

## A Method to Implement CSA N286.7-99

by

J.A. Walsworth, R.A. Prime, D.F. Basque and M.-J. Basque  
Brunswick Nuclear Inc., 143 Carrington Lane, Fredericton, NB, E3A 5R6

The Canadian Standards Association (CSA) recently released a new version of their quality assurance standard related to analytical, scientific and design computer programs for the nuclear industry<sup>[1]</sup>. This standard involves the “design, development, maintenance, modification and use of computer programs that are used in nuclear power plant applications to support: (i) design and analysis of safety-related equipment, systems, structures and components as identified by the owner; (ii) deterministic and probabilistic safety analyses and reliability studies; (iii) reactor physics and fuel management calculations; and (iv) transfer of data between computer programs or pre-or post-processing calculations associated with (i), (ii), and (iii) above.”<sup>[1]</sup>.

Brunswick Nuclear Inc. has decided to implement this quality assurance standard. During the establishment of an implementation plan, it was soon realized that the standard lacked any guidelines associated with implementation. Furthermore, the standard contains many linkages between its sections and identifies several prerequisite requirements. It was difficult for managers and other non-expert users of the standard to be certain that the minimum requirements of the standard were being considered for a specific software project.

This paper proposes a method to implement CSA N286.7-99. The requirements of the standard have been “programmed” into an electronic checklist format. The checklist identifies the requirements associated with code changes, which may be significant or non-significant, with design and development of a code, and for an existing computer program which was developed prior to the release of N286.7-99 and would be applied to new analyses. The checklist recognizes the different available options for validation and verification. The required documentation associated with code design, development and verification have been summarized. The checklist supports software projects involving computer codes, spreadsheets or macros.

Through this approach, we have been able to standardize the implementation of CSA N286.7-99 with confidence that the minimum requirements of the standard have been considered. The completed checklist defines the scope for an entire software project. The checklist is easy to execute and consistent results are achievable. As a result, overall project costs can be reduced. This paper will briefly describe the checklist tool and our experience.

### Reference:

1. “Quality Assurance of Analytical, Scientific, and Design Computer Programs for Nuclear Power Plants”, CSA standard no. N286.7-99, Canadian Standards Assoc., 178 Rexdale Boulevard, Etobicoke, Ontario, Canada. M9W 1R3, 1999 March.