

Becoming "CANDU Qualified"

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Outline

- AECL/Supplier Relationship
- Experience in Bringing New Suppliers into Supply Chain
- Guiding Principles – Supplier Qualification
- General Listing of Plant Equipment/Services
- No. of Suppliers/POs in typical new build
- Overall Process
- Qualification Categories and Process
 - Qualified to Bid
 - Qualified for Award
 - Verification During Execution of Work
- Contacts



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AECL/Supplier Relationship

- Industry supplies ~100% of equipment. AECL is not an equipment manufacturer
- Capable of manufacturing some specialized parts and assemblies, such as Fuelling Machines
- A robust supply chain is essential to AECL's business strategy
- Continuous major projects for ~20 years have maintained active supply chain. This includes current life extension projects



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AECL/Supplier Relationship

AECL maintains:

- Database >2300 suppliers (~700 currently qualified)
- 1200 in Canada – 1100 in 40 other countries
- Includes Team CANDU members and Organization of CANDU Industries
- Some suppliers have worked with AECL for more than 30 years
- Extensive supplier base can provide 100% of equipment
- Multiple supply sources for all components



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AECL/Supplier Relationship

- Since 1996 AECL has completed 7 new build nuclear projects
- Current procurement of major equipment and components for 4 life extension projects
- Excellent supplier performance has been major contributor to "on budget/on schedule" record



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AECL/Supplier Relationship

- In-house central procurement group fully experienced in large projects
- Full scope procurement including Quality Surveillance
- Procurement organization qualified to ISO 9001:2000 and CSA N286.1 standards
- CANDU Material Management System (CMMS) developed by AECL to control the supply process from initiation of demand to plant operation. Tool reduces supplier effort & streamlines processes.



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AECL/Supplier Relationship

- AECL Supply Strategy Working Group
- Includes major products and disciplines
- Identifies key areas of strategic supply
- Focuses effort on securing supply sources
- Establishes localization initiatives

AECL/Supplier Relationship

- Localization is generally a key requirement for new builds
- AECL has excellent track record in bringing new suppliers into supply chain:
 - Wolsong 1 (1983) <15% local supply
 - Wolsong 4 (1999) >75% local supply
- In mature economies, such as in Canada, ~75% of 1st units would be local supply

Experience in Bringing New Suppliers into Supply Chain

- CANDU design is well suited for small and medium sized manufacturers (e.g., no need for thick walled reactor vessel)
- AECL has extensive experience in bringing new suppliers into its supply chain, both at home and abroad

Case Study - Doosan (Korea)

- New supplier to AECL (early 90s)
- Designated Nuclear Steam Plant supplier for W2, and then W3/4
- AECL provided component design technology transfer, technical support and facilitated transfer of manufacturing technology
- Relationship continued beyond W2/3/4
- Doosan became major supplier for Qinshan and current life extension projects

Guiding Principles - Supplier Qualification

- Before PO, suppliers must meet specified technical & QA requirements (**financial status also reviewed before PO placed**)
- Qualification requirements vary, depending on:
 - complexity of item (also consider safety requirements)
 - QA/ASME code class
 - performance history
- For specialty items (e.g., pressure & calandria tubes, end fittings), qualification also involves, prototype qualification, manufacturing pre-production samples

General Listing of Plant Equipment/Services

- Calandria (reactor)
- Reactor Internals (pressure tubes, calandria tubes, end fittings, reactivity mechanisms)
- Steam Generators
- Misc. process equipment (tanks, heat exchangers, fans, blowers)
- Pumps (inc. PHT)
- Valves, piping & fittings (stainless & carbon steel)
- Instrumentation, computers, simulator, cable, wire, racks and panels (safety & non-safety)
- Turbine Generator + other Balance of Plant (i.e. non-nuclear) equip't, including Main Output Transformer, Water Treatment Plant & Security systems
- Fuelling Machine
- Fuel & Heavy Water
- Misc. items & materials (PHT header, liner, VHL crane, concrete, consumables)
- Engineering services providers
- Module Suppliers
- Construction contractors
- General Services (i.e., administrative, support, hospitality)

No. of Suppliers/Pos/Contracts that are typically involved (new build)

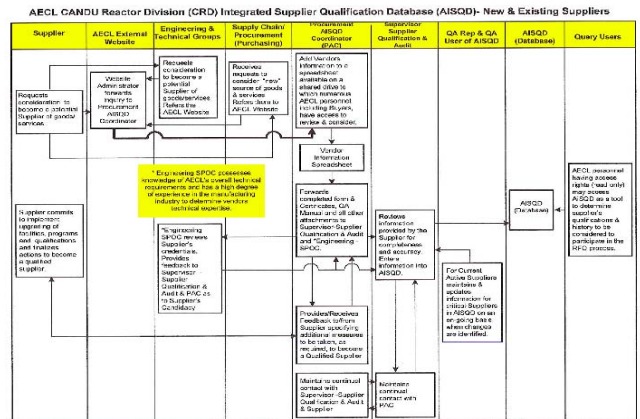
- Nuclear Steam Plant (AECL)
 - ~400 POs
 - ~150 suppliers
- Balance of Plant (SNC Lavalin)
 - ~250 POs
 - ~125 suppliers
- Above numbers increase dramatically if including sub-contractors
- In addition to above “hardware”, contracts are awarded for:
 - Engineering, and other general, services
 - Construction
 - Very Heavy Lift Cranes
 - Fuel

Overall Process

- Supplier makes initial contact with AECL or SLN (via AECL/SLN website, phone, conferences, OCI meetings, meetings or presentations in AECL/SLN offices)
- Forms sent and completed (via AECL site)
- Depending on complexity of item, QA requirements or history with supplier, an initial assessment may be necessary
- If deemed a potential supplier, added to AISQD (AECL Integrated Supplier Qualification Database), in suitable category. AISQD also includes performance history

AISQD Contents

- General (name, address, etc.)
- Evaluations (past performance)
- Certifications
- Verifications (audits performed)
- Contacts (key supplier contacts)
- Product
- Agent (is supplier an agent, firm represented)
- Manufacturers (as above, but identify agent if applicable)
- Projects (previous experience)
- POs (previous experience)



Qualified to Bid

Criteria:

- Currently qualified for award, or
- Previously qualified for award but qualifications expired due to lack of AECL work, or
- Qualified to similar QA requirements by others (OPG, ASME etc.), or
- Qualified to earlier edition of standard, or
- QA Manual and previous performance acceptable
- Supplier has capability to upgrade

Qualification Categories and Process

Qualified for Award

Criteria:

- a) Completed the required QA Program Certification
- b) If pressure boundary, jurisdictional approval also required (TSSA in Ontario)
- c) Written commitment to upgrade program, if required
- d) Manufacturing, Inspection and Test capabilities assessed and satisfactory
- e) No outstanding Quality Observations

Resources

Where can you find more information?

- AECL: <http://www.aecl.ca/supplychain@aecl.ca>
- SLN: <http://www.sinuclear.com>
- Organization of CANDU Industries: <http://www.oci-aic.org>
- Canadian Nuclear Association: <http://www.cna.ca>
- Canadian Nuclear Society: <http://www.cns-snc.ca>
- Canadian Nuclear FAQ: <http://www.nuclearfaq.ca>
- CANTEACH: <http://canteach.candu.org/>
- CANDU Owners Group: <http://www.candu.org/>
- Women in Nuclear: <http://www.win-global.org>
- Or, contact us directly:

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Summary

- AECL encourages new suppliers to become part of our supply chain
- AECL has extensive experience in bringing new suppliers into its supply chain, both at home and abroad
- Suppliers in Clarington, and Ontario as a whole, are well positioned to benefit from new opportunities
- Opportunities are both immediate and long term, as well as domestic and abroad

Questions

