО	032	Proje	ect Title:	L	CP-MUSKRAT FAL	LS	Rev. Date.: 2013-06-1	3
		Bidder:	HABS		SENS	Clier	LEAFS		Jets		Project No.: 505573	
n mber	Description	Reference	Proposed	omplian	Proposed	omplian	Proposed	omplian	Proposed	malland	Proposed	moliant
27	Height of underside hoist beam above gantry rails	7 500 mm	~5,50m	VTS	~5.50_m	UTS VTS	~5.50 m	VTS	5.5m	VTS		0
28 29	Power cable	VIS	~7,50m	VTS	~7.50_m	VTS	~7.5 m	VTS	7.5m	VTS		
29.1	Reel diameter	VTS VTS	~1,5 / 3,5m ~160 (180)m	VTS	~1.5/3.5_m ~160 (180) m	VTS	~1.5/3.5 m	VTS	1.5/3.5 m 160(180)m	VTS	Why two values ?	-
29.3	Cable type	VTS	3x70 + 3x35 / 3 mm2	N/A	3x70+3x35/3mm ²	N/A	3X70+3X35/3 mm2	N/A	100(180)	N/A		-
9.4	Cable manufacturer	VTS	TKD or similar	N/A	TKD or similar	N/A	TKD of similar	N/A	3x70+3x35/3mm2 TKD or similar	N/A		
10	Gantry drives Gantry travel speed	30 m/min	~7.5 - 70m/min	Y	~2 5-20 m/min	Y	~2 5-20 m/min	v	25,20 m/min	v		
30.2	Number of gantry drives	4	4	Y	4	Y	4	Y	4	Y		
30.3 30.4	Motor rating Motor rated full load speed	VTS VTS	6,60kW 1755rpm	VTS VTS	6.60_kW 1755 rpm	VTS VTS	6.60 kW 1755 rpm	VTS VTS	6.6kW 1755rpm	VTS VTS		-
30.5	Rated voltage /# phase/frequency	575V/3P/60Hz	575V / 3ph / 60Hz	Y	575/3/60_V/Ph/Hz	Y	575V/3Ph/60Hz	Y	575V / 3Ph / 60Hz	Y		
80.8	Rated full load current	VTS	9,0 / 60Hz	N/A	9_A	N/A	9.0 A/60 Hz	N/A	9.0A / 60Hz	N/A		
8.0 0.9	Motor manufacturer Motor Class	VTS	Demag Cranes	N/A	DEMAG	N/A	Demag Cranes	N/A	Demag Cranes	N/A		-
		VIG	ic I standard enciency		TE I Standard Efficiency	19/01	Efficiency		Dfficiency	1710		
0.10 0.11	Locked-rotor current Code letter	UTS G	78 A Not defined	N/A	78A_ Not defined	N/A N/A	78 A Not defined	N/A N/A	78A Not defined	N/A		
0.12	Design letter	Design B	CSA, Specification C22.2	Y	CSA, Specification C22.2	Y	CSA, Specification	Y	CSA, Specification	Y		
0.13	Rated temperature rise	Class B	Motor 60oC, Gearbox	Y	Motor 60°C, Gearbox	Y	Motor 60 deg C,	Y	Motor 60?C,	Y		-
0 14	Insulation system class	Class: F	50oC	×	50°C	v	Gearbox 50 deg C	~	Gearbox 50?C	v		-
0.15	Pated ambient temperature	10 Degree C		, ,	remperature class P	N.	10 00 des C (May CO	,	F	1 V		-
G. 10		40 Degree C	-+u300C (max, 600)	'	-40 - +30 C (max. +60°C)		deg C)	1	60?)			
0.16	Time rating	Continuous	\$3,60% ED, Inverter	Y	S3, 60% ED, inverter	Y	53.60% ED, Inverter operation	Y	S3,60%ED, Inverter operation	Y		
0.17	Secondary volts/# phase/full load current (for wound-rotor induction	VTS	NoV/Ph/A	N/A	No_V/Ph/A	N/A	No V/Ph/A	N/A	NoV/Ph/A	N/A		
0.18	Motor Thermally protected (Yes or no)	VTS	Yes – 3 PTC Thermistors	N/A	Yes ~ 3PTC Thermistors	N/A	Yes - 3 PTC Thermistors	N/A	Yes - 3 PTC	N/A		-
),19	Motor Space Heater- rated voltage/#phase/watte	120V/1PA/TS	110-120 or 220	Y	110-220 or 220	Y	110-120 or 220-	Y	Thermistors	Y		-
			250V/1~/40V/Ph/W		250/1/40_V/Ph/W		250V/1~/40 W		250V / 1- /40W			
0.20	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	TBD	N/A	Later_V/Ph/W	N/A	rated voltage/#phase/watts tbd	N/A	LATERV/Ph/W	N/A		1
0.21	Motor full load efficiency	Premium high	-	N/A	90%	N/A	-	N/A	LATER	N/A		-
0.22	Power factor	efficiency	-	N/A	0.89	N/A	-	N/A	LATER	N/A		-
0.23	Service factor	1.15	-	N/A	1.15	Y	• 	к	LATER	N/A		
).24).25	Enclosure type NEMA Frame type	TEFC NEMA MG-1	IP 65 No	Y N/A	IP65 No	Y N/A	IP 65 No	Y N/A	No	Y N/A		
0.26	NEMA Design	VTS	No	N/A	No	N/A	No	N/A	No	N/A		
).27	Gearbox manufacturer	VTS	Yes Demag Cranes	Y Y	Period Cranes	Y	Demag Cranes	Y Y	Demag Cranes	Y Y		
0.29	Gearbox drive ratio	VTS	140	VTS	140	VTS	140 630mm diam/ 170 mm	VTS	140 630mm /170mm	VTS		-
0.31	Wheel width inside flanges	VTS	110mm	VTS	110_mm	VTS	110 mm	VTS	110mm	VTS		
).32).33	Wheel flange height Number of wheels per corner	VTS 2	25mm	VTS Y	25_mm	VTS Y	25 mm 2	VTS Y	25mm 2	VTS Y		-
).34	Maximum vertical load per wheel	VTS	~35000kg dynamic	VTS	~35,000_kg (dynamic)	VTS	~35000 kg dynamic	VTS	35000kg dynamic	VTS		
0.35 0.36	Maximum lateral load per wheel Maximum braking load per wheel	VTS	7000kg 60000kg static	VTS	~7,000_kg 60,000_kg	VTS	~7000 kg 60000 kg static	VTS	60000kg static	VTS		-
0.37	Required gantry rail size	175#	175-lb preferred	VTS	175 lb preferred	VTS	175-lb preferred	VTS	175 - Ib preferred	VTS		
).38).39	Allowable rail centre tolerance	9050 mm VTS	9050mm +/ 2mm		9050_mm +/2_mm		+/- 2mm		+/-2mm			
0.40	Gantry pivot spacing along upstream rail	VTS	~9000mm		~9,000_mm		~9000 mm		9000mm			
1	End Stops	V15	~11500mm	_	~11,500_mm		~11500 mm		11500000			-
1.1	End Stops mounting length along crane beam	VTS	~2 x 166mm	VTS	~2x166_mm	VTS	~2X166 mm Buffer (rubber)	VTS	2 x 166mm Buffer (rubber)	VTS		
2	Power conductor	10	Burrer (rubber)	VIO	buner (rubber)	V IG			Buildi (idoboli)			
2.1 2.2	Construction Type	VTS	Motor Cable Drum LTM or similar		Motor Cable Drum		Motor Cable Drum LTM or similar		LTM or similar			-
2.3	Length	VTS	~160 (180)m		~160 (180)_m		~160(180) m		160 (180)m		Why two values ?	
2,4 3	Trash Cleaner hydraulic power unit (HPU)	V15	U = 42mm		D=42mm		D=42 mm		D = 42 mm			
3.1	Nominal pressure	4000 psi	27500kPa	Y	27500_kPa	Y	27500 kPa (275 bar) 30000 kPa (300 bar)	Y	27500kPa(275bar) 30000kPa(300bar)	Y		-
3.3	Minimum operating pressure	VTS	< 27500kPa	VTS	< 27500_kPa	VTS	<27500 kPa (<275 bar)	VTS	<27,500kPa(<275	VTS		
3.4	HPU manufacturer	Rexroth (Equiv.)	Bosch - Rexroth	Y	Bosch Rexroth	Y	Bosch-Rexroth	Y	Bosch - Rexroth	Y		
3.5 3.6	Number of hydraulic pumps Pump discharge	4 400 L/sec approx.	4 ~6.53L/sec	VTS	4 ~6.53 L/sec	VTS VTS	4 ~6.53L/sec	VTS VTS	4 6.53L/sec	VTS		-
3.7	Pump motor speed rated	rpm	1800rpm	VTS	1800_rpm	VTS	1800 rpm	VTS	1800rpm	VTS		
.8	Gantry travel speed	> 20 m/min	~0 -20m/min	Y	~0-20_m/min	Y	~0-20 m/min, variable	Ŷ	0 -20m/min, variable	Ŷ		
3.9 3.10	Number of gantry drives Motor rating	4 VTS	4 4 x 37kW	Y VTS	4 4x37 kW	Y VTS	4 4X37 kW	Y VTS	4 4 x 37kW	Y VTS		
3.11	Motor rated full load speed	VTS	1800rpm	VTS	1800_rpm	VTS	1800 rpm	VTS	1800rpm	VTS		-
3.12	Hated vollage /# phase/frequency	575V/3P/60Hz	600V / 3Ph / 60HzV/Ph/Hz	Y	600/3/60_V/Ph/Hz	Y	600V/3Ph/60Hz	Y	600V / 3PH /60Hz	Y		
3.13	Starting current	VTS	~135A	N/A	~135_A	N/A	~135 A	N/A	135A	N/A		-
3.14 3.15	Pump Motor manufacturer	VTS	Bosch-Rexroth Standard	Y Y	Bosch-Rexroth	Y	Bosch-Rexroth Standard	Y	Bosch - Rexroth	Y		
3 16	Pump Motor Class	VTC	B	NZA	B	N/A	B	N/A	Standard B	N/A		-
3.17	Locked-rotor current	VTS	~225 A	N/A	~225A	N/A	~225 A	N/A	225A	N/A		
8.18 8.19	Code letter Design letter	G Design B	V	N/A	V	N/A	A	N/A N/A	A	N/A		-
3.20	Rated temperature rise	Class B	70	N/A	70	N/A	70	N/A	70	N/A		
3.21 3.22	Insulation system class Rated ambient temperature	Class: F 40 Degree C	F (DT=80K) 40oC	N/A	F (DT=80K) 40°C	N/A	+ (D1=80k) 40 deg C	N/A N/A	+ (DT = 80K) 40?C	N/A		
3.23	Time rating	Continuous	60 min/h	N/A	60min/h	N/A	60min/h	N/A	60 min/h	N/A		
5.24	secondary voits/# pnase/tull load current (for wound-rotor induction motor)	VIS	draftedV/Ph/A	N/A	drafted_V/Ph/A	N/A	Actual not orafter V/Ph/A	NV/A	drafteV/Ph/A	N/A		
3.25	Motor Thermally protected (Yes or no)	VTS 120V/1PA/TO	Yes	N/A	Yes	N/A	Yes 110-127V/Ph/M	N/A Y	Yes 110 -127\//Ph/M	N/A		-
3.26 3.27	Oil Reservoir Heater- rated voltage/#phase/watts	120V/1P/VTS	120V/Ph/W	Y	120/1_V/Ph/W	Y	120V-Ph/W	Y	120V/Ph/W	Y		1
3.28	Motor full load efficiency	Premium high efficiency	~94,5	Y	~94.5	Y	~94.5	Y	94.5	Y		
3.29	Power factor Service factor	VTS	0,89	Y	0.89	VTS Y	0.89	VTS Y	0.89	Y		+
1.31	Enclosure type	TEFC	Casting	Y	Casting	Y	Casting	Y	Casting	Y		1
3.32	NEMA Frame type	NEMA MG-1	405S / 444 or similar	Y	405S/444 or Equivalent	Y	405S/444 or similar	Y	405S / 444 or similar	Y		
3.33	NEMA Design	VTS	в	Y	В	Y	B	Y	B	Y		1
3.34 3.35	Inverter Duty (yes/no) Sump tank dimensions: L/W/H	VTS VTS	No _~2,0m/ 1,3m/ 0.6m	N/A VTS	No ~2.0_m/ 1.3 m/ 0.6 m	N/A VTS	~2.0m/1.3m/0.6m	N/A VTS	No 2m/1.3m/0.6m	N/A VTS		
0.00		1.000				1.000	1500	1000	15001	Lore		-
3.36 3.37	sump tank reservoir volume Total oil volume of high pressure oil system	VTS VTS	~1500 LL ~1300 LL	VTS	~1500_L ~1300_L	VTS	~1500L	VTS	1300L	VTS		1-
3.38	Schematic drawing	VTS	Muhr	VTS	Muhr	VTS	Muhr	VTS	Muhr	VTS		
1 5	Machine room dimensions: L/W/H Trash Cleaner slewing drives	m x m x m]_~4,0m/_4,0m/_2,2m	VTS	~4_m/_4_m/_2.2_m	VIS	~4.um/4.0m/2.2m	VIS	4m/4m/2.2m	VIS		-
i.1	Slewing rotation speed	< 1 rpm	~0 - 1 rpm	Y	~0-1_rpm, variable	Y	~0-1 rpm variable	Y	0 - 1rpm,	Y		
5.2	Number of hydraulic motors	VTS	2	VTS	2	VTS	2	VTS	2	VTS		
.3	Hydraulic slewing motor rating	VTS	_See main pump 7.1.33	VTS	see main pump 7.1.33.	VTS	see main pump 7.1.33	VTS	See main pump 7.1.33.	VTS		
.4	Motor speed rated	VTS	See main pump	VTS	see main pump 7.1.33.	VTS	see main pump 7.1.33	VTS	See main pump	VTS		
5.5	Voltage	575V/3P/60Hz	7.1.33rpm See main pump	Y	see main pump 7.1.33	Y	see main pump 7.1.33	Y	7.1.33. See main pump	Y		
1		2. 0 T SI 100112	7.1.33V/Ph/Hz		see manipanip 7.1.55.				7.1.33.			
o.6	starting current	VTS	See main pump 7.1.33A	N/A	see main pump 7.1.33.	N/A	see main pump 7.1.33	N/A	zee main pump	N/A	-	

International December 2012 and Spin/Way Hydro-Amechanical Ecolumnical Ecolumni	-// 0			Title	Cum	ahu / Iwatall Dawashaw		Caillinen Hudeo Maab	onical			Devision No. 01
Package No.: CHOOZ Project Nr. (CHOUSE Project Nr. (CHOUSE) Petro CALL		Technical Bid Evaluation		Deelsene Ne :	Sup	piy / install Powernou:	se and	Spillway Hydro-wech	anical			Revision No.: 01
Ing no: Ing no: <t< th=""><th></th><th></th><th></th><th>Package No.:</th><th>CHU</th><th>032</th><th>Proj</th><th>ect Thie:</th><th>L</th><th>CP-WUSKRAT FA</th><th>LLS</th><th>Rev. Date.: 2013-06-13</th></t<>				Package No.:	CHU	032	Proj	ect Thie:	L	CP-WUSKRAT FA	LLS	Rev. Date.: 2013-06-13
Interment Description Specified Value or Reference Proposed Set No LEAPS Description Description Number Proposed Fig Proposed Fig Proposed Fig Proposed Fig 7.1.35.7 Full load current VTS See main pump 7.1.33, NA	-		Didde	Tag No.:	-	0510	Cilei		-	NALCOH	-	Project No.: 505573
Item Number Description Specified Value of Number Proposed Prop		les 1.2	Bidder	HABS		SENS		LEAFS		Jets		
7.136.7 Full load current VTS See main pump 7.1.33 NA	Number	Description	Reference	Proposed	Complian	Proposed	Complian	Proposed	Complian	Proposed	Complian	Proposed
7.135.8 Motor manufacturer YTS See main pump 7.1.33 NA 7.135.9 Motor Class VTS See main pump 7.1.33 NA See main pump 7	7.1.35.7	Full load current	VTS	See main pump 7.1.33A	N/A	see main pump 7.1.33.	N/A	see main pump 7.1.33	N/A	See main pump 7.1.33.	N/A	
7.13.5.9 Motor Class VTS See main pump 7.1.33 NA pinamic Oil Y Dinamic Oil Dinamic Oil Y Dinamic Oil Dinamic Oil Dinamic Oil D	7.1.35.8	Motor manufacturer	VTS	See main pump 7.1.33	N/A	see main pump 7.1.33.	N/A	see main pump 7.1.33	N/A	See main pump 7.1.33.	N/A	
7.1.35.10 Gearbox manufacturer VTS Dinamic Oil Y Dinamic Oil Y <th< td=""><td>7.1.35.9</td><td>Motor Class</td><td>VTS</td><td>See main pump 7.1.33</td><td>N/A</td><td>see main pump 7.1.33.</td><td>N/A</td><td>see main pump 7.1.33</td><td>N/A</td><td>See main pump 7.1.33.</td><td>N/A</td><td></td></th<>	7.1.35.9	Motor Class	VTS	See main pump 7.1.33	N/A	see main pump 7.1.33.	N/A	see main pump 7.1.33	N/A	See main pump 7.1.33.	N/A	
7.1.35.11Gearbox drive ratioVTS*112VTS<	7.1.35.10	Gearbox manufacturer	VTS	Dinamic Oil	Y	Dinamic Oil	Y	Dinamic Oil	Y	Dinamic Oil	Y	
7.136 Controls Controls Semens K Simens K	7.1.35.11	Gearbox drive ratio	VTS	~112	VTS	~112	VTS	~112	VTS	112	VTS	
7.1.36.1 PLC (Programmable Logic Controller) (Make) Solution Simmas K Simmas K <t< td=""><td>7.1.36</td><td>Controls</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	7.1.36	Controls										
7.1.36.2 PLC (Programmable Logic Controller) (Model) Modicon Quantum S7-314C K Simmens K Op-77A K Second PLC as spare K Second PLC as spare K Second PLC as spare K Jore Sint all and the pantal control and instrumentation redundaxc	7.1.36.1	PLC (Programmable Logic Controller) (Make)	Schneider	Siemens	К	Siemens	К	Siemens	к	Siemens	ĸ	
7.1.36.3 HMI (Human Machine Interface) display (Make) Nematron Siemens K OP-77A K Rital K OP-77A K Rital K OP-77A K Rital K OP-77A K Rital K Siemens K Siemens K Siemens K Siemens K Siemens K Siemens <td>7.1.36.2</td> <td>PLC (Programmable Logic Controller) (Model)</td> <td>Modicon Quantum</td> <td>S7-314C</td> <td>K</td> <td>S7-314C</td> <td>К</td> <td>S7-314C</td> <td>K</td> <td>S7-314C</td> <td>K</td> <td></td>	7.1.36.2	PLC (Programmable Logic Controller) (Model)	Modicon Quantum	S7-314C	K	S7-314C	К	S7-314C	K	S7-314C	K	
7.1.36.4 HMI (Human Machine Interface) display (Model) VTS OP-77A K OP-77A K OP-77A K OP-77A K 7.1.36.5 Control cabinet manufacturer VTS Rittal K Second PLC as spare K Second PLC as spare K Joystick, Buttons K Second PLC as spare	7.1.36.3	HMI (Human Machine Interface) display (Make)	Nematron	Siemens	к	Siemens	К	Siemens	ĸ	Siemens	к	
7.1.36.5 Control cabinet manufacturer VTS Rittal K Rittal	7.1.36.4	HMI (Human Machine Interface) display (Model)	VTS	OP-77A	к	OP-77A	к	OP-77A	к	OP-77A	ĸ	
7.1.36.6 Detail of the control and instrumentation redundancy VTS Second PLC as spare K Second PLC as spare <	7.1.36.5	Control cabinet manufacturer	VTS	Rittal	K	Rittal	к	Rittal	к	Rittal	ĸ	
7.1.36.7 Detail of the manual control system VTS Joystick, Buttons K Joystick, Buttons <td>7.1.36.6</td> <td>Detail of the control and instrumentation redundancy</td> <td>VTS</td> <td>Second PLC as spare</td> <td>к</td> <td>Second PLC as spare</td> <td>к</td> <td>Second PLC as spare</td> <td>к</td> <td>Second PLC as spare</td> <td>ĸ</td> <td></td>	7.1.36.6	Detail of the control and instrumentation redundancy	VTS	Second PLC as spare	к	Second PLC as spare	к	Second PLC as spare	к	Second PLC as spare	ĸ	
7.2 TRASH CLEANER HOIST Image: Cleaner Ho	7.1.36.7	Detail of the manual control system	VTS	Joystick, Buttons	к	Joystick, Buttons	к	Joystick, Buttons	к	Joystick, Buttons	к	
7.2.1 Hoist rail height above road deck VTS ~8,25m VTS ~8.25m VTS ~8.25m VTS ~7.50 m (travel distance m) VTS ~7.50	7.2	TRASH CLEANER HOIST										
7.2.2 Hoist rail length VTS ~7,50 travel distance m VTS ~7,50 m (travel distance m) VTS ~7,50 m (travel distance) VTS ~7,50 m (travel distan	7.2.1	Hoist rail height above road deck	VTS	~8.25m	VTS	~8.25 m	VTS	~8.25m	VTS	8.25m	VTS	
7.2.3 Hoist width VTS ~8,80m VTS ~8.80_m VTS ~8.80m VTS ~9.25m VTS ~9.25m VTS ~9.25m VTS ~9.25m VTS ~9.000 kg VTS </td <td>7.2.2</td> <td>Hoist rail length</td> <td>VTS</td> <td>~7,50 travel distance m</td> <td>VTS</td> <td>~7.50_m (travel</td> <td>VTS</td> <td>~7.5m (travel distance)</td> <td>VTS</td> <td>7.50 m(travel distance)</td> <td>VTS</td> <td></td>	7.2.2	Hoist rail length	VTS	~7,50 travel distance m	VTS	~7.50_m (travel	VTS	~7.5m (travel distance)	VTS	7.50 m(travel distance)	VTS	
7.2.4 Hoist rail centre distance 5 500 mm *9,25m VTS *9.25_m VTS -9.25m VTS 9.25m VTS VTS *9.00 kg V	7.2.3	Hoist width	VTS	~8,80m	VTS	~8.80 m	VTS	~8.80m	VTS	8.8m	VTS	
7.2.5 Total weight of hoist (inc. trolley, ropes and sheave blocks) VTS ~9000kg VTS ~9000_kg VTS -9000 kg VTS 9000kg VTS 7.2.6 Hoist rated capacity 50 000 kg 40000kg Y 40000_kg Y 40000 kg Y	7.2.4	Hoist rail centre distance	5 500 mm	~9.25m	VTS	~9.25 m	VTS	~9.25m	VTS	9.25m	VTS	
7.2.6 Hoist rated capacity 50 000 kg 40000 kg Y 40000 kg Y 40000 kg Y 7.2.7 Rope drum(s) 50 000 kg Y 20000 kg Y 40000 kg Y 40000 kg Y	7.2.5	Total weight of hoist (inc. trolley, ropes and sheave blocks)	VTS	~9000kg	VTS	~9000 kg	VTS	~9000 kg	VTS	9000kg	VTS	
7.2.7 Rope drum(s)	7.2.6	Hoist rated capacity	50 000 kg	40000kg	Y	~40000 kg	Y	40000 kg	Y	40000kg	Y	
	7.2.7	Rope drum(s)						12000 C 1000 C				

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* // 0	Technical Bid Evaluation		Title	Sup	ply / Install Powerhous	se and	Spillway Hydro-Mech	anical	Equipment	1.0	Revision No.: 01	
			Tag No.:	CHU	032	Clie	ect litle: nt:	<u></u>	NALCOR	LS	Rev. Date.: 2013-06-1 Project No.: 505573	13
tem	Description	Bidder: Specified Value or Reference	HABS Proposed	iant	SENS Proposed	iant	LEAFS Proposed	iant	Jets Proposed	iant	Proposed	-
umber				Compl	-	Compl		Compl		Compl		Jamo
.2.7.1	Number of ropes	2 300WT	2 Steel (\$235 / \$355)	Y	2 Steel (\$735/\$355)	Y	2 Steel (\$235/\$355)	Y	2 Steel (\$235 / \$355)	Y		T
.2.7.3	Diameter to bottom of grooves	VTS	~500mm	VTS	~500 mm	VTS	~500mm	VTS	500mm	VTS		-
2.7.4	Rope drum length	VTS	~2200mm	VTS	~2200_mm	VTS	~2200mm	VTS	2200mm	VTS		-
2.7.5	Type of bearings	VTS	~2000mm Hinge Bearing	VTS	~2000_mm Hinged Bearing	VTS VTS	-2000mm Hinge Bearing	VTS VTS	2000mm Hinge Bearing	VTS VTS		-
2.7.7	Bearing capacity	VTS	Load plus safety	VTS	Load plus safety	VTS	Load plus safety	VTS	Load plus safety	VTS		
2.8	Wire ropes	IPS Galv w/SEC	Galvanised steel	v	Galvanised Steel	×	Galvanized Steel	v	Galvanised Steel	v		
2.8.2	Country of manufacture	CANADA / US / EUR	Europe	Y	Europe	Y	Europe	Y	Europe	Y		-
2.8.3	Factor of safety	5/0.5 to Design Load	~5	Y	~5	Y	~5	Y	5	Y		
2.8.4 2.8.5	Construction Rope diameter	6 x 19 VTS	Warrington Seale 24mm	VTS VTS	Warington Seale 24 mm	VTS VTS	Warrington Seale 24mm	VTS VTS	Warrington Seale 24mm	VTS VTS		-
2.8.6	Breaking load	VTS	~50000kg	VTS	~50000_kg	VTS	~50000kg	VTS	50000kg	VTS		_
2.9	Hoist drive		4	15	4	VIS	4	VIS	4	VIS		-
2.9.1	Motor rating	55 kW @ 6 m/min		N	28 kW jeliemative without	N	24kW/ collectrative HydraU(k)	N	244/Wi (attemative Evolution	N		
2.9.2	Motor rated full load speed	1 200 rpm	~1800rpm	VTS	~1800_rpm	VTS	~1800 rpm	VTS	1800rpm	VTS		
2.3.0	Hated Voltage /# phasemequency	575V/3F/00H2	HzV/Ph/Hz		600/3/60_V/Ph/Hz	Y	600V/3Ph/60Hz	Ť	600V/ 3Ph/ 60Hz	Y		
.2.9.4 .2.9.5	Starting current Rated full load current	VTS VTS	~88A 29.5A	N/A	~88_A ~29.5 A	N/A	88 A ~29.5 A	N/A	88A 29.5A	N/A		_
2.9.6	Motor manufacturer	VTS	Getriebebau Nord / SEW	N/A	Getriebebau Nord / SEW	N/A	Getriebebau Nord	N/A	Getriebebau Nord /	N/A		
2.9.7	Motor Class	VTS	в	N/A	в	N/A	в	N/A	B	N/A		
2.9.8	Locked-rotor current Code letter	VTS	~150 A F	N/A	~150 F	N/A	~150A F	N/A	150A	N/A		_
2.9.10	Design letter	Design B	A	к	A	к	A	к	A	к		
2.9.11 2.9.12	Insulation system class	Class B Class: F	A	ĸ	70 A	ĸ	A	ĸ	A	K		
2.9.13 2.9.14	Rated ambient temperature Time rating	40 Degree C	105oC 60 min/h	K	150°C	K K	105 deg C 60 min/h	K	105 deg C 60 min/h	K		
2.9.15	Secondary volts/# phase/full load current (for wound-rotor induction	VTS	Actual not	N	not drafted yet_V/Ph/A	N.	Actual not drafted	~	Actual not	K		-
2.9.16	Motor Thermally protected (Yes or no)	VTS	draftedV/Ph/A Yes	Y	Yes	Y	yes	Y	drattedV/Ph/A Yes	Y		-
2.9.17	Motor Space Heater- rated voltage/#phase/watts	120V/1P/VTS	120 V /Ph/WV/Ph/W	Y	120/1_V/Ph/W	Y	120V/Ph/W	Y	120V/Ph/W	Y		
2.9.18	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	120 V /Ph/WV/Ph/W	Y	120/1_V/Ph/W	Y	120V/Ph/W	Y	120V/Ph/W	Y		-
2.9.19	Motor full load efficiency	Premium biah	~94	Y	~94	Y	-94	Y	94	Y		
2 9 20	Power factor	efficiency	0.89	, v	0.89	v	0.89		0.89	v		
2.9.21	Service factor	1.15	1,15	Y	1.15	Y	1.15	Y	1.15	Y		
2.9.22 2.9.23	Enclosure type NEMA Frame type	TEFC NEMA MG-1	Casting 365 / 404 or similar	Y	Casting 365/404 or. Equ.	Y VTS	Casting 365/404 or similar	Y VTS	Casting 365 / 404 orsimilar	Y		
2.9.24	NEMA Design	VTS	D		D	VTS	D	VTS	D			-
2.9.25	Inverter Duty (yes/no)	VTS	Yes		Yes	VTS	yes	VTS	Yes			-
2.10 2.10.1	Gearbox Gearbox manufacturer	SEW ERO. (Equiv.)	Getriebebau Nord / SEW	Y	Getriebebau Nord /	Y	Getriebebau Nord/SEW	Y	Getriebebau Nord /	Y		-
2 10 2	Coston deus selle	A/TO	2000	VTC	SEW_	VITC	000	VITE	SEW	MTC		_
2.10.2	Brakes	VIS	-900	15	900_	VIS	-900	VIS	900	VIS		-
2.11.1	Holding brake manufacturer	ELEVANJA	Getriebebau Nord /SEW	Y	Getriebebau Nord / SEW	Y	Getriebebau Nord/SEW	Y	Getriebebau Nord / SEW	Y		
2.11.2	Holding brake type	Magnetic Drum	Spring-Magnetic incl.	Y	Spring-magnetic incl.	Y	Spring-Magnetic Incl.	Y	Spring-Magnetic	Y		
2.11.3	Holding brake rated torque	VTS	Switch ~100 kN-mkN-m	N/A	Switch ~100_kN-m	N/A	~100 kN-m	N/A	100kN-m	N/A		-
2.12	Trolley drive	VTS	~0 _ 5m/min	VTS	~0.5 m/min	VTS	- 0-5m/min	VTS	0 - 5m/min	VTS		-
2.12.1	Number of trolley drives	VTS	2	VTS	2	VTS	2	VTS	2	VTS		
2.12.3 2.12.4	Motor rating Motor rated full load speed	VTS VTS	2,2kW ~1800rpm	VTS VTS	2.2_kW ~1800 rpm	VTS VTS	2.2 kW ~1800 rpm	VTS VTS	2.2kW 1800rpm	VTS VTS		
2.12.5	Rated voltage /# phase/frequency	575V/3P/60Hz	575V / 3Ph / 60Hz	Y	575/3/60_V/Ph/Hz	Y	575V/3Ph/60Hz	Y	575V/ 3Ph/	Y		
2.12.6	Starting current	VTS	~5,3A		~5.3_A		~5.3A		5.3A			
2.12.7	Motor manufacturer	VTS	Demag / Nord / SEW	-	DEMAG Nord / SEW		Demag/Nord/SEW		Demag / Nord /			-
2.12.9	Motor Class	VTS	IE 1 Standard Efficiency		IE 1 Standard Efficiency		IE 1 Standard Efficiency		IE 1 Standard			-
2.12.10	Locked-rotor current	VTS	~26 A		~264		~26A		Efficiency 26A			-
2.12.11	Code letter	G	Not defined		not defined		Not definied		Not defined			
2.12.12	Design letter	Design B	CSA, Specification C22.2	Ŷ	CSA, Specification C22.2	Y	CSA, Specification C22.2	Y	CSA, Specification C 22.2	Y		
2.12.13	Rated temperature rise	Class B	Motor 60oC, Gearbox	Y	Motor 60°C, Gearbox	Y	Motor 60 deg C, Gearbox 50 deg C	Y	Motor 60?C, Gearbox 50?C	Y		
2.12.14	Insulation system class	Class: F	Temperature Class F	Ŷ	Temperature Class F	Y	Temperature Class F	Y	Temperature Class	Y		1
2.12.15	Rated ambient temperature	40 Degree C	-4030oc (max.60oC	Y	-40°C - +30°C (max.	Y	-4030 deg C (max. 60	Y	-4030?C (max.	Y		1
2.12.16	Time rating	Continuous	53.60% ED. Inverter	Y	+60°C) S3.60%ED. Inverter	Y	deg C) S3, 60% ED, Inverter	Y	60?) S3. 60%ED.	Y		-
2 12 17	Secondary volte/# phase/full load ourgest /features distances	VTC	operation		Operation		Operation		Inverter operation			-
	motor)	VIG	draftedV/Ph/A		Not Graned_V/Ph/A		V/Ph/A		draftedV/Ph/A			
2.12.18	Motor Thermally protected (Yes or no)	VTS	Yes – 3PTC Thermistors		Yes – 3PTC Thermistors		Yes-3 PTC Thermistors		Yes - 3 PTC Thermistors			
2.12.19	Motor Space Heater- rated voltage/#phase/watts	120V/1P/VTS	110-120 or 220-250V /	Y	110-120 or 220-	Y	110-120 or 220-	Y	110-120 or 220-	Y		
2.12.20	Gear Box Space Heater- rated voltage/#phase/watts	120V/1P/VTS	tbd	N/A	120V~1/Ph/1000W	Y	tbd V/Ph/W	N/A	tbdV/Ph/W	N/A		
2.12.21	Motor full load efficiency	Premium high efficiencv	20		90%		-					
2.12.22	Power factor Service factor	VTS		N/A	0.89	Y	-	N/A		N/A		
2.12.24	Enclosure type	TEFC	IP 65	Y	IP65	Y	IP 65	Y	IP 65	Y		
2.12.25	NEMA Frame type NEMA Design	NEMA MG-1 VTS	No No		No No		No No		No No			-
2.12.27	Inverter Duty (yes/no)	VTS	Yes		Yes		Yes		Yes			1
2.12.29	Gearbox drive ratio	VTS	~285		~285		~285		285			
2.12.30	Wheel diameter/spacing Wheel width inside flanges	VTS VTS	250mm Ø/_~110mm ~60mm		~250mm Ø/~110mm ~60mm		~250mm diam/~110mm ~60mm		250mm /110mm 60mm			-
2.12.32	Wheel flange height	VTS	~16mm		~16mm		-16mm		16mm			+
2.12.33	Maximum vertical load per wheel	VTS VTS	1 ~12500kg		1 ~12500kg		~12500 kg		12500kg			
2.12.35	Maximum lateral load per wheel Maximum braking load per wheel	VTS	~2000kg		~2000kg		~2000 kg		2000kg			
2.13	End Stops	VIJ	LUCOURS		TOTONE		2000 Ng		Looding			
2.13.1	End Stops mounting length along crane beam End stop description/mounting details	VTS VTS	~130mm Buffer (rubber)	VTS VTS	~130mm Buffer (rubber)	VTS	~130mm Buffer (rubber)	VTS VTS	130mm Buffer(rubber)	VTS VTS		-
2.14	Power conductor	Litte	C-11-		Color State	1	Cable	Vine	Cableman			1
2.14.1	Type	VTS VTS	Cableway Wampfler, Vahle		Cableway Wampfler, Vahle	VTS	Cableway Wampfler, Vahle	VTS VTS	Wampfler, Vahle			-
2.14.3	Length	VTS	~13m		~13m	VTS	~13m	VTS	13m			-
2.14.4	Incoming cable size	VTS	~4 x 16 mm2		~4x16mm²	VTS	~4X16mm2	VTS	4 x 16mm2			
2.15.1	Control type	control panel & radio	Siemens 57	Y	Siemens S7	VTS	Siemes S7	VTS	Siemens S7	Y		
.15.2	Rotary limit switch manufacturer	remote VTS	Getriebebau Nord / SEW	Y	Getriebebau Nord / SEW	VTS	Getriebebau Nord/SFW	VTS	Getriebebau Nord /	Y		
2.15.3	Control cabinet manufacturer	VTS	Rittal	Y	Rittal	VTS	Bittal	VTS	SEW	Y		-
2.15.4	Control power	VTS	24 VV/Ph/Hz	Y	24V	VTS	24V	VTS	24V	Y		
≤.15.5	General Arrangement drawing of the hoist assembly	VTS	Muhr design	Y	Muhr Design	VTS	Muhr design	VTS	Muhr design	Y		
1.15.6	Details of motor	VTS	Getriebebau Nord / SEW	Y	Getriebebau Nord / SEW	VTS	Getriebebau Nord/SFW	VTS	Getriebebau Nord /	Y		

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	Technical Bid Evaluation		Title	Sup	ply / Install Powerhous	e and	d Spillway Hydro-Mech	anical	Equipment	_	Revision No.: 01	
			Package No.: Tag No.:	CHO	0032	Proj	ect Title:	L	CP-MUSKRAT FAL	LS	Rev. Date.: 2013-06-1	13
		Bidder	HABS		SENS	one	LEAFS		Jets	_	110/00110	_
n nber	Description	Specified Value or Reference	Proposed	oliant	Proposed	oliant	Proposed	oliant	Proposed	oliant	Proposed	
				Com		Comr		Comi		Com		
5.7	Details of holding brake operation	VTS	Spring-Magnetic incl.	Y	Spring Magnetic incl.	VTS	Spring-Magnetic Incl.	VTS	Spring-Magnetic	Y		+
5.8	Extreme upper limit switch make and model	VTS	Switch	Y	Switch	VTS	Switch	VTS	incl.Switch Stromag	v		
5.9	Details of drum dogging device limit switch	VTS	Stromag	Y	Stromag	VTS	Stromag	VTS	Stromag	Y		-
5.10	Normal upper limit switch make and model	VTS	Stromag	Y	Stromag	VTS	Stromag	VTS	Stromag	Y		
5.12	Hoist load cell make and model	VTS	Tecsis	Y Y	Tecsis	VTS	Tecsis	VTS	Tecsis	Y		-
5.13	Slack rope detection make and model	VTS	lfm	Y	lfm	VTS	lfm	VTS	lfm	Y		
5.14	Unbalance wire rope load detector make and model	VTS	Tecsis Getriebebau Nord / SEW	Y	Tecsis	VTS	Tecsis Getriebebau Nord/SEW	VTS	Tecsis Getriebebau Nord /	Y		-
0.10		V13	Genebebau Nord / Seve		Getriebebau Nord / Sew	VIS	Gethebebau Nord/SFW	10	SEW	T.		
5.16	Radio remote control make and model	VTS	HBC / Funke und Huster	Y	HBC / Funke und Huster	VTS	HBC/Funke und Huster	VTS	HBC / Funke und Huster	Y		
	SPILLWAY ELECTRICAL BUILDING											
												1
	Weight of building steel	VTS	17300kg	VTS	~16 900 kg	VTS	твс	VTS	14000kg	VTS		-
	Weight of exterior and interior architectural finishes	VTS	15000lb	VTS	~40 000 kg	VTS	TBC	VTS	930kg	VTS		
	Manufacturer.	VIS	IBD	V15	Inc.	IVIS	IBD	VIS	LATER	VIS		
	Autres	VTS		VTS		VTS	no line item	VTS	no line item	VTS		-
	SPILLWAY ELECTRICAL BUILDING – ELECTRICAL AUXILIARIES											
	ELECTRICAL DISTRIBUTION SYSTEM FOR DIVERSION											
	PHASE 600 kW Diesel Generator											-
.1 	Unit Rating & Performance Data:	VTC	MTH Oppite Energy		C	~	CAT	v	LATED	NUA		_
351	manufacturer.	VIS	MTO Onsite Energy		Generation	Y	CAT	Y	LATER	IN/A		
.1.2	Duty to ISO 8528:	VTS	Prime Power with		Prime Power		MEETS		MEET			T
.1.3	Prime Running Power (PRP) in accordance with ISO 8528 (brake)	VTS	615kWe		680 kWe in accordance	к	680 kWe	к	680kWe			-
	(, , , , , , , , , , , , , , , , , , ,				with ISO 8528 (brake)							
.1.4	Limited Time Running Power (LTP) in accordance with ISO 8528 (brake)	VTS	650kWe		N/A kWe		750 kWe		776kWe			
.1.5	Continuous Operating Power (COP) in accordance with ISO 8528	600 kW	500kWe	к	N/A kWe	к	kWe	к	510 kWe	к		
.1.6	Rated speed	VTS	1800rpm		1800 rpm	VTS	1800 rpm	VTS	1800rpm			
1.7	Rated power factor:	0.8	0.8	Y	80%	Y	80.00%	Y	80%	Y		
.1.8	Rated voltage:	600V, 3P 4W 60 Hz	60	Y	60 Hz	Y	60 Hz	Y	60Hz	Y		
1.10	Overload Rating to ISO 3046-1, 1 out of 12 hours:	10%	650kWe	ĸ	748 kWe	Y	10%	Y	680kWe	к		-
2	Engine Basic Data	NTE	MTH 10V000C4ETB		Complex las	V	CAT	~	LATER			
.2.1	Fuel Stop Power in accordance with ISO 3046-1 (brake)	VTS	780	-	808 kW in accordance		776 kW	4	776kW			-
					with ISO 3046-1 (brake)							
.2.3	Speed	VTS	1800		1800 rpm	VTS	1800 rpm	VTS	1800rpm			
.2.4	Aspiration (natural or turbo charged)	VTS	Turbo Charged		Turbo charged	VTS	TURBO ASPIRATION	VTS	ТА			
2.5	Number of cylinders	VTS	12		6	VTS	12	VTS	12			_
.2.6	Minimum recommended light load Duration light load can be applied per 24 hr period	VTS	130		225 kWe	VTS	204 kWe UNLIMITED	VTS	LATER kWe 24hr			+
.2.8	Maximum sound level@ 1 m	105 dBA	101	Y	95 dBA	Y	101.6 dBa	Y	110dBA	N		
.2.9	Fuel consumption at PRP rating	VTS	176		181.7 L/hr	VTS	183.1 L/hr	VTS	183.1L/hr			-
.3.1	Fuel type	Diesel	Diesel	Y	Diesel #2	Ŷ	DIESEL	Y	MEUI(DIESEL)	Y		+
.3.2	Day tank type	VTS	Double Wall ULC-S602		Double wall steel		N/A		DI			
.3.3	Day tank capacity	To be sized for 8 hrs	1135 L	к	fabrication	Y	NUA 1388 L	N	7000L	к		-
3.4	Day tank nun time at PBP rating	at 75% Load	6 E br	~	Laborate 17.1 m	v	NUM T RES	N	24br	K		-
.3.4	Engine Starting System	onrs.	6.5 hr	Y	Lator or 13 nrs	Ţ	1968: 5 (198)	IN	2411	n		+
.4.1	Battery type	Heavy Duty Lead	Sealed	VTS	8D	VTS	CAT 1300 CCA	VTS	LATER	N/A		1
.4.2	Starting system voltage	24 V DC	24	Y	24 Vdc	Y	24 Vdc	Y	24Vdc	Y		1
.4.3	Number of batteries	VTS	4	VTS	2	VTS	2	VTS	2	VTS		
.4.4	Battery capacity Generator Data	VTS	860		1400 CCA Ahr	VTS	190 Ahr	VTS	200Ahr			+
.5.1	Manufacturer	VTS	Marathon		Cummins Power	VTS	CAT	VTS	LATER			-
52	Bated full load current	VTS	741 at Prime Power	_	Generation	VTS	817 9 4	VTS	817.94			-
6	Evolution System		Rating			• 10	017.0-4	110	o.m.on			-
.6.1	Manufacturer	VTS	Marathon		Cummins Power	VTS	PM	VTS	LATER			-
	Manager and the second second second	1/70	Marshare In Franks		Technologies	VITO	CAT		LATED			_
1.6.2	Voltage regulator manufacturer	VIS	DVR2000		Cummins	VIS	CAT	VIS	LATER			
1.6.3 1.6.4	Steady State voltage regulation(±) Descriptive information for Excitation systems and voltage regulator to be provided	+/- 0,5% Brushless Type with rotating rectifier & with PM exciter. Solid state fail safe AVR	0.25 PMG	Y Y	± 0.5 % PMG + Digital PI/IIM AVR	Y Y	LESS THAN +/- 1 -2 % YES	Y	±0.5% ±5% FULL LOAD 36.07V/6.34A	Y N/A		
1.7	Governor	100					0.17					
.7.1	Ivianutacturer	equivalent	MTU ADEC	K	Cummins	*	CAT	1	LAIER	N/A		
.7.2	Frequency regulation(±)	VTS	0.25		± 0.25 %	VTS	0.20%	VTS	±0.5%			-
	(Isochronous); Yes/No	105	100		153	10	200	10				_
.7.4	Contirm that governor is capable of operation in parallel with Utility arid (Droop): Yes/No Provide descripting information for Contents	VTS	Yes		Yes, ILSI	VTS	MODEL ADDITA	VTS	NO			
.7.0	Provide descriptive information for Governor	V15	(ECM) system		Isochronous Governor	VIS	MODEL ADEM A4	VIS	A DEMIA4 TYPE			
.8 .8.1	Control Panel Manufacturer	VTS	MTU by Basler		Cummins	VTS	CAT	VTS VTS	LATER			-
8.2	NEMA Enclosure type	VTC	#DGC2020		Nema 1	VTC	Equivalent to NEMA 4	VTC	NEMA 1/EMODAL			
.8.3	Control power supply by Supplier (yes/no)	VTS	yes		Cummins	VTS	yes	VTS	NO			1
.8.4	Automatic Synchroniser Manufacturer	N/A	Basler		Cummins	N/A	n/a	N/A	LATER			
.9.5	Genset Dimensions	VIS				MA	y03	INCA				
.9.1	Length	<4500	4318 mm		4395_mm	VTS	4141,6 mm	VTS	4140mm			
.9.2	Height	<1800	2197 mm		2061 mm	VTS	2210,5 mm	VTS	2210mm			1
.9.4	Weight	VTS	7300 kg		6518 kg	VTS	6031 kg	VTS	5950kg			
10 10.1	Diesel Genset Main Fuel Tank And Transfer System Manufacturer	VTS	Desjardens		Industries Desiardins inc		see attached		LATER			
10.2	Tank type	VTC	UI CS601 Double Mat		Above ground with		see attached		וס		l	-
	i sami yes	13	CLOBOUT DOUBle Wall		double wall		Joo dilacribu		51			
10.3	Tank capacity Main fuel tank run time with Spillway and similar orbit Deverts	20,000 L	18200 L	K	19 230 L	K	see attached 25 000 L	K	25000L	Y	Change to 10,000 L	4
. 10.4	generating units operating at PRP rating	72 nrs	53.3 IIF	N	sater 3 days		180	n.	15% LUAD 32hr	IV.		
10.5	Transfer Pump Capacity	VTS	454 L/hr		14 000 L/hr	VTS	1736 L/hr	VTS	488.3L/hr			1
10.6	mansier Fiping Design	double wall	NA		Double trae Omega Flex	1	2	N	LATER			
10.7	Transfer Pipe Material	VTS	Carbon Steel		Nylon 12 and Stainless	VTS	TBD	VTS	ASTM A53/A53M			
10.8	Transfer Pipe Class	VTS	A53 Sch 40 ERW		UL97 1A	VTS	тво	VTS	150			1
.10.9	Motor Rating	VTS	250 W		560 W	VTS	0.75HP	VTS	7500W			
10.10	Motor speed rated	VTS	TBD		3450 rpm	VTS	1160 rpm	VTS	1800rpm			
10.12	Starting current	VTS	TBD		30 A	VTS	7.08 HP	VTS	27A			
10.13	Full load current	VTS	TBD		8A	VTS	1.18 A	VTS	9A			1
10.14	Notor manufacturer	VTS	IBD		Fe Petro (Franklin fueling	VTS	WEG	VIS	LATER			
10.15	Motor Insulation Class	Class: F	В		Later	VTS	TEFC	VTS	LATER			
.10.16	NIDIOF Environmental Protection	VTS NEMA MG-1	Upen drip proof		Later	VTS	D56	VIS	LATER			-
	the second se	CONTRACTOR OF THE OWNER.		1	and a set			1.1.1.2				

◆)) S.	NC+LAVALIN Technical Bid Evaluation		Title	Sup	ply / Install Powerhous	se and	Spillway Hydro-Mecha	anical	Equipment		Revision No.: 01	
			Package No.: Tag No.:	СНО	032	Proje Clier	ect Title: nt:	L	CP-MUSKRAT FAL NALCOR	LS	Rev. Date.: 2013-06- Project No.: 505573	-13
Item Number	Description	Bidder Specified Value or Beference	Proposed	liant	SENS Proposed	liant	LEAFS Proposed	iant	Jets Proposed	iant	Proposed	iant
				Comp		Comp		Comp		Compl	-	Compl
9.1.1.10.18 9.1.1.10.19	NEMA Design Inverter Duty (yes/no)	VTS VTS	TBD No		Later Later	VTS VTS	A NO	VTS VTS	LATER NO			
9.1.2 9.1.2.1	25 kV Load Break Switch Manufacturer	VTS	Eaton		Dual-ADE	VTS	ABB Powercon	VTS	GENENAL			_
9.1.2.2	Model	VTS	no line item		313-027-100	VTS	see-attached		ELECTRIC not answered			
9.1.2.3 9.1.2.4	Rated voltage Rated current	25 kV 3P 60Hz 600 A	27kV 600A	Y Y	27 kV 600 A	Y Y	see attached 27 kV see attached 600 A	Y Y	27kV 200A	Y Y		_
9.1.2.5 9.1.2.6	Current Interrupting Rating Lightning Impulse Withstand (BIL)	600 A 125 kV	16.8 kA 125kV	Y Y	16 kA 125 kV	Y Y	see attached 40 kA see attached 125 kV	Y Y	12kA 16kV	Y Y		_
9.1.2.7 9.1.2.8	Width Depth	<1200 <1500	2134 mm 2470 mm		2236 mm 2400 mm	VTS VTS	see attached	VTS VTS	LATER mm			_
9.1.2.9 9.1.3	Height Dry Type Power Transformer With OLTC	<2300	2413 mm		2590 mm	VTS	see attached	VTS	LATER mm			_
9.1.3.1 9.1.3.2	Manufacturer Model	VTS VTS	Rex Power Magnetics		REX Power Magnetix	VTS	ABB	VTS				
9.1.3.3	Voltage Ratio	24.94 kV-0.6 kV	24940 - 600/347	Y	24940 Delta/600Y347 V	Y	see attached 24940 -	Y	25KV/600V	VTS	-	
9.1.3.4 9.1.3.5	Rated current Winding Configuration	VTS Dyn11	1200 A Delta:Wye	Y Y	28/1202.8 A Delta/Wye	Y Y	see attached TBA	K Y	1500A DELTA - WYE	Y Y		
9.1.3.6 9.1.3.7	Rating Capacity HV Winding Lightning Impulse Withstand (BIL)	1250 KVA ANN 125kV	1250 kVA 125 kV	Y	1250 kVA	Y	see attached 1250 kVA	Y Y	1250kVA	Y Y		
9.1.3.8	HV Winding Lightning Impulse Withstand (BIL)	10kV	10 kV	Y	10 kV	Y	see attached 10 kV	Y	10kV	Y		
9.1.3.10	Width	2.5%	2795 mm	INCA	2794 mm	VTS	1.25%.	VTS	LATER mm	t.		_
9.1.3.11 9.1.3.12	Depth Height	<2500	1525 mm 2794 mm		2794 mm	VTS	see attached 2286 mm	VTS				
9.1.4	600 V Switchgear	VTC	Estas		Duel ADS	VTC		VTC	CATERIAM			
9.1.4.2	Model	VTS	Eaton		313-028-100	VTS	see attached Max-SG	VTS	WESTINGHOUSE			_
9.1.4.3	Rated voltage	600V, 3P 3W	600 V	Y	600 V	Y	see attached 600 V	Y	600V	Y		
9.1.4.5	Interrupting Current Rating	42 kA	42 kA	Y	35 kA	Y	see allached 50 kA	Y	42kA	Y		
9.1.4.7	Air Circuit Breaker Manufacturer and Model	VTS	Eaton Mangdum DS		Merlin Gerin	VTS	see attached ABB Emax	K N/A	SQUARE - D			-
9.1.4.8	Air Circuit Breaker Frame Rating	1600 A	1600AF and 800AF		1600 A	Y	see attached 1200 A	K	1200A	N		
9.1.4.10	Depth	<1700	1219.2 mm		1651 mm	VTS	see attached 1753 mm	VTS	LATER mm			
9.1.4.11	Motor Control Centre	<2300	2324.1 mm		2342 mm	VIS	see attached 2209 mm	VIS	LATER mm			
9.1.5.1 9.1.5.2	Manufacturer Model	VTS	Eaton		EATON Freedom MCC 2100	VTS VTS	ABB see attached MNS-MCC	VTS VTS	SQUARE - D LATER			-
9.1.5.3	Rated voltage	600V, 3P 3W	600v, 3 Phase, 3 Wire	Y	600 V	Y	see allached 600 V	Y	600V	Y		
9.1.5.4	Main bus rated current	1600 A	1600 kA		800 A	ĸ	A	ĸ	800A	N		_
9.1.5.6	Withstand Current Rating	42 kA	65 kA	Y	65 rms kA	Y	see attached	ĸ	42kA	Y		
9.1.5.7	Unit disconnect (switch or MMUB/MUCP)	Feeder-MCCB, MCP	hmCP/Inermai-mag breaker Faton C440 solid state	Y	Circuit Breaker	VTS	MCCB	Y VTS		Ŷ		_
9.1.5.9	No. of Vertical Sections	VTS	8 total (4 front & rear)		fater	VTS	Electronic OR see attached	VTS	BOOA			
9.1.5.10	Width	500 (each vertical section)	2032 mm		4597 mm		see attached	VTS	LATER mm			
9.1.5.11	Depth	500 (each vertical section)	2134 (Front & Back) mm		536 mm	Y	see attached 500 mm	Y	LATER mm			
9.1.5.12 9.1.6	Height 600 V Busway	<2300	2286 mm		2324 mm	Y	see allached 2300 mm	Y	LATER mm			
9.1.6.1 9.1.6.2	Manufacturer Model	VTS VTS	Eaton POW-R-WAY III	_	EATON Pow-R-Way III	VTS VTS	ABB TBD		WESTINGHOUSE LATER			
9.1.6.3 9.1.6.4	Enclosure Type Rated voltage	CSA Enclosure 1 600V 3P 60 Hz	NEMA 1 600 V	K Y	Indoor IP56 600 V	Y Y	TBD TBD		NEMA 1 600V	K Y	1	
9.1.6.5 9.1.6.6	Rated current Width	1600A VTS	1200 A 149.3 mm	N	1200 A N/A mm	N VTS	TBD TBD		1200A LATER mm	N		_
9.1.6.7 9.1.6.8	Height Length	VTS VTS	111.3 mm 8230 mm		N/A mm	VTS VTS	TBD		LATER mm			
9.1.7	Manual Transfer Switch For Mobile Genset	VTS	Faton		Caternillar	VTS	CAT	VTS	WESTINGHOUSE			
9.1.7.2	Model	VTS	Heavy Duty Double		CTGM	VTS	see attached CTGM	VTS	LATER			
9.1.7.3	Enclosure Type	VTS 600V 3P 4W 60 Hz	NEMA 4X	Y	Nema 1	VTS V	see attached NEMA 1	VTS	NEMA 1	N/A		
9.1.7.5	Rated current	800 A	800 A	Y	800 A	Y	see attached 800 A	Y	1000A	Y		
9.1.7.7	Height	VTS	1702 mm		1880 mm	VTS	see attached TBD	VTS	LATER mm			
9.1.7.6	Receptacle For Mobile Genset	V15	357 mm		495 mm	VIS		V15	LATER MIN			
9.1.8.1	Manutacturer	VIS	Eaton		Cooper Crouse-Hinds	VIS	TBC		CORPERATION			
9.1.8.3	CSA Configuration	VTS	Connect Switches	_	Posi-lock/Cam-Lock	VTS	TBC		LATER	_		
			LR68743, meets CSA22.2, no.4		Toby Looky Carry Look							
9.1.8.4	Enclosure Type	NEMA 4	Receptacles 3R, Enclosure NEMA 4X,	Y	Nerma 3	N	TBC		NEMA 4X	Y		
9.1.8.5	Rated voltage	600V 3P 4W 60 Hz	Assembly 3R 600 kV	Y	0.6 kV	Y	твс		0.6kV	Y		
9.1.8.6 9.1.8.7	Rated current Width	800 A VTS	800 A 828.4 mm	Ŷ	800 A 500 mm	Y VTS	ТВС		LATER mm	N		
9.1.8.8 9.1.8.9	Height Length	VTS VTS	2160 mm 551.94 mm		1000 mm 250 mm	VTS VTS	TBC TBC		LATER mm LATER mm			-
9.1.9 9.1.9.1	Dry Type Distribution Transformers Manufacturer	VTS	Rex Power Magnetics		Rex Power Magnetics	VTS	AB8 Rex Power	VTS	WESTINGHOUSE			_
9192	Model	VTS	BCxxJ-M/Z (xx is kVa		Various	VTS	Magnetics	VTS	P60G28T15M			
9.1.9.3	Enclosure Type	CSA C 22.2 No. 94.2	Rating) NEMA1	к	Nema 2	к	see attached NEMA 3R	к	NEMA 1	к		
2111 - 122		(Suitable for installed environment)										
9.1.9.4 9.1.9.5	Rated voltage Voltage Ratio	VTS 600-600/347 V, 600-	600V 600-600/347V and 600-	Y	0.6 kV Class 600:208 or 600:600	VTS Y	see attached 600 V see attached 600-	VTS Y	0.6kV 208/120V	к		
9.1.9.6	No. of Phases	208/120V 3	120/208V 3	Y	3	Y	208/120, 600-600/347 see-attached 3	Y	3 PHASE	Y		
9.1.9.7	Rated Capacity (list number and sizes of all distribution transformers)	45kVA 600-600/347V 2 no, 30kVA 600- 208/120V-2 nos	15, 30 and 45 kVA. *Dimensions below for 45kVa	Y	15 kVA 30 kVA	к	see attached 15 kVA, 30 kVA	к	15 kVA	к		
9.1.9.8	Width	VTS	572* mm		521 521 mm	VTS	see attached 609 mm	VTS				
9.1.9.9	neight	VIS	673° mm		406 528 mm	VIS	mm/685 mm	VIS				
9.1.10	Panel Boards						mm/533 mm					
9.1.10.1	Manufacturer Model	VTS VTS	Eaton Pow-B-Line 1a/3a		Eaton Pow-R-Line 3a	VTS	ABB Eaton	VTS	WESTINGHOUSE			
9.1.10.3	Rated voltage	600/347, 208/120V	120/240, 120/208.	Y	600 V	к	Line see attached 600/347 V.	Y	600V	к		+
9.1.10.4	Rated bus current	225A, 100A	347/600, and 600 V up to 1200 A	к	250 A	Y	208/120 V see attached 100 A, 250	Y	200A	Y		
9.1.10.5	No. of phases/wires	3P 4W	single/3 wire, 3 phase/3	Y	3Ph 3W	к	A see attached 3P, 4W	Y	3 PHASE4 WIRE	Y		
9.1.10.6	Withstand Current Rating	600V -18kA, 208V-	wire and 4 wire 42 bus rating kA	Y	14 kA	Y	see attached 14 kA, 18	Y	8kA	N		
9.1.10.7	Circuit breaker interrupting current	14kA 600V -18kA, 208V-	as requested	Y	10 kA	к	see attached TBD	к	18kA	Y		
9.1.10.8	Circuit Breaker Manufacturer	VTS	Eaton		Eaton	VTS	see attached TBD	VTS	SQUARE - D			
9.1.10.10	Main Circuit Breaker Rating	225A, 100A	as requested	Y	200 A	Y	see attached TBD	K	200A	Y		
9.1.10.11	No. of branch circuit pole positions Width	42P	610 mm		42 508 mm	VTS	see attached TBD	K VTS	LATER			
	100×0×0		••••••••••••••••••••••••••••••••••••	1	A	1000			Concernance of the second s			- H 7

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•)) SI	NC+LAVALIN		Bid Evaluation Plan Ap	Sup	x 5 ply / Install Powerhous	e and	Spillway Hydro-Mecha	nical	Equipment		No.: 01	
	rechnical Bid Evaluation		Package No.: Tag No.:	СНО	0032	Proje Clien	ect Title: nt:	L	CP-MUSKRAT FAL NALCOR	LS	Rev. Date.: 2013-06 Project No.: 505573	-13 1
em	Description	Bidder: Specified Value or	HABS Proposed	ant	SENS Proposed	ant	LEAFS Proposed	ant	Jets Proposed	ant	Proposed	te te
umber		Reference		ilamo		ompli		ompli	E.a.	ompli		alumo
1.10.13	Height	VTS	Varies on # of CCTs	Ő	915 mm	VTS	see attached 1219,	UTS	LATER mm	Ŭ		C
1.10.14	Length	VTS	290 (depth) mm		146 mm	VTS	1524, 1828 mm see attached 146, 139,	VTS	LATER mm			-
1.11	Safety Switch For Trash Cleaner	VTC	Fatan		Patan	VTC	146 mm	VITC	WERTINGLIGUER			
1.11.1	Manufacturer Model	VTS	Heavy Duty Window		DH364NRK	VTS	TBD	VTS	LATER			
1.11.3	Enclosure Type	CSA Enclosure 1	NEMA4X	Y	Nema 3R	к	TBD		NEMA 3R	к		
I.11.4 I.11.5	Rated voltage Rated current	600V 3P 4W 60Hz 200 A minimum	600 kV 200 A	Y Y	0.6 kV 200 A	Y Y	TBD TBD		0.6kV 300A	Y Y		
1.11.6	Width Height	VTS VTS	430 mm 899 mm	-	406.4 mm 701.8 mm	VTS VTS	TBD TBD	VTS VTS	LATER mm			
1.11.8	Length	VTS	295 mm		285.8 mm	VTS	TBD	VTS	LATER mm			
.12	Manufacturer	VTS	Gentec		Marathon	VTS	WESCO EnerSys	VTS	SQUARE - D			
.12.2	Model	VTS	T-160HP		M12V155FT	VTS	TBD PowerSafe DDM- 25	VTS	LATER			
1.12.3	Type	VIS	valve regulated lead		Lead Acid (AGM)	VIS		VIS	NEMA 1	NI/A		
1.12.5	Voltage Current rating	70 Ahr minimum, bidder to complete the DC load list submitted with clarification	160Ahr	Ŷ	125 VDC 155 Ahr	ĸ	125 Vac TBE 1200 Ahr	ĸ	2 240Ahr	Y		
.12.6	No. of cells Width	60 Cells VTS	72 425 +/- 5 mm	Y	10 blocks of 12 V 124 mm	K VTS	TBD 60 TBD 252 mm	Y VTS	12 LATER mm	к		
.12.8	Height	VTS	1022 +/- 8 mm		283 mm	VTS	TBD 155 mm	VTS	LATER mm			
.12.9	125 V DC Battery Chargers	VIS	1660 #/- 10 mm		559 mm	V15	180 S90 mm	V15	LATER MM			_
.13.1	Manufacturer Model	VTS VTS	Gentec RS Series		Primax P4500F-3-125-75	VTS VTS	TBD TBD		SQUARE - D LATER			
1.13.3	Rated input voltage Bated output voltage	600V 3P 3W 60 Hz	600 V 125 V DC	Y	600 VAC +/- 10%	Y Y	TBD		600V	Y		
1.13.5	Rated output current	20 A minimum (bidder to complete the DC load list submitted with clarification)	50 A	Ŷ	75 A	Ŷ	твр		100A	Ŷ		
.13.6	Battery recharge time	12hrs	TBD	к	TBA hr	K	TBD		12hr	Y		_
.13.7	Height	VTS	1613 mm		1295 mm	VTS	TBD		LATER mm			
.13.9 .14	Length 125 V DC Panelboards 'A' And 'B'	VTS	600 mm		508 mm	VTS	TBD		LATER mm			
.14.1	Manufacturer Model	VTS	Eaton Pow-B-Line 4		Eaton EZB2036PC	VTS	TBD		SQUARE - D			
.14.3	Rated voltage	125 V DC	125 Vdc	Y	125 V	Y	TBD		125V	Y		
.14.4 .14.5	Rated bus current No. of phases/wires	VTS 2W	250 A single / 2 wire	Y	225 A 2Pole 2W	VTS Y	TBD TBD		100A 1 PHASE2 WIRE	Y		
14.6	Withstand Current Rating	VTS	42 kA		10 kA	VTS	TBD		6kA			
.14.8	Circuit Breaker Manufacturer	VTS	eaton		Eaton	VTS	твр		SQUARE - D			
.14.9 .14.10	Circuit Breaker Model Main Circuit Breaker Rating	40 A minimum (bidde to complete the DC load list submitted with clarification)	Series C (HJD/HFD) 250 A	к	GBH 40 A	Y	TBD		100A	к		
.14.11	No. of branch circuit pole positions	42P	36 - 2p, 15A, totaling 72	к	4;	2 Y	TBD		18	N		
.14.12	Depth	VTS	285 mm		915 mm	VTS	TBD		LATER mm			
.14.14 .15	Height High Voltage Power Cable	VTS	2286 mm		140 mm	VTS	TBD		LATER mm			
.15.1	Manufacturer	VTS		X	Prysmian	V	General Cable	v		DI/A		
.15.2		18CK 90 3C+ G	174	, Y	20 200 1/	1 V	See attached PV Teck	T V	LATER .	N/A		_
.15.3	Conductor Material	Stranded, annealed	copper	Ŷ	Copper	Y	See attached Cu	Y	COPPER	Y		
.15.5	Insulation Material	soft bare Cu XLPE 100%	TR-XLPE	Y	TRXLPE	Y	(copper) See attached TR-XLPE	Y	PVC	N		
.15.6	Armour Material	Interlocked AI armour	Aluminum	Y	AIA	Y	See attached AIA	Y	XLPE	Y		
.15.7	Jacket Material	-40 Deg C PVC jacket	PVC	Y	PVC-Polyvinyl Chloride	Ŷ	See attached PVC	Y	PVC	Y		
.16	Low Voltage Power Cable	VTS	Novans		Promise		General Cable		LATER			
.16.2	CSA Type	FR Teck 90 3C+ G	C22.2 No. 131 and No.	Y_	TEK90, CSA C22.2	Y	See attached Teck 90	Y	CSA-C22.2 NO 38	Y		
.16.3	Rated voltage	VTS	174 600 V	(N	1000 V	E	See attached 1000 V	Y	600V			
.16.4	Conductor Material	Stranded, annealed soft bare Cu	copper	Y	Copper	Y	See attached Cu (copper)	Y	COPPER	Y		-
.16.5	Insulation Material Armour Material	XLPE Interlocked Al armour	XLPE Aluminum	Y Y	XLPE Aluminum AIA	Y Y	See attached XLPE See attached AIA	Y Y	PVC XLPE	N N		_
.16.7	Jacket Material	-40 Deg C PVC	PVC	Y	PVC	Y	See attached PVC	Y	PVC	Y		
.17	Control Cables	jacket										
.17.1	Manufacturer	VTS	Nexans	V	Prysmian	v	General Cable	~	LATER	v		
17.2	Poted veltage	multiconductor	174	T V	FER 90, CSA CZZ.Z	T.	See attached feck 90	v	200V	N		_
.17.4	Conductor Material	Stranded, annealed	copper	Y	Copper	Y	See attached Cu	Y	COPPER	Y		
.17.5	Insulation Material	soft bare Cu XLPE	XLPE	Y	XLPE	Y	See attached XLPE	Y	PVC	N		
.17.6 .17.7	Armour Material Jacket Material	Al armour -40 Deg C PVC	Aluminum PVC	Y Y	Aluminum AIA PVC	Y	See attached AIA	Y	PVC	Y	6	
.18	Fire Alarm System	jacket										
18.1	Fire Alarm Panel Manufacturer	VTS VTS	Edwards		MIRCOM	VTS	MIRCOM EX-2001-6K	VTS VTS	EDWARDS			
.18.3	Туре	VTS	4 Class B or 2 Class A		Addressable	VTS	n/a	VTS	NEMA 1	V		
.18.4 .18.5	Hated input voltage Width	120 V 1P 60 Hz	385 mm	Y	120 V 635 mm	Y VTS	see attached	VTS	LATER mm	1		
.18.6	Depth Height	VTS VTS	158 mm 280 mm		165 mm 825 mm	VTS VTS	see attached	VTS VTS	LATER mm			
4	SPILLWAY ELECTRICAL BUILDING – MECHANICAL AUXILIARIES											
1.1	HVAC SYSTEM Vibration and Seismic Control Manufacturer		ТВD	VTS	Vibro-Acoustics	VTS	ТВО	VTS	Vibron Model SRH, Korfund, Vibro- Acoustics, or accepted equal	VTS		
1.2 1.2.1	Operating Dampers Manufacturer		Alumavent	Y	Vibro-Acoustics	VTS	ТАМСО	Y	Tamco	Y		
1.2.2	Damper Model (Insulated)		3965BFSS 3165	Y	Later	VTS	9000ECT	Y Y	9000ECT	Y Y		
1.2.0	Fire Dampers		5105		Later	13	5.000					
1.3	Manufacturer		Alumavent BV	Y	Roskin DIBD2	Y Y	HUSKIN DIBD2	Y Y	Buskin DIBD2	Y Y		
.1.3 .1.3.1 .1.3.2	Bamper woder			v	Greenback	Y	Greenbeck	Y	Greenbeck	Y		
1.3.1 1.3.1 1.3.2 1.4	Emergency Generator Room Ventilation Fan		PennBarry	1.000	L'OLOCHICON	Se	3.33.1190N			V		
1.3.1 1.3.2 1.4 1.4.1 1.4.2	Emergency Generator Room Ventilation Fan Manufacturer Model		PennBarry SX125BHC	Y	BSQ-130HP-7	Ŷ	BSQ-130HP-7	Y	BSQ-130HP-Z			
1.3 1.3.1 1.3.2 1.4 1.4.1 1.4.2 1.4.3 1.4.4	Emergency Generator Room Ventilation Fan Manufacturer Model Airflow Static Pressure	L/s Pa	PennBarry SX125BHC 400 L/s 390 Pa	Y Y Y	BSQ-130HP-7 400 L/s 372 Pa	Y Y Y	BSQ-130HP-7 400 L/s 372ESP + 16.2 Filter	Y Y Y	400L/s 372ESP+16.2	Y Y		
1.3 1.3.1 1.3.2 1.4 1.4.1 1.4.2 1.4.3 1.4.4 1.4.5	Emergency Generator Room Ventilation Fan Manufacturer Model Airflow Static Pressure Motor	L/s Pa HP	PennBarry SX125BHC 400 L/s 390 Pa 3/4	Y Y Y Y	BSQ-130HP-7 400 L/s 372 Pa 0.75 HP	Y Y Y	BSQ-130HP-7 400 L/s 372ESP + 16.2 Filter 3/4 HP	Y Y Y	400L/s 372ESP+16.2 FilterPa 3/4 HP	Y Y Y		
1.3 1.3.1 1.3.2 1.4 1.4.1 1.4.2 1.4.3 1.4.3 1.4.4 1.4.5 1.4.5 1.4.6 1.4.7	Emergency Generator Room Ventilation Fan Manufacturer Model Airflow Static Pressure Motor Octave Band Center Sound Power Inlet Filter MERY Ration	L/s Pa HP dB	PennBarry SX125BHC 400 L/s 390 Pa 3/4 67 dB 8	Y Y Y Y Y	BSQ-130HP-7 400 L/s 372 Pa 0.75 HP +/- 64 dB	Y Y Y Y Y	BSQ-130HP-7 400 L/s 372ESP + 16.2 Filter 3/4 HP see attached MERV 8	Y Y Y Y	BSQ-130HP-2 400L/s 372ESP+16.2 FilterPa 3/4 HP 83dB MERV8	Y Y Y Y Y		
1.1.3 1.1.3.1 1.1.3.2 1.1.4 1.1.4.1 1.1.4.2 1.1.4.3 1.1.4.3 1.1.4.3 1.1.4.5 1.1.4.5 1.1.4.6 1.1.4.7 1.1.4.8	Emergency Generator Room Ventilation Fan Manufacturer Model Airflow Static Pressure Motor Octave Band Center Sound Power Inlet Filter MERV Rating Inlet Filter Static Pressure Drop	L/s Pa HP dB Pa	PennBarry SX125BHC 400 L/s 390 Pa 3/4 67 dB 8 TBD	Y Y Y Y Y Y Y	BSQ-130HP-7 400 L/s 372 Pa 0.75 HP +/- 64 dB 8 16.2 Pa	Y Y Y Y Y Y	BSQ-130HP-7 400 L/s 372ESP + 16.2 Filter 3/4 HP see attached MERV 8 see attached	Y Y Y Y	400L/s 372ESP+16.2 FilterPa 3/4 HP 83dB MERV8 51Pa	Y Y Y Y Y Y		

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	Technical Rid Evaluation		Title	Sup	ply / Install Powerhous	e and	Spillway Hydro-Mecha	anical I	Equipment		Revision No.: 01	1
	rechnical Bid Evaluation		Package No.:	CHO	0032	Proje	ct Title:	L	CP-MUSKRAT FAL	LS	Rev. Date.: 2013-06-13	
			Tag No.:			Clier	it:		NALCOR		Project No.: 505573]
	-	Bidder	HABS		SENS	-	LEAFS		Jets		Description of the	-
ltem Number	Description	Specified Value or Reference	Proposed	neilamo	Proposed	omplian	Proposed	omplian	Proposed	omplian	Proposed Eild	
10.1.5.3	Airflow (each)	L/s	800 L/s	Y	800 L/s	Y	800 L/s	Y	800L/s	Y	0	
10.1.5.4	Static Pressure	Pa	434 Pa	Y	434 Pa	Y	434 Pa	Y	434Pa	Y		
10.1.5.5	Motor (each)	HP	1.5 HP	Y	1 HP	Y	1 HP	Y	1HP	Y		
10.1.5.6	Octave Band Center Sound Power	dB	69 dB	Y	68 dB	Y	see attached	Y	77dB	Y		
10.1.6	Engine Exhaust System		One in Ohimani				CAT		Delluid:Matella actor	v		
10.1.6.1	Manufacturer		International	Y.	INEISON		CAT		Seikirkivietaibestos	1		
10.1.6.2	Model		CIX Secure Stack	Y	FRD6540		see attached	Y	IPS	Y		
10.1.6.3	Temperature Rating	oC	1000 continuous deg C	Y	460 °C		see attached	Y	540 deg C	Y		
10.1.6.4	Insulation Rating			VTS	Later	VTS	see attached	Y	Double wall with	Y		
10.1.7	Louvers			-					100 mm insulation			
10.1.7.1	Manufacturer		Ventex	Y	Ruskin	Y	Construction Specialities	Y	Construction	Y		
10170	Madat		Mind driven Fillens H	N/	5 5 43000		DD 4000	v	Specialties	V		
10.1.7.2	Model		2590	Y.	EmE 42000	Y	HS-4300	×.	HS-4300	Y.		
10.1.7.3	Material Finish		Kinar	Y	Duracron	Y	Kynar 500 / Hylar 5000	Y	Kynar500/Hylar500	Y		1
10174	Parformanca Requirmente		TRD	VTS	Vanu with the size of the	v	see attached		0 Maxmum	v		
19.1./.4	r standinge nedattionto		150	13	louver	1	and analytica		Airflow(L/s) 1600,			
10 1 7 5	Erro Aven		TRD	1.000	Name and a second	N	and other to d		20853	V		
10.1.7.5	Free Area		IBD	VTS	Vary with the size of the	Y	see attached		2.84, 3.17	Y		
10176	Static Pressure Drop	Pa	TBD	VTC	Vary with the size of the	Y	see attached		27 4 34 5 Pa	Y		
		ra		113	louver				and onor a			
10.1.8	Electrical Room Inlet Air Filter				arman ar							
10.1.8.1	Manufacturer		G&F/Hardy Filtration	Y	Camfil Farr	Y	CAMFIL FARR	Y	Camfil Farr	Y		
10.1.8.2	Model				V-Band Glide Pack	Y	V-Bank Glide Pack	Y	V-Bank Glide Pack	Y		
10.1.8.3	Thickness	mm	51 mm	Y	51 mm	Y	51 mm	Y	51 mm	Y		
10.1.8.4	Airflow	L/s	1600 L/s	Y	1600 L/s	Y	1600 L/s	Y	1600L/s	Y		
10.1.8.5	Filter Face Velocity	m/s	1,44 m/s	Y	1.44 m/s	Y	1.44 m/s	Y	1.44m/s	Y		
10.1.8.6	Static Pressure Drop (Initial)	Pa	32 Pa	Y	32 Pa	Y	32 Pa	Y	32Pa	Y		
10.1.8.7	Static Pressure Drop (Final)	Pa	248 Pa	Y	248 Pa	Y Y	248 Pa	Y	248Pa	Y		
10.1.9	Duct Mounted Electric Heater		0	1	0		WENV O		MERVO			
10.1.9.1	Manufacturer		Thermolec	Y	Thermolec	Y	THERMOLEC	Y	Thermolec	Y		
10.1.9.2	Model		Thermo-V	Y	Slip in	Y	THERMO-V	Y	Thermo-V	Y		1
10.1.9.3	Coll Material		Nickel chrome alloy	Y	Nickel chrome Alloy	Y	Nickel Chrome Alloy	Y	Nickel Chrome	Y		1
10194	Airfow	1/e	4001/8	v	4001/6	v	4001/s	v	Alloy 4001/s	v		
10.1.9.5	Capacity / Output	kW	12 kW	Y	400 L/S	Y	12 kW	Y	12kW	Y		
10.1.9.6	Control Type	100 T	SCR	Y	SCR	Y	SCR	Y	SCR	Y		
10.1.9.7	Control Signal		0-10Vac	Y	0-10v dc	Y	0-10 VDC	Y	0-10 VDC	Y		
10.1.10	HVAC Control System											
10.1.10.1 F	PLC (Programmable Logic Controller) Manufacturer		Baraseme							VTS		
10.1.10.2	PLC (Programmable Logic Controller) Model		PP Sigma	V15	Delta	MAS .	ALLEN PRADLEY	WTS:	BY SHE SIPLUS	VTS		
10.1.10.3	HMI (Human Machine Interface) display Manufacturer		Schneider	Y	Delta (Salta	VTS	2711P-T7C4D8	Y	MP377 PBO 15	Y		
	, and a manager and a model		HMIPCCP170BB33K04	ľ								
101105	Design Design March 1990		N00	V	P. It.	V.	HAMMOND	V	not oneward	VITE		
10.1.10.5	Instrumentation / Sensor Manufacturer		ACI	Y	Delta	Y	GREYSTONE/AUTOTR	Y	not answered	VIS		
				Č	benu		ON/JOHNSON					
10.1.10.7	Damper Actuator Manufacturer		Johnson Controls	Y	Belimo	Y	TBD AMI	VTS	not answered	VTS		
10.1.10.8	Damper Actuator Model		M9208	Y	Various models	Y	TBD AMI	VTS	not answered	VIS		
			Specification Co	mpli	ance Summary							
		Bidder	1	mpn	2		3		4		5	1
Compliant		Y	564	565	543	544	584	583		513	0	0
Technically	y Acceptable with Negotiated and Approved Deviations	к		77		94	10	73		120	0	R
Non Compl	liant and Not Acceptable	N	52	.51	54	.53	12	13		82	0	2
Not applica	able to evaluation	N/A		167		101		107		154	0	13-
vendor to S	specity	VIS		235		436		410		220	0	
Approvals	Signature	Date	Remarks		Remarks		Remarks		Remarks		Remarks	1
	STR MO	Date 2013	Mechanical design:		Mechanical design:		Mechanical design:		Mechanical		1	1
Lead Engineer	BA (UU,	- Cr	Minor review for		Technical acceptable		Minor review for		design:			
Lead Engineer		00	compliance.		but need to review		compliance (steel		Insufficient			
Lead Engineer			Mechanical		compliance (Overall		service hoist). All		review design			
Lead Engineer		13	compnents						approach for			
Lead Engineer		13	compnents manufactured in		gate and bulkhead		mechanical					
Lead Engineer		13	compnents manufactured in Brasil: Will need to		gate and bulkhead diemnsions, hoist		mechanical components are fully		compliance			
Lead Engineer		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels,		mechanical components are fully manufactured in		compliance (Most of			
Lead Engineer		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical		mechanical components are fully manufactured in Canadian well known		compliance (Most of equipment is			
Lead Engineer		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned).			
Lead Engineer		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical			
Lead Enginee		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are			
Lead Enginee		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities:		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in			
Lead Enginee		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			
Lead Enginee		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			
Lead Enginee		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			
Lead Engineei		13	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			
Vechanical Le:	ad R. D. Kard	13 Date 13-06-201	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			
Vechanical Lea	ad R. P. Frank	13 Date 13-06-201 Date 13 - 06-29	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			×
Vechanical Lea Electrical Lead	and R. P. Kong danager- and Kanang G. HAIN 25	13 Date 13-06-201 Date 13-06-20 Date 13-06-20	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			×
Vechanical Le Electrical Lead Electrical Lead	and R. P. Kong danager- Warm Raward & HAIN 25	Date / 3 - 06 - 201 Date / 3 - 04 - 29 Date / 3 - 04 - 29 Date / 3 - 06 - 29 Date 13 - 04 - 20	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			×
Vechanical Lea Electrical Lead Engineering Ma Package Lead	and R. P. Konß Annager- Uden Rawing G HAIN 25	13 Date 13-06-201 Date 13-06-201 Date 13-06-201 Date 13-06-201	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		Insufficient information provides to			
Vechanical Lea Electrical Lead Electrical Lead Engineering M Package Lead	Aanager- adam Rawing a MAIN 23	Date / 3 - 06 - 20 / Date / 3 - 06 - 20 /	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		Insufficient information provided to obtain passing			
Vechanical Lea Electrical Lead Engineering M Package Lead	and R. P. Konß danager- adem Raming G HAIN ES dansger-	Date / 3 - 06 - 20 / Date / 3 - 06 - 20 /	compnents manufactured in Brasil: Will need to be surveyed.		gate and bulkhead diemnsions, hoist ropes, gate wheels, primary anchors). Main mechanical structures, welding, painting and assembling are done in Chinese facilities: Will need to be surveyed permanently.		mechanical components are fully manufactured in Canadian well known facilitieas.		compliance (Most of equipment is quite overdesigned). All mechanical components are manufactured in Korea.			×

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Appendix 6 - C ty Assurance Evaluation	Rep	ort			С	IM	FP	Exhibit P	-01	187	1.000						Page 46
RFP #: CH0032	Weight	Max Score	Vam	e: 5/1	Powerhouse	Hyd	ro/Me	chanical Equi	pme	nt					anomina		
					Sens	1	1			100	Leafs						
11) • Bidder's quality policy statement and	200000000	1.2	Score	Weighted Score	Comments	Score	Weighted Score	Comments	Score	Weighted Score	Commente Ganotec-MUGA Fab Policy	Score V	elghted Score	Comments	Score	Weighted Score	Comments
- list of current quality objectives.	0.7	5.0	4.5	0.18	objectives issued		0.00		2.5	0.10	statement received. No objectives received.		0.00			0.00	
1ii) - Bidder's Master Documents List or the Table of Contents of your policy and procedures manual.	0.5	5.0	4.0	0.40	No procedures list provided		0.00		3.0	0.30	Canmec's QM TOC received Ganotec QM rec'd, Bidder clarified which manual applies. No apparent traceability between		0.00			0.00	
										Terris	manual, QM5 and certificate. See clarification question no. 92						
1iii) Bidder's current - Internal Audit Schedule. - External Audit Schedule	1.0	5.0	3.2	0.64	Audit schedules combined, previous years implementation suspect		0.00		3.0	0.60	Canmec Internal Audit schedule received, Ganotech's Audit schedule received.		0.00			0.00	
1iv) Bidder's third party ISO 9001:2008 registration, if available.											Very confusing presentation of						
	85	5.0	5.0	0.50	Very detailed scope definition specific to our scope of work.		0.00		2:0	0.20	certificates across many companies. ISO 9001 certificate presented for Ganotec is a integrated Management System between Ganotec and Muga Fab Inc., yet Execution Plan Indicates that the QMS of Ganotec will serve as the foundation of their program.		0.00			0.00	
1v) Most Recent Management Review Minutes of Meeting.	1.0	5.0	3.0	0.60	Only Table of contents provided		0.00		2.5	0.50	Canmec Management Review minutes submitted. Ganotech submitted a Quality presentation when asked for Mgmnt Review minutes.		0.00			0.00	
1vi) If ISO 9001:2008 registration is held, a copy of last third party surveillance report.	0.3	5.0	5.0	0.30			0.00		2.5	0.15	Audit report was conducted on a Project JV of three different organizations of which Ganotec was joint ventured with Muga Fab Inc		0.00			0.00	
 Briefly describe any processes employed to plan the activities related to the requested products / services. If available, provide typical examples of - Quality Plans and / or - Instruction and Test Plans. 	0.ď	5.0	5.0	0.40	Good submission of ITP's		0.00		3.0	0.24	Myriad of QP & ITP submissions submitted between Ganotec and Canmec		0.00			0.00	
 Describe how this work relates to the total annual productive capacity of Bidder's company and that of Bidder's main suppliers. 	0.5	5.0	3.5	0.35			0.00		2.0	0.20			0.00			0.00	
4) Briefly describe the processes used to control the design of the products / services to be supplied. Include references to the following processes: • Design Planning • Design Review • Design Verification • Design Validation • Design Changes	1.0	5.0	4.0	0.80			0.00		1.0	0.20			0.00			0.00	
S) Briefly describe the Bidder's Supplier / Sub-contractor selection process and any processes employed to monitor continued performance against contract requirements. In Bidder's response include a list of any services associated with the scope of work that would be sub-contracted out and where appropriate, the contract details for that Sub-Contractor.	1.0	5.0	4.5	0.90	List of subcontracted services provided in A16 as part of Commercial response. Supplier Assessment and Selection procedure included with response to questionnaire		0.00		2.0	0.40	List of subcontracted services provided in response to A16 question		0.00			0.00	
6) What techniques does the Bidder employ to verify that the product / service have been delivered appropriately and in accordance with the contract requirements? What verification records are generated?	0,4	S.0	4.0	0.32	Answer is acceptable and ITP's submitted are acceptable.		0.00		2.0	0.16			0.00			0.00	
7) Briefly describe the Bidder's records retention system and the normal records retained (or supplied to the client) as part of this product/ service delivery. Bidder's response should make reference to records such as Material Test Reports, Non- destructive examination records, in process inspections and Factory Acceptance tests.	0.2	5.0	3.0	0.12			0.00		2.5	0.10			0.00			0.00	
8) What processes does the Bidder employ to ensure that inspection is performed and Measuring and Test Equipment is fully calibrated and functioning appropriately?	0.5	5.0	4.0	0.40			0.00		2.0	0.20			0.00			0.00	
9) When products / services do not meet requirements, what processes are employed to ensure timely resolution of the problem? If so, what records of the problem and solution are generated?	0.2	5,0	4.0	0.16	NCR procedure submitted		0.00		2.5	0.10			0.00			0.00	
10) Does the Bidder employ any continuous improvement processes or other methods to monitor evaluate and improve the quality of products / services provided? If so, briefly describe them. Include in your response details on the following: Processes to monitor and measure effects of continuous improvement changes. Processes for the evaluation and implementation of innovative and cost reduction ideas.	0.5	5.0	4.0	0.40			0.00		2.5	0.25			0.00			0.00	
11) Does the Bidder employ any processes to monitor internal / external activities to ensure conformance to procedures? If so, briefly describe them.	0.5	5.0	3.5	0.35		-	0.00		2.5	0.25			0.00			0.00	
12) Briefly describe the Bidder's Training Policy and any controls used to ensure personnel are competent to perform their defined functions and responsibilities.	0.5	5.0	3.5	0.35			0.00		2.0	0.20			0.00			0.00	
13) Briefly describe any servicing and / or product support required / recommended as part of the delivery of this equipment / service.	0.5	5.0	3.0	0.30			0.00		0.0	0.00			0.00			0.00	
14) Briefly describe any processes employed to monitor Customer Satisfaction and how these processes will be applied to the proposed scope of work. 15) The Bidder shall confirm that it has reviewed and can comply with any Duality.	0.2	5.0	4.0	0.16			0.00		2.0	0.08			0.00			0.00	
Assurance requirements outlined in the contract agreement and that the responses to this questionnaire are true and accurate.	10	5,0	5.0	0.10	QM Sign off		0.00		2.0	0.04	President sign off. Requested to have QM sign off but request was denied.		0.00			0.00	
Preliminary evaluation scores based on requested objective documentary evidence submissions only as depicted by the colour blue.	10.0			77%			0%			43%		09	6.00			0.00	
Desk Top Study Score-Based	Recomm	nendation					1.375		Canme Ganote	ec-Design ec - Const	& Manufacturing ruction Exec & PM						
Comments: (Overall impression of the Bidder and how the ev	aluation	relates to	the re	commen	dation)	е 1911		**Proponent must ac	hieve a	minimu	m Total Weighted Score of 6	0 percen	to be	considered acceptable.			
Sens: Andritz Hydro's Quality submission was acceptable with responses p Bidder 2:	rovided b	by their Qu	uality N	Aanager	who was able to provi	de ap	propriate	details to applicable q	uestion	ns. The re	esponse to the questionnaire	was sup	pleme	nted with supporting QA pro	cedures	5.	
Leafs: The collaboration of players and required interface management rep Bidder 4:	resents a	a risk to th	ne proj	ect. Ther	e is no sound evidence	e of co	herent in	plementation of Qua	ity Assu	urance. T	his is concerning regarding d	lesign co	ntrol a	nd associated interface betw	/een all	parties.	
Bidder 5:		_	(
Evaluation Rating Recommended Clarification / Pre Award Audit (Desk Top and/or Site) Recommended Not Recommended	Green Yellow Red			80%					Ovei	rall S	coring by Biddeı	r					
Scoring Guide:	「「「	-		70%	77	%										Tarant	D SOM



Health and safety scoring Guide: 0 - Question not answered or no relevant info 1 - Response does not meet key Criteria 2 - Response only meets a few of the key crite 3 - Response meets amajority of the key crite 4 - Response meets all key criteria 5 - Response meets and exceeds key criteria	rmation prov ria ria	ided in res	ponse:			Package I Package I Project :	Name: No.:	Supply an CH0032 Lower Chu	d Install P urchill Pro	owerhous ject	e and spill	way Mech	anical
	Question	Gan	otec	Als	tom	And	fritz	Vyt	rell	KHNP / C	Daewood	Bid	der
	Weight (%)	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
Health and Safety 2.0 HEALTH AND SAFETY MANAGEMENT PERFORMANCE - Please provide the following safety statistics, referencing the attached incident definitions and frequency calculation.	10	4	8	3	6	1	2		0		0		0
3.0 WORKER'S COMPENSATION - Indicate the jurisdiction where you are registered. List your overall Worker's Compensation industry rating for the current year and past three (3) years. Attach a WCB clearance letter and experience rating statements for the past three years.	3	4	2.4	4	2.4	4	2.4		0		0		0
4.1 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a certificate of recognition or is your health and safety management system certified by an outside agency? (OHSAS 18001, CSA 2- 1000 etc.) If yes, provide a copy of the certificate.	2	5	2	4	1.6	з	1.2		0		0		0
4.2 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your health and safety program have a policy statement that clearly outlines the Company's commitment to health and safety?	3	4	2.4	4	2.4	4	2.4		Q		0		0
4.3 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Has your company received an occupational health and safety stop work order, charges or equivalent from any regulator in the last three (3) years? If yes, provide details.	3	3	1.8	4	2.4	1	0.6		0		0		0
4.4 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Please list the highest ranking safety professional in your organization: (attach résumé). Do you plan to have a safety representative(s) for this Work full time or part time (Y or N)? If "Yes", provide a résumé(s).	3	3	1.8	3	1.8	4	2.4		0		0		0
4.5 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your health and safety management system address the following key elements? Management leadership and commitment; hazard/risk identification, evaluation and control; risk assessments on all critical and non- routine jobs/job functions; a permit to work system; ongoing inspection. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	4	6.4	4	5.4	4	6.4		O		o		0
4.6 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your health and safety management system include work practices and procedures, such as: Lockout and tagout; traffic control; excavation and trenching; confined space entry; hoisting and rigging; working near power lines; handling and transporting hazardous substances; unloading large/long materials (such as piles); vehicle recovery. If yes to any of these, reference appropriate Health and Safety manual section(s).	8	4	6.4	4	6.4	4	6.4		Q		0		0

	Question	Gan	otec	Alst	om	And	fritz	Vy	rell	KHNP/C	aewood	Bid	der
	Weight (%)	Answer	Score	Answer	Score								
Health and Safety													
4.7 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have written programs for the following? Duty to refuse work; fall protection; noise management; workplace violence; working alone; personal protective equipment (PPE); WHMIS (Workplace Hazardous Materials Information System); respiratory protection. If yes to any of these, reference appropriate Health and Safety manual section(s). In regards to respiratory protection, have your employees been: trained? fit tested? medically approved?.	8	4	6.4	4	6.4	4	6.4		O		O		0
4.8 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you conduct medical exams for the following? Pre-employment; replacement job capacity; pulmonary; respiratory. If yes to any of these, reference appropriate Health and Safety manual section(s).	2	0	0	3	1.2	4	1.6		0		0		0
4.9 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a drug and alcohol program? If "Yes", does it include the following? Pre- employment testing; testing for cause; post incident testing; formalized arrangements with a collection and testing agency (if "Yes", provide testing agency information]; does your drug and alcohol policy follow the guidelines as laid out in The Canadian Model for Providing A Safe Workplace – Alcohol and Drug Guidelines and Work Rule Version 2 – Effective October 1, 2010? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	3	1.8	3	1.8	4	24		0		0		0
4.10 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Equipment (Tools, Supplies, Machinery and Sanitary Facilities): Do you have a written list of equipment requiring pre-use inspections? Do you have a documented list of equipment requiring scheduled servicing in accordance with manufacturer's recommendations, legislated requirements, and industry standards? Is frequency of equipment inspections and maintenance identified? Are corrections of deficiencies documented? Do you have follow-up mechanism for corrective actions? If yes to any of these, reference appropriate Health and Safety manual section(s).	4	4	3.2	4	3.2	4	3.2		0		0		0
4.11 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Orientation Program: Do you have a health and safety orientation program? Does the program include new, transferred and temporary workers? Does the program provide instruction on the following: employer health and safety responsibilities; employee health and safety responsibilities; obligation to refuse imminent danger work; progressive discipline policies and procedures; safe work practices and/or procedures; emergency response procedures; first-aid procedures; incident/near miss reporting; does you orientation program include a qui2? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4		٥		o		0
4.12 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Incident Investigation: Do you have a written procedure for incident reporting and investigation?; Do you utilize a root cause determination process such as "Tap-Root"? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4		0		0		0
4.13 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have an emergency response plan related to activities and specific locations? If yes reference appropriate Health and Safety manual section(s).	4	4	3.2	4	3.2	4	3,2		0		0		0

	Question	Gan	otec	Alsi	om	And	lritz	Vyt	rell	KHNP/C	aewood	Bid	der
Health and Safety	Weight (%)	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
4.14 HEALTH AND SAFEY SUPPLEMENTARY QUESTIONS - Do you have a policy pertaining to prohibited items on (e.g., knives, firearms)? Are all employees made aware of the prohibited items policy and is it enforced? If yes to any of these, reference appropriate Health and Safety manual section(s).	1	3	0,6	4	0.8	4	0.8		O		Ø		O
4.15 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you make reference to following legislative requirements where work is being performed?; violence policies and procedures; harassment policies and procedures. If yes to any of these, reference appropriate Health and Safety manual section(s).	1	4	0.8	4	0.8	4	0.8		0		0		ð
4.16 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Do you have a policy or specific rules with respect to the use of personnel protective equipment (PPE)? Do you have a formal process in place for determining PPE requirements? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	4	2.4	4	2.4		0		O		0
4.17 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Contractor Management: Do you pre- qualify subcontractors?; Do you include subcontractors in: orientations, health and safety meetings, inspections, audits. If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4		0		O		0
4.18 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Communications: Do you inform employees and subcontractors on Health and Safety alerts, programs, practices, procedures, rules, revisions and related information ? Do you have a joint Health and Safety committee? Do you hold scheduled safety meetings, such as weekly general safety meetings for all crew and weekly departmental meetings for each department at all worksites? Are Health and Safety meeting minutes and attendance recorded? If yes to any of these, reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4		0		D		O
4.19 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your Health and Safety program outline the requirements for supervisors and employees to conduct regular Health and Safety inspections of equipment and work conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	3	4	2.4	4	2.4	4	2.4		0		Q		0
4.20 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Does your Health and Safety program require the prompt reporting of hazardous conditions at all worksite(s)? If yes reference appropriate Health and Safety manual section(s).	5	4	4	4	4	4	4		0		Ö		0
4.21 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Health and Safety Training: Have your employees received the required Health and Safety training and retraining? Do you have a specific Health and Safety training program for supervisors? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	4	2.4	4	2.4	4.	2.4		0		0		0
4.22 HEALTH AND SAFETY SUPPLEMENTARY QUESTIONS - Training Records: Do you have Health and Safety training records for your employees? How do you verify competency of the training (job monitoring? written test? competency check? oral test? other?). Are all training records available upon request? If yes to any of these, reference appropriate Health and Safety manual section(s).	3	з	1.8	4	2.4	4	2:4		0		0		0
Score	100	76	.20	76.	40	71	.80	0.0	00	0.0	00	0.0	00
PASS/FAII	rercentage	76. PA	55	76.4 PA	55	/1.	SS	0.0	0%	0.0	0%	0.0	U%

Minimum Pass Score is 70%

	Question	Gan	otec	Alst	tom	And	ritz	Vyt	rell	KHNP/C	aewood	Bid	der
	Weight (%)	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score	Answer	Score
Health and Safety	Network Contraction			100				10.000		Contraction of the			
			/			-							
Evaluated By	Sean Lee	_	$\leq \wedge$	-									
Reviewed By		-	0										
Review Date	25-Apr-13					1							

lealth and Sa	fety Scoring G	Suide:								
- Question formation - Response - Response - Response - Response - Response	not answere provided in r does not me only meets a meets a maj meets all ke meets and e	d or no relevant esponse set key Criteria a few of the key criteria jority of the key criteria y criteria exceeds key criteria			Package I Package I Project :	Vame: No.:	Supply an CH0032 Lower Chu	d Install Powerhous urchill Project	a and spillway Mechanical	
_	Question	Ganotec		Alstom		Andritz		Votrall	KHNP / Daewood	
	Weight (%)	Answer Score	Answer	Score	Answer	Score	Answer	Score	Answer Score	
lealth and 9	Safety	HINNEY SERIE	Allshel		Andres					-
ACCIEAU	Juice	PASS		PASS		PASS	Coule	d Not Complete	Could Not Complete	
ASSIFAIL		No further clarification	H& Manag	ement System	H& Manao	ement System	Only provi	ded a table of	Could not evaluate, the	
		required, H&S Management System provided meets the requirements of the evaluation criteria to obtain a pass mark.	provided n requirement rate.	neets the nts for a passing	provided i requireme rate.	neets the nts for a passing	contents a copy of the System	nd did not provide a e H&S Management	documents provided ware not robust enough to provide adequate evaluation.	
		OHSAS 18001 Registered and certificate provided.	Over the la Alstrom ha Time Injuri has been t this trend continue. I determine incidents o during insi manufactu	ast 3 years as had 20 Lost ies. What actions alken to ensure does not Have the trends d that these occured on site tallation or during uring.	Over the li has had 1 and 22 me actions ha ensure thi continue. determine incidents during ins manufactu	ast 2 years Andritz 6 Lost Time Injuries idical aids. What is been taken to s trend does not Have the trends d that these occured on site tallation or during uring.				
					In a period Andritz ha and a fine been take does not I What impo made to y Managem	I of just over a year d 2 stop work orders what actions have not censure that this happen on the LCP? ovements have been our H&S ent System?				

Minimum Pass Score is 70%

Evaluated By Sean Lee Reviewed By Review Date 25-Apr-13

RFP - Environmental Evaluation

RFP #: CH0032		RFP Name: S/I Powerhouse Hydro/Mechanical Equipment									
	Weight	Max Score	A	stom Vytrell	К	HNP Daewoo	Gai	notec/Canmec		Andritz	Scoring Instructions
Evaluation Plan Appendix 10			Score	Weighled Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	(Pass Mark 70%)
ANAGEMENT INVOLEMENT, LEADERSHIP AND ADMINISTRATIO	N										
1.1 Environmental Management System (ISO or Not)?	3.5	5.0	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	If ISO Score 5, If not ISO Score 3, If No System score 0
1.1a Adequacy of TOC (if provided)	3.0	5.0	4.0	2.40	0.0	0.00	5.0	3.00	5.0	3.00	Rank adequacy 1 - 5; If not provided Score 0
1.1b Adequacy of Environmental Policy (if provided)	3.0	5.0	4.0	2.40	0.0	0.00	5.0	3.00	5.0	3.00	Rank adequacy 1 - 5; If not provided Score 0
1.3 Are environmental targets developed and reviewed on a regular basis?	3.0	5.0	5.0	3.00	5.0	3.00	5.0	3.00	5.0	3.00	Yes = 5; No = 0
1.3a Adequacy of Environmental targets	8.0	5.0	3.0	1.80	3.0	1.80	4.0	2.40	4.0	2.40	Rank adequacy 1 - 5; if not provided Score 0
1.4 Has a formal system, including the use of audits and inspections, been developed to define responsibilities for verifying that environmental performance objectives are met?	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; Na = 0
1.4a Adequacy of audit and inspection information	15	5.a	4.0	1.20	3.0	0.90	4.0	1.20	4.0	1.20	Rank adequacy 1 - 5; If not provided Score 0
2. ENVIRONMENTAL HAZARD IDENTIFICATION AND RISK MANAGEN	IENT										
2.1 Does the Bidder conduct formal risk assessments when planning and implementing operations and activities?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
2.2 If "Yes", does that risk assessment include environmental risks?	15	5,0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
2.2a adequacy of risk management system	1.5	5.D	5.0	1.50	3.0	0.90	5.0	1.50	4.0	1.20	Rank adequacy 1 - 5; f not provided Score 0
2.3 Has a formal hazard observation program been implemented at the midder's worksites?	0.5	5.0	5.0	0.50	5.0	0.50	5.0	0.50	4.0	0.40	Yes = 5; No = 0
2.3a Adequacy of hazard observation program	0.5	5.0	3.0	0.30	3.0	0.30	4.0	0.40	4.0	0.40	Rank adequacy 1 - 5; If not provided Score 0
3. ORGANIZATIONAL RULES AND WORK PROCEDURES											
3.1 Does the Bidder have documented environmental protection plans for all jobs/work activities?	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
3.1a adequacy of EPP	25	5.0	4.0	2.00	5.0	2.50	5.0	2.50	4.0	2.00	Rank adequacy 1 - 5; If not provided Score O
3.2 Does the Bidder have environmental contingency plans?	15	5.0	5.0	1.50	3.0	0.90	5.0	1,50	5.0	1.50	Yes = 5; No = 0
3.2a adequacy of contingency plans/Does the plan outline responsibilities, available resources and actions to be taken in the event of an environmental incident?	2.5	5.0	4.0	2.00	5.0	2.50	4.0	2.00	4.0	2.00	Rank adequacy 1 - 5; If not provided Score O
4. EMPLOYEE KNOWLEDGE, TRAINING AND AWARENESS		-									
4.1 Does the Bidder have an environmental awareness program?	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
4.1a Adequacy of Program?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Rank adequacy 1 - 5; If not provided Score 0
4.2 Does the Bidder provide environmental awareness training to supervisory staff?	2.0	S.D	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
4.3 What is frequency of environmental awareness training?	2.0	5.0	1.0	0.40	3.0	1.20	3.0	1.20	1.0	0.40	Score 1-5. If monthly score 5; if bimonthly score 4; if quarterly score 3; if biannually score 2; if annually score 1
4.3a Adequacy of content environmental awareness training	2.0	5.0	4.0	1.60	2.0	0.80	3.0	1.20	3.0	1.20	Rank adequacy 1 - 5; lf not provided Score O
5 PERSONAL COMMUNICATIONS AND ENVIRONMENTAL MEETINGS											
re personal communications conducted to impart environmental creness with other workers and thereby reducing the likelihood of non compliances or environmental incidents?	1.5	5,0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1,50	Yes = 5; No = 0
5.2 Is there a system for sharing best practices and procedures, incidents and other information across the Bidder's organization?	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	Yes = 5; No = 0
5.3 Is there an environment committee in place?	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	Yes = 5; Na = 0

RFP - Environmental Evaluation

Т REP Name: S/I Powerbouse Hydro/Mechanical Equipme

RFP #: CH0032		RFP N	lame:	S/I Powerho	ouse H	- lydro/Mech	anica	l Equipment			
	Weight	Max Score	A	stom Vytrell	К	HNP Daewoo	Gai	notec/Canmec	-	Andritz	Scoring Instructions
Rid Evaluation Plan Appendix 10			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	(Pass Mark 70%)
re regular (minimum monthly) environmental meetings held at all unities to maintain effective communication of environmental information throughout the organization and with Bidder's contractors?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
5.4a Adequacy of content and frequency of environmental meetings?	1.5	s.a	3.0	0.90	5.0	1.50	5.0	1.50	5.0	1.50	Rank adequacy 1 - 5; If not provided Score O
5.5 Are minutes and records of attendance of these meetings maintained?	0.5	5.0	5.0	0.50	5.0	0.50	5.0	0.50	5.0	0.50	Yes = 5; No = 0
5.5a Adequacy of meeting minutes	0,5	s.a	4.0	0.40	4.0	0.40	3.0	0.30	3.0	0.30	Rank adequacy 1 - 5; If not provided Score 0
5.6 Does the Bidder respond in writing to environmental concerns raised at environmental meetings?	1.0	5.0	4.0	0.80	4.0	0.80	4.0	0.80	3.0	0.60	Yes = 5; No = 0
6. ENVIRONMENTAL MONITORING AND REPORTING											
6.1 Has the Bidder developed specific procedures for environmental monitoring and reporting on incidents that occur at its worksites?	2,0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0 2.00		Yes = 5; No = 0
6.1a Adequacy of monitoring and incident procedure	1.5	S.0	4.0	1.20	3.0	0.90	5.0	1.50	4.0	1.20	Rank adequacy 1 - 5; If not provided Score 0
6.2 Does the Bidder use an EMS system to establish standards, reporting and follow up and corrective action?	15	5.0	0.0	0.00	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
6.2a Adequacy of this process	1.0	5.0	0.0	0.00	3.0	0.60	4.0	0.80	3.0	0.60	Rank adequacy 1 - 5; If not provided Score 0
6.3 Does the Bidder have dedicated environmental personnel?	2.0	5.0	0.0	0.00	4.0	1.60	5.0	2.00	5.0	2.00	Yes = 5; No = 0
6.3a Adequacy of personnel and responsibilities	ð.S	5.0	3.0	0.30	3.0	0.30	5.0	0.50	5.0	0.50	Rank adequacy 1 - 5; If not provided Score 0
re supervisors formally trained in accident/investigations?	1.5	5.0	5.0	1.00	5.0	1.00	5.0	1.00	4.0	0.80	Yes = 5; No = 0
6.4a Adequacy of training program and frequency	0.5	5.0	4.0	0.40	4.0	0.40	4.0	0.40	4.0	0.40	Rank adequacy 1 - 5; If not provided Score 0
7. ENVIRONMENTAL INCIDENT ANALYSIS											
7.1 Does the Bidder have in place a formal system for the collection, analysis, trending and evaluation of environmental incident data and statistical analysis?	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
7.2 Does the Bidder develop monthly environmental incident analysis reports, which are reviewed during management review meetings?	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
7.3 Does senior management review and comment on serious and significant environmental incidents?	1.5	5,0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
7.4 Are all incident reports followed through from recommendations to completion and closure?	1.5	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1,50	Yes = 5; No = 0
8. LEADERSHIP TRAINING											
8.1 Does Bidder's management receive formal environmental management training which provides a thorough understanding of the philosophies and principles behind environmental management?	2.0	5.D	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
8.1a Adequacy of environmental management training	2.5	5,0	4.0	1.60	2.0	0.80	5.0	2.00	4.0	1.60	Rank adequacy 1 - 5; If not provided Score O
8.2 Does the Bidder's management receive an orientation to the Bidder's Environmental Management System that includes an introduction to individual accountabilities and responsibilities?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
8.2a Adequacy of orientation	2.0	5.0	3.0	1.20	3.0	1.20	4.0	1.60	5.0	2,00	Rank adequacy 1 - 5; If not provided Score 0
9. ENVIRONMENTAL AUDITS, INSPECTIONS AND PREVENTATIVE MA	INTEN/	ANCE		1							
9.1 Is there a documented process for performing environmental audits?	25	5.0	5.0	2.50	5.0	2.50	5.0	2.50	5.0	2.50	Yes = 5; No = 0
9.2 Has a formal process been developed to ensure routine environmental monitoring?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
9.3 Does the Bidder have planned preventative measures in place to prevent environmental incidents?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
10. CRITICAL OPERATION AND TASK ANALYSIS											

RFP - Environmental Evaluation

RFP Name: S/I Powerhouse Hydro/Mechanical Equipment

RFP #: CH0032		RFP N	lame:	S/I Powerh	ouse H	ydro/Mecl	nanical	Equipmen	t		
	Weight	Max Score	Als	tom Vytrell	KH	NP Daewoo	Gan	otec/Canmec	T	Andritz	Scoring Instructions
Bid Evaluation Plan Appendix 10			Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	Score	Weighted Score	(Pass Mark 70%)
Has a systematic approach been developed to identify and inventory asks based on mandatory rules, regulations and applicable codes, guidelines and standards?	2.0	5.0	5.0	2.00	5.0	2.00	5.0	2.00	5.0	2.00	Yes = 5; No = 0
10.2 Is there a formal process to assess the environmental requirements associated with the tasks and to mitigate the risk to ensure compliance with the requirements?	2.0	5.0	4.0	1.60	4.0	1.60	5.0	2.00	5.0	2.00	Yes = 5; No = 0
11. SYSTEM REVIEW AND EVALUATION											
11.1 Do the Bidder's senior management conduct regular reviews of the Environmental Management System, at least annually or at more frequent intervals, as the organization may deem necessary?	1.5	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	Yes = 5; No = 0
11.1a Adequacy of reviews	1.5	5. 0	4.0	1.20	5.0	1.50	5.0	1.50	4.0	1.20	Rank adequacy 1 - 5; if not provided Score 0
11.2 Do these reviews include environmental management policies and procedures and other inputs such as the results and recommendations from environmental audits, monitoring and surveys and analysis of incident investigations?	1.0	5.6	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	Yes = 5; No = 0
12. STATISTICS											
12.1 Number and type of directives from clients or regulators	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	3.0	0.60	For 3 yr periad: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.2 Oil spill incidents;	15	5.0	5.0	1.50	5.0	1.50	0.0	0.00	3.0	0.90	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.3 Waste management incidents;	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.4 Hazardous materials incidents;	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	For 3 yr periad: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.5 Water degradation incidents;	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.6 Air degradation incidents; and	1.5	5,0	5.0	1.50	5.0	1.50	5.0	1,50	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.7 Soil degradation incidents.	15	5.0	5.0	1.50	5.0	1.50	5.0	1.50	5.0	1.50	For 3 yr period: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
12.8 Total Environmental incidents	1.0	5.0	5.0	1.00	5.0	1.00	5.0	1.00	5.0	1.00	For 3 yr periad: >= 5 score 0; 4 score 1; 3 score 2; 2 score 3; 1 score 4; 0 score 5
Total Weighed Scores	100.0	1		86.20		84.40		94.30		91.90	

representative.		
	1	17 7.0
13		17 1100/01 <
	-13	-13 W-ih

Appendix 15

Schedule and Execution Plan Evaluation Matrix Package # 505573-CH0032 (Component C1) Hydro - Mechanical Contract Administrator.: R .Anderson Lead Technical : Bruce Drover Lead Commercial: Ed Over Lead Planner: Tony Scott Senior Planner - C1: Marvin Zylber Area Managers: Luc Turcotte Construction: Laird Paton

Date:

NOTE: Each subsection is rated on a scale 1 - 10 (rating) then multiplied by the weighted value (weighting) for the item (within the evaluation subsection) to get the item value.



10-Jun-13



SUMMARY OF RESULT

	н	ahs	5	ens	L	eafs		lets	Bidder 5		No bidder 5. Only met Senators and Leafs in pre-bid meetings to-da
Points value of Section 3 Schedule & Execution Plan	66%	0.66	93%	0.93	93%	0.93	69%	0.69	0%	0.00	Senators team already contractors on CH0030 Turbine project. Thus
OVERALL RATING OF PROPOSALS	7%	0.66	9%	0.93	9%	0.93	7%	0.69	0%	0.00	

	Habs	Sens	Leafs	Jets	Bidder 5
Schedule Execution Plan	66%	93%	93%	69%	0%
Overall Result	7%	9%	9%	7%	0%

100% Results Summary	
Schedule Execution Plan	Overall Result
□ Habs □ Sens □ Leafs ■ Jets ■ Bidder 5 ■ Bidder 5 ■ Bidder 5	

Overall Comments

Je Mars

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s LCP is familiar with their team and quality of work.



Provincial Benefits (including INNU Content) - Labour RFP Evaluations (for use on Civil, Supply & Install, and Services RFPs)

				Sens	incomplete questiona	ire j	ets		1	Leafs		a chun dha an					Bid	lder 6	10 of the set of the	Bi	der 7
Section	Description / Expectation	Weighting Assigned	Score Given	Weighted Score	Comments	Score Given	Weighted Score	Comments	Score Given	Weighted Score	Comments	Score Given Score	ed Comments	Score Given	Weighted Score	Comments	Score Given	Weighted Score	Comments	Score Given	Weighte Score
.1	Contracting and Procurement (7.5%)			A MARINE ST			No / Rear		10000	레벨백명동							利力が言いた				138 C 12
1.1 a)	Describe Bidder's experience with implementing local benefits strategies and agreements,	255		-		Mas	-	V-24 - 2	726	664	54 1056 15			1	80		8	B			182
	Including Aboriginal agreements	2.5		0		0	0	no canadian experience	a 5	2.5	projects listed	0		0	0		0	0		0	0
.1b)	Describe Bidder's procurement policies and procedures that will ensure reasonable advance														1 1						
	notice to NL supply community of all procurement opportunities									1.00	- Second and a second sec										
1 -1		2.5		0		2	1	ystem for international p	n 5	2.5	direct contacts	0			0		0	0		- 0	
.1 4	familiar with these canabilities, describe proposed stors to appure familiarity									1				0	1 1						
	fammar with these capabilities, describe proposed steps to ensure fammarity	75		0		5	25	orking with M&M and Ca	5	2.5		0		0	0		ñ	0		0	0
	E-mail and an and (COA)	2.3		·		-	2.0	Siking with World and Ca		2.5	vernan den den se		THE REAL PROPERTY OF						w m w sweim		
2 -1	Employment (5%) Describe Ridder's familiarity with Newfoundand & Labrador workforce			-			25	17	-	1	1			-		<u> </u>	-	-	S IS MULT	-	T
26)	Describe Bidder's human receives policies that will entire Newfoundand and Labrader	2.5		0		5	2.5	prking with M&M and Ca	1 5	2.5	long narbour	0		0	0		U	U		0	U
	employment henefits	1.5		0		E	15	local partners	10	1 5		0	Č.	0	0						
20	Describe Ridder's human recourse policies that will entimize input employment benefits for	1.5					1.5	local partners	3	1,5	-	0		U	.0						
	work in Labrador	1.0		0			0		5	1	work with inpu pation			0	0		0	0		0	0
2	Gondor Equity and Diversity (E%)		1		N // 2011		3			-	Work With Maria Hadon		CONTRACTOR NOT M		Auguli di				CONSERVED IN		181.0
2 -1	Dees Bidder base gender equity and diversity plans? If so, describe Bidder's policies		1	ľ		0.000 0.00	A CONTRACTOR OF THE OWNER			T					1		-	1			1
,5 4/	including barassment and discrimination policies that support gender equity and diversity														1 1						
	including including and anothing and policies that support Bender equity and any site	1.5		0			0	none indicated	5	1.5	provided	0		0	0		0	0		0	0
2.3 b)	Does Bidder's human resource policies enable the voluntary identification of members of										presses	-									-
0.000	under represented groups? If so, describe these policies	1.5		0			0			0		0		0	0		0	0		O.	0
2.3 c)	Is the Bidder a woman-owned business?								-								-	1 5			1
		1.0					0														
(b E.	List any intended subcontractors / suppliers that are woman-owned business																				
		1.0					0														
.4	NL Benefits Reporting (5%)		a Section of the		The Sur Velan 14				S			A Shink and	18 Mining include	na alla chi	V. 34 Jal 7		3 8 1	1 M 4 6			
.4 a)	Indicate Bidder's previous experience at capturing employment and expenditure data as		1																		
88	they relate to local benefits monitoring	2.5		0			0	none	5	2.5	vale	0		0	0		0	0		0	0
.4 b)	Indicate who, within Bidders organization, will be responsible for benefits monitoring and						1		1												
	reporting	2.5		0		5	2.5	admin manager	5	2.5	hr	0		0	0		0	0		0	0
	Scoring Grid Scoring Guidance for Section 2 (above)	12	1 10			a na se		A CONTRACTOR OF A CONTRACT	1.1.1.1		Lange of Earling	The the second	이번 방법 이야지 못	inter Collection			4 65.5			사이를 가야.	
	5 Response meets and exceeds all key criteria	di da di serie de la composición de la c												1.5.1					0.565.2.1	8 C 4	
	4 Response meets all key criteria		1.5						-			A REAL SAME	(BN)							12.134	
	3 Response meets a majority of all key criteria	and services	1.10					Contraction of the second	2015 T 1		A THE ALL STREET			State of the second second	Que nue 115		de la		12 21	2	
	2 Response meets only a few of the key criteria	-			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	-			0.200		1 - 1 - 1 - 1 - 2 - 1 - 2 - 1		21		C (1922 - 182				and the second	4 . T. Y.	
2.0	Provincial and Innu Content		-			and the second second	10	North Street Street Street	-		Contraction of the second	the second s		1.1	-		1			1	10.00
10 a)	Is Bidder a registered Innu Company with IBDC? Yes = 5 No = 0	5.0		0			n			0		0 0		0	0		0	1 0		0	1 0
3.0 b)	Use of registered Innu subcontractors? Yes = 5 No = 0	2.5		0			0		1	0		0 0		0	0		0	0		0	0
8.0 c)	Is Bidder an NL Company Yes = 5 No = 0	5		0			0			0		0		0	0		0	0	1	0	0
3.0 d)	Use of NL Subcontractors Yes = 5 No = 0	2.5	5	2.5	listed	5	2.5	listed		0		0 0		0	0		0	0		0	0
8.0 e)	Bidder has experience working with aboriginal IBAs Yes = 5 No = 0	2.5		0			0		5	2.5		0		0	0		0	0		0	0
1.0 a)	NL BENEFITS CONTENT - PERSON HOUR ESTIMATE by Residency (25.0)	25	5	25	Ì		0		4	20		0		0	0		0	0		0	0
	Score = 5 If NL percentage of total hours is > 80%																				
	Score = 4 If NL percentage of total hours is 60 to 80 %					10.000			*******			1004			-						
	Score = 3 If NL percentage of total hours is 40 to 60 %	_		100%		Not Co	mpleted		n, O procure	ement enginee	ri	0%			0%		8	0%		2	J%
	Score = 2 If NL percentage of total hours is 20 to 40 %	-																			
	Score = 1 If NL percentage of total hours is < 20%			1			-		-			1						1 .		-	
1.0 6)	NL BENEFITS CONTENT - PERSON HOUR ESTIMATE by Location of Work (10.0)	10	5	10			0		4	8		0		0	0		0	0		0	0
	Score = 4 If NL percentage of total hours is > 80%	-																			
	Score = 3 If NL percentage of total hours is 40 to 60 %	1		100%		Not Co	mpleted		100%constr	uction, no oth	e	0%			0%		3	0%		1	0%
	Score = 2 If NL percentage of total hours is 20 to 40 %	1					2.54		[0							
	Score = 1 If NL percentage of total hours is < 20%																				
.0	NL BENEFITS CONTENT - EXPENDITURE ESTIMATE (25%)	25	2	10			0		4	20		0		0	0		0	0		0	0
- Annalise of the	Score = 5 If NL percentage of total expenditures is > 80%		1			1				1.			1					87		1	10
	Score = 4 If NL percentage of total expenditures is 60 to 80 %	1																			
	Score = 3 If NL percentage of total expenditures is 40 to 60 %			29%		Not Co	mpleted					0%			0%		1	0%			1%
	Score = 2 If NL percentage of total expenditures is 20 to 40 %																				
	Score = 1 If NL percentage of total expenditures is < 20%		1						6											1	
cored B	r: Maria Moran Total	100		47.5			12.5			69.5		0			0			0			0
Date:	Sectional Weighting	2.5%		1.1875			0.3125			1.7375		0			0			0			0
	Ranking																				

Maria Moran

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BID EVALUATION PLAN COMMENT SHEETS

Package Number:	CH0032	Ж	
Package Name:	Supply and Install Powerh	ouse Hydro-Mechanic	al Equipment
Bidder Name:	Andritz	Percentage	71.50%
Comments:	Bidder has performed multiple Hyd Bidder has appropriate expertise ar understanding of remote cold weat dissiminated across the world with manufacturing will be required. Der monitored closely. Bidder emphasizes on quality of MI and retention.	ro projects throughout Canad nd experience for this type of t ther locations. However, the p the major ones in China. On-s tailed logistics plan will need t Faccomodations as mitigation	a in northern remote loations. work and demonstrates good roduction facilities are ite quality monitoring of o be implemented and measure for labour attraction
Bidder Name:	Ganotec-Canmec	Percentage	67.80%
Comments:	Bidder has performed multiple Hyd remote loations. Canmec has manu and is familiar with Canadian stand Canmec will be the only manufactu production capacity to CH0032, its investigated and monitored closely Bidder emphasizes on quality of MI and retention.	ro projects of similar nature th ifactured similar equipment fo ards. However, as the scope o rer of the main components, o ability to meet production req Faccomodations as mitigation	hroughout Canada in northern or multiple Canadian owners, f CH0032 is very large and as dedicating 100% of its juirements should be measure for labour attraction
Bidder Name:	KHNP-Deawoo	Percentage	50.10%
Comments:	Bidder is not a manufacturer but a prior experience with this type of w relationships with local partners fro knowledge of local labour availabili experience in remote cold weather heated enclosures but rather havin to warm-up. Many supporting docu are substandard, suggesting potent Saint-John's seems to be considerer suggesting poor knowledge of local and plans.	Project manager only. Bidder york in Canada and would have om "scratch" upon contract aw ty conditions. Bidder does not location. There is no mention g heated "warm-up" facilities uments are provided in Korean tal communication challenges d as the proper location for se geography having a direct im	does not demonstrate having e to start building vard. Responses indicate poor demonstrate having of sheltering work areas with and workbreaks for workers and those provided in English during contract execution. tting up project offices, pact on logistical assumption
Bidder Name:	Alstom-Not	Percentage	#VALUE!
	evaluated		
Comments:			
		-11	+ AD/
Scored I	By: Jean-Daniel Tremblay-Interface Mana	ger & Risk Coordinator	Flittm-
Da	te: JUNE 13, 2013	4	

Evaluation Text

Nalcor Energy Lower Churchill Project

BID EVALUATION DISCIPLINE SCORE SHEETS Package Number: Package Name: Supply and Install Powerhouse Hydro-Mechanical Equipment Scoring Guide: Package Number information provided in response 0 - Question not answered or no relevant information provided in response Package Number information provided in response 1 - Response does not meet key Criteria Package Numets a few of the key criteria 3 - Response meets anajority of the key criteria Package Numets a few of the key criteria 5 - Response meets and exceeds key criteria Package Numets and exceeds key criteria

	Question Weight (%)	n Andritz %)					Ganotec-Canmec	KHNP-Deawoo				m-Not eva	luated
		Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments
Item Risk Management	The second second											1	
1 Risk Management system in place.	5	3	3	Bidder states Corporate Risk Management document titles without providing samples. Risk management system not aimed at proactively managing Project Risks with LCP Team but rather managing bidder's own risks.	3	3	Informal Risk management conducted by Partnership estimators at bidding phase. Risks, mitigating measures and associated costs transferred to Project management team upon Contract award. Risks under the control of client noted and identified for Client action.	2	2	No risk management system currently in place but to be implemented for this Contract.		0	
2 Risk Management Plan sample	5	1	1	No sample provided. Stated as being proprietary and confidential.	3	3	No sample provided. Major Risks identified with associated mitigation measures.	2.5	2.5	Sample of intended Risk Management plan provided. Management plan somewhat generic and incomplete.		0	
3 Top 5 Risks - Identification	5	4	4	1-Delay of approval process of design- Intense communication with client 2-Shortage of Raw Material on the world market-Timely placement of POs 3-Shortage of components of special sub-suppliers (like gear boxes, etc.)- Timely placement of POs 4-Bad work planning of manufacturer- Site supervision 5-Weather conditions influencing transport-Local transporter experience	4	4	 1-Delay with Contract award without extension of milestone dates 2-Delay with drawings approval by LCP team 3-Readiness of camp accommodations 4-Delay in spillway availability 5-Delay in Powerhouse availability for all these risks mitigation measure stated to be proactive communication of technical info and drawings for approval. 	2	2	 1-Weather conditions 2-Permisions and licenses 3-HSE Policy 4-Local Labor 5-Inspection and testing As mitigation measure, Bidder states the they will set up new Risk Management plan for the Project. Stated Risks seem to relate mostly to limited knowledge of local conditions and acquisition of visas (Permissions and licenses) 		0	

Nalcor Energy Lower Churchill Project

RFP - Risk Management Questionnaire Evaluation

BID EVALUATION DISCIPLINE SCORE SHEETS

Package Number:

CH0032

Supply and Install Powerhouse Hydro-Mechanical Equipment

Package Name:

Scoring Guide:

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5 - Response meets and exceeds key criteria

	Question Weight (%)	Andritz					Ganotec-Canmec	KHNP-Deawoo				Alstom-Not evaluate		
		Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	
4 Magnitude of Scope	10	4	8	Bidder states having all required financial, human and manufacturing resources to execute contract according to schedule and budget	4	8	All scope of work has been considered and an execution plan developed accordingly	4	8	Stated as not affecting their capacity to deliver the work.		0		
5 Loss Control Plan	3	2	1.2	Bidder does not provide details of plan in the event of disruption or loss of major production facility	2	1.2	No formal Loss Control plan but contingency plan needed to mitigate identified will be developed upon award.	3	1.8	Nationwide Emergency action Plan in place for disaster and loss.		0		
6 Involvement of Subs in Risk Management	3	4	2.4	Subs stated as being part of overall execution plan	4	2.4	Major Supplier, Canmec part of the Joint Venture	1	0.6	Subs currently not involved but will be in new Risk management to be implemented for CH0032.		0		
7 Historical Records-Successful delivery	2	2	0.8	Four project international names stated but with no details substantiating similarity with scope of CH0032	4	1.6	Multiple other Canadian hydro projects stated as similar in nature but of smaller scope.	2	0.8	KHNP states they are not a manufacturer. Provides list of Hydro- mechanical Projects performed by its major subs.		0		
8 Report and root cause of unsuccessful deliveries	2	4	1.6	"Lessons Learned" stated as being part of company wide corporate process	4	1.6	No significant delays to report. However, the following are identified as having potential impact on Project delivery: delay in award of contract delay in issuing construction drawings Limited availability of qualified labor Provision of first class accommodations	1	0.4	Stated as N/A		0		

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	Question Weight (%)	n Andritz %)					Ganotec-Canmec			KHNP-Deawoo	Alsto	n-Not eva	luated
		Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments
9 Discussion on Schedule Critical Path	10	4	8	Local manufacturing of primary embedded anchors. Preliminary design of hoists allowing for early PO Manufacturing of major components at reliable known locations	3.5	7	Critical fabrication performed by Canmec. Milestone dates imposed on all supplier and fabricators with close follow up and monitoring.	1	2	Critical path stated as being the "preparation of local skilled labor". KHNP to open office in St Jones (sic) to manage the delivery of labor and equipment".		0	
10 Production Workload forecast	10	3.5	7	Main manufacturing facility for Gates Trashrack and stop logs in Tianbao China, guides in Portugal, Spain Italy and Slovakia. Production capacity stated as far exceeding CH0032 needs, but no details provided.	4	8	Canmec's production workload is 90% CH0032 for Q3 and Q4 of 2013 and 100% for 2014.	3.5	7	Currently not much work to supply hydro-mechanicals in Korea. Keumjeon and Kumsung identified as major subs for this project which have sufficient capacity.		0	
11 Mobilization strategy	5	3	3	Bidder states there is sufficient time for mobilization. Team experienced with cold weather. Installation team involved in design.	3	3	Bidder relates to successful completion of five large tanks in Deception Bay, Quebec. Refers to Appendix A9 control schedule indicating 40 day mobilization period starting Sept 7, 2014 as well as mobilization dates for 100T and 220T cranes. No specific comments on strategy.	2	2	Bidder response as follow: "Foreign: Selection of engineering company, start of design and manufacturing Local: open local office, manager dispatched upon contract award"		0	
12 Mitigation of lower productivity due to adverse weather	5	4	4	Scaffolding towers enclosure along gate slots. Insulated cladding and roofing on towers and heated. Certain float considered in project schedule to account for extreme weather conditions. Heated enclosures for most of the work. High wind is major condition for which work could not proceed.	4	4	Trailers located close to work areas to avoid down time. Heated enclosures for performing work in winter conditions.	2	2	Overtime and added personnel identified as measure to catch-up schedule.		0	

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	Question Weight (%)			Andritz			Ganotec-Canmec		KHNP-Deawoo			Alstom-Not evaluated		
		Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	
13 Strategy and plan for successful installation of the Work in extreme weather.	5	4	4	One shift time table considered in project schedule. Additional shifts introduced if required. Additional manpower not contemplated as workspace is confined.	4	4	Bidder states extensive experience in all northern areas of Canada.	2	2	Suspension of work in severe weather. Overtime and work on off days to catch- up schedule.		0		
14 Strike or lock-out history	5	3.5	3.5	Most of equipment manufactured in medium scaled privately owned companies in Europe and China where risks of strikes are considered limited.	2	2	Bidder states that CLRA-NL Building Trades agreement will be used. Silent on main manufacturers strike history	4	4	No strikes to report at Keumjeon and Kumsung facilities.		0		
15 Summary of Health & Safety Mgt Plan	2	5	2	Provided in Appendices A5 and A6	5	2	Provided in Appendices A5	5	2 Provided in Appendices A5			0		
16 Summary of QA/QC Mgt Plan	2	5	2	Provided in Appendices A7	5	2	Provided in Appendices A7	5	2	Provided in Appendices A7		0		
17 Critical Skills, number of people and turn-over	5	3	3	Generic listing provided. Limited details regarding critical skills required. However, bidder states available resources from various Canadian and European business units having a generally low turnover.	3	3	Specialized skilled in-house personnel to provide training to Train to less experienced workers for alignment of embedded parts.	2	2	Limited generic response .		0		
18 Attraction and retention of skilled labour	5	5	5	Bidders demonstrates good understanding and experience with remote site conditions and provides reasonable retension strategy. Emphasis on Camp conditions.	3	3	Refers to CLRA-NL Trades agreement with emphasis on good camp accommodations	2	2	Bidder does not demonstrate adequate understanding of local labor condition as provided response can be summarized as follow:. "use of skilled workers until end of Contract. Provide temporary house to skilled worker. Replace skilled worker instantly if one leaves the project"		0		

Nalcor Energy Lower Churchill Project

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	Question Weight (%)	Andritz			Ganotec-Canmec			KHNP-Deawoo			Alstom-Not evaluated		
		Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments	Answer	Score	Comments
19 Logistics strategy and plan	10	3.5	7	All logistical aspect under the direct responsibility of the bidder. Testing in accordance with technical specification.	2	4	Refers to Appendix A9 control schedule, no other details provided	2	4	Will do their best to solve problems if any.		0	
20 Responsibility statement	1	5	1	Provided	5	1	Provided	5	1	Provided		0	
Score - transfer to Technical Summary	100	71.50			67.80			50.10			0.00		
	Percentage	/1.50%			67.80%			50.10%			0.00%		

Scored By:	Jean-Daniel Tremblay - Interface & Risk Coordinator	Tan-
Date:	JUNE 13, 2013	\sim

Appendix 3

Overall Evaluation Scoring Matrix

Package # 505573-CH0032: S/I Powerhouse Hydro/Mechanical Equipment

. «OTE: Each subsection is rated on a scale 1 - 10 (rating) then multiplied by the weighted value (weighting) for the item (within the evaluation subsection) to get the item value.

Section 1 Commercial						The Market States				
Lead : Ed Over Weighted value:	60%	Alston	n	And	ritz	Ganotec	/Canmec	KHNP	/Daewoo	
Criteria:	item wgtg	Rating 0-10	item value	Rating 0-10	item value	Rating 0-10	item value	Rating 0-10	item value	Comments:
1 Total Evaluated Cost comprising : Proposal Price - A & B Terms of Payment Net Present Value Milestone Payment Schedule Delivery Schedule Currency Exchange Costs	65% × × × × × × × × × × × × × × × × × × ×		0.00 0.00 0.00 0.00 0.00 0.00	10 =	6.50 0.00 0.00 0.00 0.00 0.00		0.00 0.00 0.00 0.00 0.00 0.00		= 0.00 = 0.00 = 0.00 = 0.00 = 0.00 = 0.00 = 0.00 = 0.00	v
2 Terms & Conditions comprising: Limitation of Liability Liquidated Damages Title Transfer Insurance Performance Security Ownership of I.P Default Exceptions Overall compliance	35% × × × × × × × × × × × × × × × × × × ×		0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	8.43 = = = = = = = = = = = = = = = = = = =	0.00 2.95 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0	8.66	= 0.00 $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$		= 0.00 $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$ $= 0.00$	
	Weighted value Points value		X 60% 0.00		X 60% 5.67		X 60% 1.82		X 60% 0.00	0

Section 2 Technical

Lead: Bruce Drover

Weighted value:

Criteria:

- 1 Spillway Hydro- Mechancial Acceptability
- Spillway Hydro-Mechanical Acceptability
 Spillway Electrical Building Acceptability
 Intake Hydro-Machancial Acceptability
 Draft Tube Hydro-Mechancial Acceptability
 Trash Cleaner Acceptability

27.5%	Alstom	Andritz	Ganotec/Canmec	KHNP/Daewoo	
item wgtg	Rating 0-10 item value	Rating 0-10 item value	Rating 0-10 item value	Rating 0-10 item value	Comme
25% x 20% x 25% x 15% x	$\begin{array}{c} 9.2 \\ 0.0 \\ 8.8 \\ 10.0 \\ \hline 0.0 $	8.8 = 2.20 9.5 = 1.90 8.8 = 2.20 8.7 = 1.31 1.40 = 1.40	$\begin{array}{r} 10.0 \\ 8.0 \\ 10.0 \\ 10.0 \\ 0.2 \\ 0.2 \\ 1.50 $	$\begin{array}{c} 7.0 \\ 0.0 \\ 7.0 \\ 7.0 \\ 7.7 \\ 7.7 \\ 7.7 \\ - 1.16 \\ 1.40 \end{array}$	Alstom 8
15% x 100% Weighted value Points value	9.3 = 1.40 n/c 7.40 X 27.5% n/c	9.3 = 1.40 45.10 9.00 X 27.5% 2.48	9.3 = 1.40 47.30 9.50 X 27.5% 2.61	9.3 = 1.40 n/c 6.05 X 27.5% n/c	3

ents:



Contract Administrator: R Anderson Lead Technical: Bruce Drover Lead Commercial: Ed Over Area Manager: Luc Turcotte

& KHNP-Daewoo were considered incomplete as they scored '0' in this category



- Issue for Commercial. Some Bidders did not clearly match payment schedules to deliverables.
- Andritz had a better quality schedule in terms of presentation & logic. Alstom & Daewoo schedules were hard to follow Ganotec will mfr locally. Andritz need to ship parts worldwide. Logistics risk. Issue for Commercial re cost/benefit
- Ganotec have VERY good mfr'g approach, but concerns with site construction schedule/float

SUMMARY OF PROPOSAL RESULTS

	Als	And	iritz	Ganotec/Canmec		KHNP/Daewoo		
Points value of Section 1 Commercial	0%	0.00	95%	5.67	30%	1.82	0%	0.00
pints value of Section 2 Technical	n/c	n/c	90%	2.48	95%	2.61	n/c	n/c
sints value of Section 3 Schedule & Execution Plan	66%	0.66	93%	0.93	93%	0.93	69%	0.69
Points value of Section 4 NL Benefits	0%	0.00	5%	0.12	7%	0.17	1%	0.03
OVERALL RATING OF PROPOSALS	7%	0.7	92%	9.2	55%	5.5	7%	0.7

		Alstom	Andritz	Ganotec/ Canmec	KHNP/ Daewoo
1	Commercial	0%	95%	30%	0%
2	Technical	n/c	90%	95%	N/C
3	Schedule Execution Plan	66%	93%	93%	69%
4	NL Benefits	0%	5%	7%	1%
	Overall Result	7%	92%	55%	7%
5	Risk Management	F	Р	P	F
7	Health & Safety	F	Р	P	F
8	Quality Assurance	F	Р	F	F
9	Environmental	Р	Ρ	Р	Р



Overall Comments: