Muskrat Falls Project- Contract CH0007.
Tender Phase
Overall tender organization, subcontractors, productivity rates and labour costs used to finalize the offer

1 Tender milestones

Astaldi was invited by Nalcor to submit its offer on sept 28th, 2012. A site visit was scheduled for Oct 18th and 19th in St. John's/Goose Bay.

During the site visit, several subjects were shared, including Labour Agreement, but no special reference was done with respect to the productivity. The site visit was attended by 3 people from Astaldi, including the International Tender manager and the risk manager from Rome.

On December 5th, 2012, the tender period was extended to March 4th, 2013 (Add No. 3). On Feb. 8th, the tender was extended to April 9th, 2013 (Add. No. 9) and finally on Feb 16th, Nalcor extended the final submission to April 16th, 2013 (Add. No. 10).

2 Astaldi tender strategy

2.1 Introduction

Astaldi Canada (ACI) was incorporated in Canada at the beginning of March 2012, and lately acquired TEQ, allowing Astaldi's personnel to rump-up much faster with respect to the local market experience.

Nevertheless, ACI was conscious that without a highly and qualified specific experience it would not have been able to attend the basic requests from the Corporate (Astaldi SpA – Rome) to manage the different risk components related to Construction Project in Canada.

For this reason, fully supported by the parent Company, ACI decided to proceed to heavily invest on the tender study, allowing the Proposal Manager to hire and/or contract several local Consultants to build-up a reliable working team.

2.2 The team

With the essential support, knowledge and experience of Mr. Triassi, (CEO of TEQ and Area Manager of ACI), several consultants were contacted and contracted for this task: among them:

Construction Companies

1.	CEGERCO (QB)	Civil works experience with Hydro Quebec, including La Romaine HPP, union relationships
2.	LAVAL FORTIN (QB)	Civil works experience in extreme cold conditions, dealing with Unions and first Nation
3.	GREENFIELD (NB)	Civil works experience in cold conditions, dealing with Unions and first Nation
4.	BIG LAND (NL)	Based in Goose Bay, deep knowledge of the local market, dealing with Unions and first Nation

Canadian and international Consultants

5.	KGS	Engineering Company specialized in hydropower projects (several offices in Canada)
6.	TMA	Consulting company specialized in tender and project management (QB)
7.	Claudio Vissa, P. Eng	Canadian, Past Chief Engineer at AECOM for Hydropower Projects
8.	Pierre Cianni, P. Eng.	Canadian, Senior Expert in Planning, experience with Hydro Quebec
9.	Enrico D'Arronco, P. Eng.	Canadian, Senior partner at DPHV, Consulting company specialized in structural engineering (QB)
10.	Ken Chryssolor	Canadian, construction Manager, past PM with AECON at James Bay 2 Projects (Hydro Quebec)
11.	Jean Pierre Samson	Canadian, Project Manager with COGERCO at Romaine 2 Project (Hydro Quebec)
12.	Ghislain Fortin	Canadian, past Project Director with COGERCO
13.	Bill Alcock	Canadian, Senior Expert in Union relations, based in St. John's
14.	Paul Shelley	Canadian, former PC Labour Minister for NL government
15.		
16.	Daniele Proverbio	Senior Construction Manager, over 40 years of experience in hydropower plant contraction worldwide
17.	Vittorio Robiati	Senior Construction Manager, over 35 years of experience in hydropower plant contraction worldwide, including the Panama Canal improvement project (2008 – 2012)
18.	SEA Consulting	Specialized in tender management, quantity take-off and 3D models

2.3 Tender organization and management

The team was coordinated by Venturini, reporting to Mr. Lanciani, COO of Astaldi for North and South America. The proposal manager was assisted by Mr. Improta, technical manager and Juan-Carlos Bassi, delivery manager. Several areas were defined:

19.	Mario Lanciani	supervision	Rome
20.	Guido Venturini	proposal manager	Montreal
21.	Carlo Importa	technical manager	Montreal
22.	Juan Carlos Bassi	delivery manager	Montreal
23.	Vittorio Robiati	method's	Montreal
24.	Alberto Cavallari	site logistics	Montreal
25.	Ivan Passaro	technical assistent	Montreal
26.	Katiushia Ierardi	Quantity take-off	Montreal
27.	Emanuel Triassi	contracts	Montreal
28.	Alberto Audisio	procurement (plant and equipment)	Miami
29.	Maurizio Robasto	PMO, estimation coordinator	Rome
30.	Federico Della Libera	estimation manager	Rome
31.	Lidia Sammrtino	scheduling	Rome
32.	Jennifer Hoffman	risk manager	Rome
33.	Luigi Vivian	subcontractors	Rome

34.	Agostino Bertozzi	equipment, plants	Rome
35.	Fabio Paulon	organization chart	Rome

The total effort deployed by ACI during the tender stage, in terms of manhours is of approx. 25,000 hrs, (see below) with an overall investment of more than 4 Million $.

tender workforce	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13
monthly hrs	2,520	3,360	3,220	4,536	4,704	4,704	2,016
progressive (hrs)		5,880	9,100	13,636	18,340	23,044	25,060

Please note that the project was procured through a Design-Bid-Build scheme, in which the Contractor is not usually asked to perform such kind of efforts, which are more typical of Design-Build or P3 projects.

3 Subcontractors and suppliers

25 major potential subcontractors were selected, covering the following categories.

- Cement
- Concrete
- Reinforcement steel
- Formworks
- Structural Steel
- Special Forms (draft tube)
- Grouting

In total, over 96 subcontractors were selected and inquired, providing additional information about

- Embedded parts
- Electrical installations
- Architecture
- Precast concrete
- Miscellaneous steel
- Site installations
- Logistics and transportation
- Permits, immigration, etc.

A partial list of the subcontractors is reported in Annex XXX.

The shortlisted subcontractors were finally listed in the Annex 16 of the tender offer (Proposed Subcontractors, Manufacturers and Material Sources).

It has to be noted that none of the subcontractors provided detailed information during the tender stage, in terms of productivity etc, except those which were related to their past experience.

Note: it is a standard practice for Subcontractors, in Canada, to provide offers at the very last moment of the bid stage, approach that can generate a very unconformable position for the General Contractors.

4 Productivity rates

During the tender stage, the entire work was analyzed by parts and sub-parts, non only in order to complain with the requirements of the schedule of price breakdown, but also to analyze and define the best possible approach in terms of methods and materials.

To be consistent with Nalcor requests the concrete price was calculated as the combined analysis of forming, reinforcement steel and concrete pouring. The analysis would has had to take in account other major variable like thermal protection, winterization etc., depending from the schedule. Thus, bid analyses considered only the Milestones provided during the tender phase.

The productivity rates were calculated considering the follows:

a. Scaffolding
b. Formwork installation and maintenance (assembling, disassembling, lifting, etc.)
c. Reinforcement steel preparation and placement
d. Concrete placement
    i. Pumping operation and maintenance
    ii. Concrete tower and booming operation and maintenance
e. Concrete curing, etc.

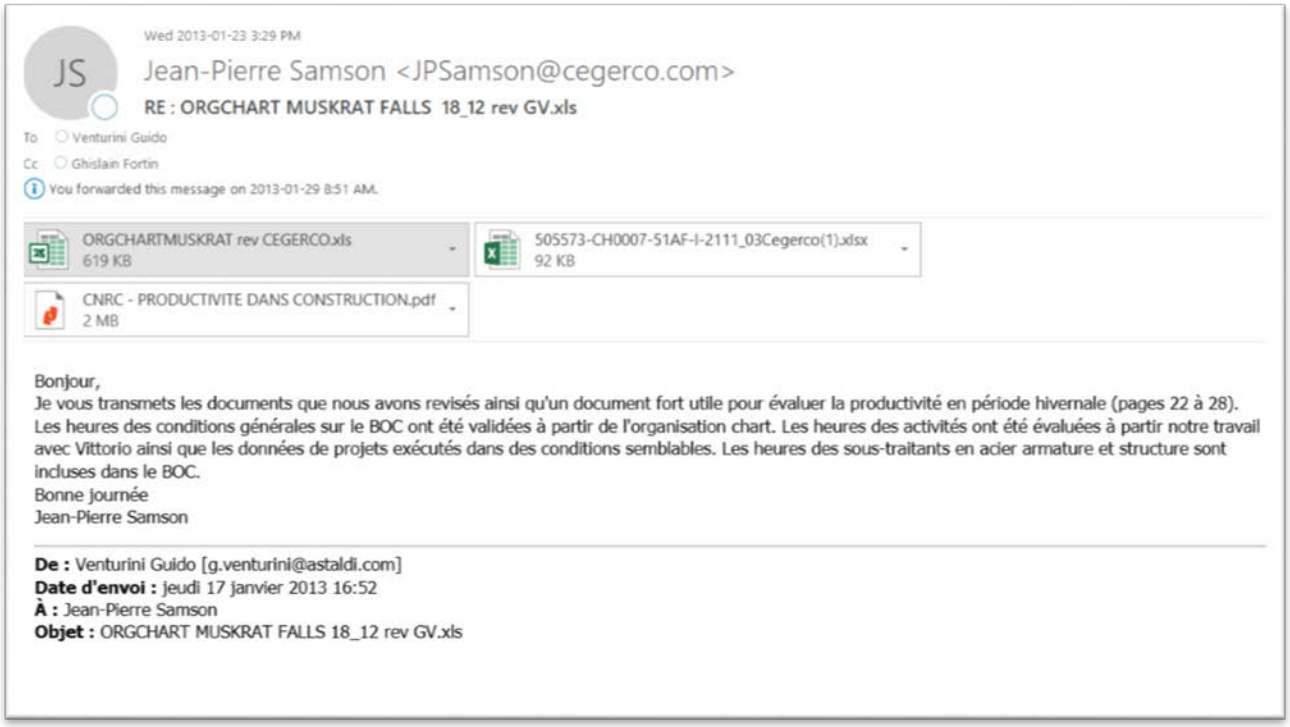
The most impacting parameter in terms of productivity was related to the formwork installation. After a detail analysis of all available data, generated from both the past experience of the involved consultants and the literature data, Canada, included, an average value of 8 hr/m2 was considered, and lately rebalanced to be adopted to the single component of the work.

The analyses generated overall production values for concrete varying from 2 hr/m3 (large pours with moderate reinforcement steel, like slabs) to 10hrs/m3 for the most complicated pours (intakes and outlet roofs, spiral case, etc.).

All these values, generated by highly experienced construction managers, where lately confirmed by the Canadian Consultants, including Mr. Chryssolor, former PM at AECOM for the James Bay 2 project (Hydro Quebec) and upper management of COGERCO, recently involved in similar civil works for Hydro Quebec at La Romaine Project, as can be seen in the following mail exchange, referring to formwork productivity rates for the Powerhouse, the most complex part of the Contract.

COGERCO actively participated to the tender studies both in Montreal and Rome (from Feb 10th, 2013 to Feb 25th, 2013), where Mr. Samson spent two weeks working with the Estimation Department Managers to finalize the productivity parameters.

The same company provided its own evaluation with productivity values for concrete ranging from 1 hr/m3 to 7 hrs/m3, similar or below those finally chosen by Astaldi to finalize the bid prices (see Annex XXXX). Moreover, COGERCO shared with ASTALDI a useful document, published by the National Research Council of Canada (NRCC) intitled “La productivite’ dans la construction”. prices (see Annex XXXX). The entire production organization was also validated by CEGERCO.



Wed 2013-01-23 3:29 PM

JS

Jean-Pierre Samson <JPSamson@cegerco.com>

RE : ORGCHART MUSKRAT FALLS 18_12 rev GV.xls

To Venturini Guido

Cc Ghislain Fortin

You forwarded this message on 2013-01-29 8:51 AM.

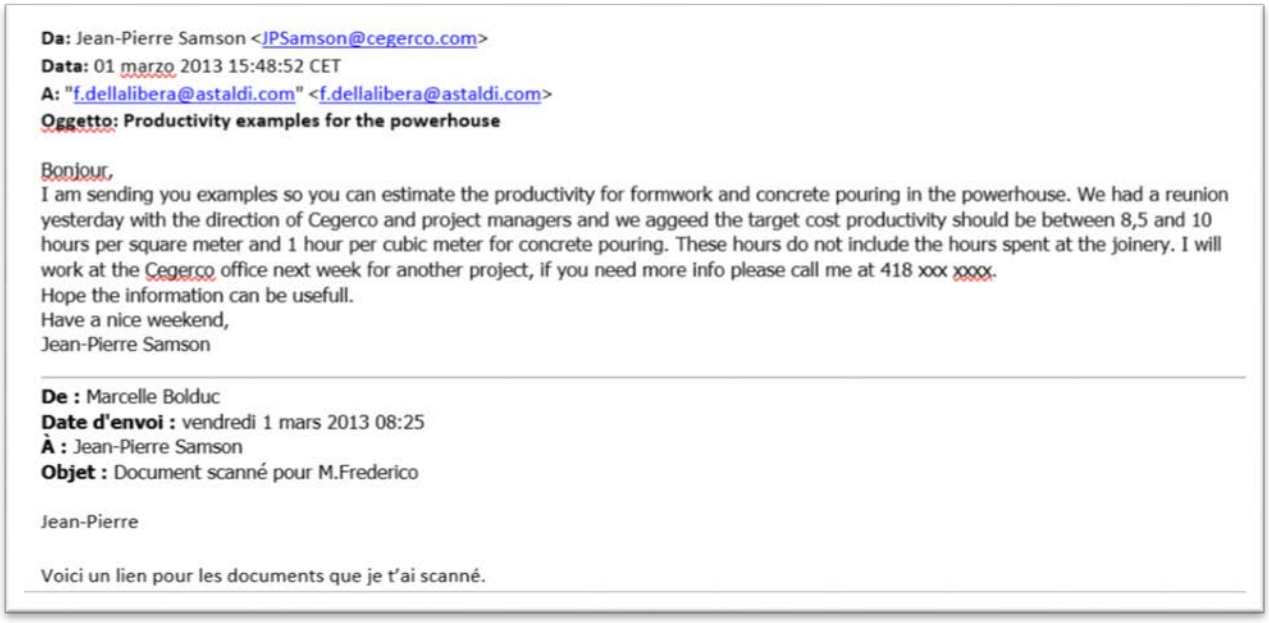
ORGCHARTMUSKRAT rev CEGERCO.xls
619 KB

505573-CH0007-51AF-I-2111_03Cegerco(1).xlsx
92 KB

CNRC - PRODUCTIVITE DANS CONSTRUCTION.pdf
2 MB

Bonjour,
Je vous transmets les documents que nous avons revisés ainsi qu'un document fort utile pour évaluer la productivité en période hivernale (pages 22 à 28). Les heures des conditions générales sur le BOC ont été validées à partir de l'organisation chart. Les heures des activités ont été évaluées à partir notre travail avec Vittorio ainsi que les données de projets exécutés dans des conditions semblables. Les heures des sous-traitants en acier armature et structure sont incluses dans le BOC.
Bonne journée
Jean-Pierre Samson

De : Venturini Guido [g.venturini@astaldi.com]
Date d'envoi : jeudi 17 janvier 2013 16:52
À : Jean-Pierre Samson
Objet : ORGCHART MUSKRAT FALLS 18_12 rev GV.xls



Da: Jean-Pierre Samson <JPSamson@cegerco.com>
Data: 01 marzo 2013 15:48:52 CET
A: "f.dellalibera@astaldi.com" <f.dellalibera@astaldi.com>
Oggetto: Productivity examples for the powerhouse

Bonjour,
I am sending you examples so you can estimate the productivity for formwork and concrete pouring in the powerhouse. We had a reunion yesterday with the direction of Cegerco and project managers and we aggeed the target cost productivity should be between 8,5 and 10 hours per square meter and 1 hour per cubic meter for concrete pouring. These hours do not include the hours spent at the joinery. I will work at the Cegerco office next week for another project, if you need more info please call me at 418 xxx xxxx.
Hope the information can be usefull.
Have a nice weekend,
Jean-Pierre Samson

De : Marcelle Bolduc
Date d'envoi : vendredi 1 mars 2013 08:25
À : Jean-Pierre Samson
Objet : Document scanné pour M.Frederico

Jean-Pierre

Voici un lien pour les documents que je t'ai scanné.

Please refers to the annexes for more detailed data.

5 Labour Costs

Since the beginning, Astaldi considered Labour costs and the Union Agreement as a major task to be managed.

For this reason, Astaldi signed an Agreement with Bill Alcock, Newfoundlander and Union expert, former consultant at NALCOR for development of the future Union Agreement at Muskrat Falls.

Moreover, Astaldi signed and Agreement with MR. Paul Shalley, former PC Union relation Minister for NL, which facilitated several meetings and discussions, which helped Astaldi to fully complying with the contract tasks.

Although there are no official documents provided by Alcock, we can share tens of mail exchange between him and the team, including the estimating team, focused on the most appropriate labour cost definition for the project (see Attachment)

Mr. Allock supported Astaldi during the overall start-up phase till mid 2014. He often interacted also with Mr. David Clark, Consultant lawyer to Nalcor for Union relations. Mr. Clark facilitated meeting with the Unions, during the earlier phases of the project.

As known, all labour cost assumptions were discussed and verified by Nalcor during the negotiation phase.