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Components of a CANDU Nuclear Refurbishment

CANDU nuclear reactors, the type of reactors currently operating in all Canadian nuclear stations, are designed to include a mid-life outage after about 30 years of service.

This major maintenance and replacement process, undertaken with the units in shut down mode, allows the station to be regenerated for continued operation for an extended period of time. In the case of a full refurbishment, as is being proposed for Darlington Nuclear, this would mean approximately another 30 years of service.

A refurbishment is a major and complex construction project. It requires significant human resources, employing people with many different skill sets. It also calls upon many different source suppliers and contractors with expertise or specialty products of a high caliber to satisfy nuclear safety standards. There is a high demand for human and supply resources that results from a refurbishment project. Much of this need is directed to high-technology, manufacturing and construction industries.

The first step in undertaking a refurbishment is a full assessment of the station condition to determine the scope of work required. Depending on the plant condition going into the outage, this work can vary but potentially can include:

- Refurbishment of reactor components;
- Replacement of any life-limiting components, safety and environmental systems;
- Maintenance and inspection activities;
- Replacement of fuel bundles; and
- Commissioning and return to operations.

Additionally, there are a number of regulatory conditions that must be met before proceeding with a refurbishment. These include completion of:

- An Environmental Assessment to determine any potential impacts on the local area from the refurbishment project and to identify any required mitigation. The environmental assessment will ensure and validate the environmental safety of the project before it is allowed to proceed;
- An Integrated Safety Review to determine the plant condition prior to the start of refurbishment. This comprehensive study, expected to result in thousands of pages of data about the station condition, will compare the current station to

modern codes and standards to determine the level of compliance and the work required to operate it during the operational period following the refurbishment work.

A key component of success in any refurbishment project is planning completed well in advance of any refurbishment work taking place. OPG has built expertise in project management and has developed specific processes to ensure we 'plan the work and work the plan' in a robust manner that ensures the right work is well laid out and executed. Like any major project, experience and planning are key to success.

In addition, to ensure our planning assumptions and execution path are correct, OPG will validate its plans and implementation with third-party oversight and pre-testing of procedures to ensure the right work gets completed on schedule and on budget.

For More Information, Contact:

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