

## Preserving the Life Extension Option for Wolsong NPP Unit 1 Through Plant Life Management Program

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### Abstract

The first CANDU 6 plants, including Wolsong Unit 1 nuclear power plant (NPP) (which entered service in the early 1980's) are now approaching two thirds of their thirty-year design life. Korea Electric Power Research Institute (KEPRI) and Atomic Energy of Canada Limited (AECL) have worked together since 2000 to develop and implement a comprehensive and integrated CANDU Plant Lifetime Management (PLiM) program for Wolsong Unit 1 NPP. PLiM will see this plant successfully and reliably through to the design life and preserve the option for life extension.

The focus of the initial phase of the program is on the major critical components and structures and any potential aging phenomena that might affect plant safety and availability. In-depth life assessments of Wolsong Unit 1 critical systems, structures, and components (CSSCs) are under going. It is recognized that effective plant practices in inspection, monitoring, maintenance, and operations are the primary means of managing aging through the design life and necessary for preserving the life extension option. Hence, the PLiM assessments identify enhancements to current plant programs to mitigate aging effects and to ensure reliable life attainment and performance.

The KEPRI/AECL co-operation for the PLiM program over the last few years is providing in-depth assessments and promising life prognosis for the key CSSCs of Wolsong Unit 1. The assessments are also identifying those areas for optimized plant inspection, monitoring and maintenance programs to achieve utility targets for safety, reliability and production capacity during extended life. These outcomes are important inputs to decision makings to embark upon a detailed Wolsong Unit 1 life management program. In this paper, the PLiM program assessment methods and techniques tailored to the components, like CANDU 6 steam generators, are described. A typical proactive aging management program for steam generators, aimed to continue current excellent service for long and reliable life, is also outlined. Furthermore, the paper briefly describes the interaction between the PLiM Life Assessment program and Plant Condition Assessments that will collectively form the basis for evaluating refurbishment requirements and for plant life extension planning.