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Contracting Strategy for Turbine Generator Refurbishment Work

OPG initially explored contracting the full scope of turbine generator (“TG”) refurbishment work at Darlington to Alstom, as the OEM, based on an engineering, procurement and construction (“EPC”) contracting model. As Alstom and OPG were unable to agree upon a mutually acceptable risk sharing arrangement, the TG refurbishment work was divided into two separate work packages enabling OPG to benefit from the experience and expertise of the OEM for the purchase of equipment while achieving value for money through a competitively procured EPC contract for the field work. This strategy also allowed OPG to avoid a potential compatibility risk of having a non-OEM contractor reverse engineer or completely redesign the TG components.

A separate agreement covering the installation (“construction”) phase of the TG refurbishment work and some related engineering and procurement work (the “TG EPC Agreement”) was entered into with a contractual joint venture of SNC-Lavalin Nuclear Inc. and Aecon Construction Group Inc. (the “SNC/AECON JV”).

The TG ESES Agreement and the TG EPC Agreement function together to govern the refurbishment of the TGs. A memorandum of understanding signed by OPG, Alstom and the SNC/AECON JV requires that the three parties work closely together while working on the TG project. Specifically, the SNC/AECON JV acknowledges Alstom as the OEM and the supplier of the equipment required for the TG refurbishment project.

Scope and General Requirements of TG ESES Agreement

The TG ESES Agreement covers the design and supply of equipment for the refurbishment of TGs and is based on a single phase approach, without dividing work into a definition and an execution phase. Alstom provides the equipment, component parts and control systems for the TG components. The design engineering includes all conceptual, preliminary and detailed design engineering, as well as issuance of design packages and required drawings to OPG. There is optional scope for additional components that may need to be refurbished

1 following inspections. Alstom also provides limited services to support the SNC/AECON JV
2 installation as well as static commissioning work and dynamic commissioning work.

3
4 The Contractor is required to perform all work safely and diligently, in an organized and
5 timely manner, and in accordance with the TG ESES Agreement, applicable laws and
6 prudent practices.

7
8 Contract Price

9 The equipment supply component of the work, including preliminary design and factory
10 testing, is conducted using a fixed/firm price model and accounts for the majority of the
11 contract value (approximately 85%). The work on the first unit is fixed price (without
12 escalation for inflation), with work on each additional unit being firm price (with escalation for
13 inflation).

14
15 Installation support work, static commissioning work and dynamic commissioning work, are
16 conducted using a reimbursable cost model accounting for approximately 15% of the
17 contract value. Most of the reimbursable work is done on a target cost basis, with separate
18 targets for: (i) installation support work and static commissioning work; and (ii) dynamic
19 commissioning work.

20
21 Fixed and firm price work is invoiced upon milestone completion. Reimbursable work is
22 invoiced monthly, using hourly rates set out in the agreement which include profit and
23 overhead. OPG may review, audit and dispute invoiced costs and has additional audit rights
24 with respect to work performed on a reimbursable cost basis.

25
26 Schedules

27 The TG refurbishment work is governed by the contract schedule, progress schedules, and
28 submittal schedules. The Contractor is required to adhere to the progress and submittal
29 schedules and provide OPG with progress reports, including any deviations or anticipated
30 deviations from these schedules. Any changes to the contract schedule require an
31 amendment to the TG ESES Agreement. All payments for the Contractor's fixed/firm price

1 work are made in accordance with the milestone payment schedule. These schedules, as
2 agreed between OPG and the Contractor, were incorporated into the agreement and
3 amended only if required to reflect changes in scope.

4
5 OPG retains the right to delay the originally scheduled breaker open date for any given unit
6 for up to one year. If OPG exercises this right, it must be done through a change directive, in
7 which case milestone dates and cost would be adjusted accordingly as required.

8
9 Financial Incentives and Disincentives – Cost and Schedule

10 The TG ESES Agreement includes financial incentives and disincentives that apply to both
11 cost and schedule performance.

12
13 Cost incentives and disincentives apply to work performed on a reimbursable costs basis
14 (installation support work, static commissioning work and dynamic commissioning work). If
15 the actual amount of reimbursable costs incurred during installation support work/static
16 commissioning work or dynamic commissioning work is greater than the target cost for the
17 applicable work package, the Contractor will pay to OPG 50% of the cost overruns. Similarly,
18 OPG will pay to the Contractor 50% of the cost savings if the Contractor comes below the
19 target cost.

20
21 Schedule disincentives are paid by the Contractor for delays in achieving specific milestones
22 for completion of design engineering, factory acceptance testing and delivery of equipment.
23 The Contractor will pay an amount calculated by multiplying the number of calendar days of
24 delay by an amount per week equal to 1% of the aggregate costs associated with a delayed
25 milestone up to an aggregate cap for all schedule disincentives of 10% of the aggregate cost
26 of the fixed or firm price work for the applicable Unit. There are no schedule incentives paid
27 by OPG to the Contractor.

28
29 Change Directives, Excusable Delays and Force Majeure

30 The TG ESES Agreement restricts the ability of the Contractor to initiate “change directives”
31 (change orders) and to make claims for “excusable delay” events and “force majeure” events

1 that extend the milestone dates in the contract schedule. Change directives are only allowed
2 in specific situations listed in the agreement. The rationale for this restrictive approach is that
3 the Contractor is the OEM, and as such, it should not be discovering additional scope or
4 encountering delay-inducing “unforeseen risks” with respect to the equipment that it designed
5 and has maintained and serviced throughout the life of the Darlington nuclear generating
6 station.

7
8 “Excusable delay” events for fixed/firm price work are restricted to delays caused by OPG’s
9 breach of the agreement or emergency situations requiring the Contractor to leave the site at
10 OPG’s direction. As the Contractor does not control the schedule for reimbursable work, the
11 Contractor is entitled to relief for any schedule delays to the reimbursable work. The
12 agreement contains a closed list of “force majeure” events, which are restricted to (i) natural
13 disasters such as fire, explosion, flood, tidal wave, lightning, earthquake, cyclone, tornado,
14 hurricane, unusually severe ice storm; or (ii) declared epidemic or pandemic disease, labour
15 strikes (unless caused by the Contractor’s breach of a collective agreement), war, riot or act
16 of public enemies, including terrorists, sabotage, vandalism or transportation accident. Both
17 “excusable delay” and “force majeure” events require the party seeking relief to provide a
18 notice and take steps to minimize the impact of the delay. In the event of an “excusable
19 delay”, the Contractor is entitled to both cost and schedule relief, while in the event of “force
20 majeure”, the Contractor is entitled to schedule and cost relief for reimbursable work, and
21 schedule relief, but no cost relief with respect to fixed/firm price work.

22 23 Contractor Personnel

24 The TG ESES Agreement requires the Contractor to identify and employ certain key
25 personnel for the duration of the project. This obligation is reinforced with financial penalties
26 if key personnel are replaced without OPG’s prior consent.

27 28 “Open Book” Approach and Audit Rights

29 The TG ESES Agreement provides OPG with full and open access to all financial and other
30 records relating to the project. The TG ESES Agreement also provides OPG with extensive
31 audit rights for all financial and other records that relate to work that is performed on a

1 reimbursable costs basis, with restrictions on the lookback periods for audits and
2 readjustment of contractor cost claims. The Contractor agrees that OPG has the right to
3 provide governmental authorities (such as the Canadian Nuclear Safety Commission (the
4 “CNSC”)) with access to and copies of documentation, including audit reports, prepared by
5 the Contractor or OPG in respect of the project.

6
7 Subcontractors

8 The TG ESES Agreement restricts the use of subcontractors to certain listed entities, and
9 obliges the Contractor to “push down” all applicable terms and conditions of the agreement to
10 each subcontractor.

11
12 Scientific Research and Experimental Development (“SRED”) Tax Credit

13 The TG ESES Agreement entitles OPG to claim all SRED tax credits generated by the work.

14
15 Performance Security

16 The TG ESES Agreement obliges the Contractor to post an initial letter of credit in the
17 amount of 6% of the contract price to support the Contractor’s obligations under the
18 agreement. The amount of the initial letter of credit steps up to 10% of the contract price on
19 the breaker open date for the first unit to be refurbished. The 10% letter of credit stays in
20 place for the entire period of refurbishment and then steps down to 2% of the contract price
21 upon completion of the work. The 2% letter of credit will stay until the warranty period on the
22 last unit to be refurbished will expire.

23
24 The Contractor provided a guarantee from its parent company in support of all of the
25 Contractor’s obligations under the agreement. The agreement contains specific requirements
26 and tests respecting the ongoing creditworthiness of the parent guarantor.

27

1 Ownership of Goods

2 The TG ESES Agreement requires that ownership of all physical goods (equipment, parts
3 and components) to be transferred to OPG no later than the time of payment by OPG.

4

5 Intellectual Property

6 Alstom, as the OEM, maintains ownership of and all rights in all intellectual property in
7 respect to the work and the goods provided under the agreement. OPG has a licence to use
8 the Contractor's intellectual property, which licence is irrevocable, perpetual, royalty free,
9 fully paid-up and not assignable (unless in connection with a permitted assignment of the TG
10 ESES Agreement).

11

12 Under the licence, OPG can utilize, disclose and reproduce the Contractor's intellectual
13 property for the purposes related to the lifecycle of the Darlington nuclear generating station.
14 Any modifications of the Contractor's intellectual property by OPG are at OPG's risk.
15 Disclosure of the Contractor's intellectual property by OPG to third parties must be protected
16 by a confidentiality agreement; disclosure of Contractor's commercially sensitive intellectual
17 property is allowed only with the Contractor's prior written consent.

18

19 The Contractor is required to provide OPG with the control systems source code. The
20 Contractor is also required to continuously support and deliver the most current version of
21 the source code copy to OPG up to the expiration of the warranty period on the last unit to be
22 refurbished. The Contractor retains ownership of the source code, and OPG has a licence to
23 use it solely for safe operation and maintenance of the Darlington nuclear generating station
24 as required by the CNSC. OPG can only disclose the source code to the CNSC.

25

26 Completion Incentives

27 The TG ESES Agreement provides for a final payment holdback in the amount of \$250,000.
28 OPG is entitled to withhold this amount until it has determined that the Contractor completed
29 all work under the agreement.

30

1 Warranty

2 The TG ESES Agreement provides for a warranty of the Contractor's work, and obliges the
3 Contractor to correct any defective work at its own cost. The warranty period is sufficiently
4 long for OPG to identify any potential defects with the work performed by the Contractor. The
5 warranty period for each unit ends on the earlier of: (i) the date that is three months after the
6 actual end date of the first planned outage where inspections take place for such unit; and (ii)
7 the date that is four years from the unit in-service date for such unit.

8

9 The unit latent defect warranty period extends the warranty period for each unit for "latent"
10 defects (i.e., defects that were undiscoverable by OPG through reasonable inspection) until
11 the end of the warranty period for the last unit to be refurbished.

12

13 The warranty period for a unit will not in any event extend beyond eight years from the unit
14 in-service date for such unit.

15

16 Termination for Default

17 The TG ESES Agreement includes standard events of default. If the Contractor defaults, OPG
18 will be entitled to terminate the agreement and to exercise a number of self-help remedies.
19 Termination for default would permit OPG to make a claim against the contractor for full
20 contractual damages (subject to a percentage cap formula that is linked to the total contract
21 price and certain other amounts).

22

23 Termination for Convenience

24 The TG ESES Agreement permits OPG to terminate the agreement for convenience at any
25 time. Certain types of direct damages (but not full contractual damages) will be payable by
26 OPG to the Contractor in such circumstances.

27

28 Suspension of the Work

29 The TG ESES Agreement permits OPG to suspend the work at any time. Certain types of
30 direct damages (but not full contractual damages) will be payable by OPG to the Contractor
31 in such circumstances.

1

2 The Contractor can only suspend the work if the Contractor is owed payment in excess of
3 \$1M (undisputed) for more than 90 days, or if there is an unresolved “force majeure” relief
4 claim continuing for more than 12 months. The Contractor cannot suspend the work with
5 respect to units disconnected from the grid.

6

7 Dispute Resolution

8 The TG ESES Agreement provides for both informal and formal dispute resolution. The
9 informal procedure contemplates a staged escalation of disputes within OPG’s and the
10 Contractor’s management structure with a view to achieving a consensual resolution of the
11 dispute. The formal mechanism is binding arbitration under commercial arbitration rules. The
12 agreement limits the recourse of the Contractor and OPG to the ordinary courts. The dispute
13 resolution provisions in the TG ESES Agreement and TG EPC Agreement are consistent and
14 allow OPG to consolidate procedures under these two agreements at OPG’s option.