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## QUALIFICATION OF ALTERNATE SUPPLIERS FOR Zr-2.5Nb MATERIAL FOR CANDU PRESSURE TUBES

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### Abstract

To assure security of supply, two potential alternate fabricators of Zr-2.5Nb material were located. An evaluation program to qualify these suppliers was developed based on 30 years of research on pressure tube metallurgy and fabrication. Guidelines were developed for properties defined by the technical specification and those properties that can be modified by the fabrication process, but not routinely evaluated, that are also necessary to ensure the design life of the pressure tubes is met. The qualification was based on a thorough evaluation of prototype tubes, preceded by evaluation of material samples obtained at various stages of manufacture. The chemical composition, microstructures, tensile and fracture properties and rolled-joint characteristics were measured and found to be acceptable for both new suppliers. Finally, based on the final tube properties, in-reactor deformation and corrosion were predicted to be acceptable for the design life of the pressure tubes. The properties of production tubes will be monitored closely until adequate experience with these suppliers has been obtained.

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