



David Fournier, M.A.Sc., P.Eng, CFSE
Partner, exida.com

Fields of Competence

Nuclear Standards – IEC 61513, 62138, 61226; RCC-E
IEC Functional Safety – IEC 61508, IEC 61511
Real-Time Software Project Management
Control & Safety Systems – BWR, PWR, CANDU, EPR

Experience Summary

Mr. Fournier has over 35 years of experience and extensive knowledge in the nuclear field, primarily in the design of programmable control and safety systems.

1973—2005, with Atomic Energy of Canada Ltd:

- lead designer of the CANDU-6 reactor protection systems, introducing computerized shutdown systems to CANDU nuclear power plants.
- product manager and lead designer for AECL's micro-computer-based control product (*PROTROL*[™]) licensed in several US nuclear facilities
- design of BWR digital feedwater control systems (DFCS) in the United States (Peach Bottom, Oyster Creek) and the digital control system for the Penn State Breazeale reactor.
- engineering manager for the first PLC-based AMSAC systems in U.S. PWRs. (Watts Bar, Turkey Point)
- principal engineer for the Cernavoda-2 DCC project (plant control computers)
- recognized leader in applying a probabilistic approach to the classification/categorisation process used in Canada in lieu of IEC 61226 role-based rules
- Bruce A Qualified Power Supply categorisation (introduced IEC 61508 SIL determination concepts to categorisation in Canada)
- first application of IEC 61513/62138 within AECL.

2005-present, partner with exida.

- Numerous SIL Verifications and SRSs for O&G projects
- IEC 61508 SIL 1 certification program for OL3 NPP in Finland
- IEC 61508 SIL determination in South Africa (>300 SIFs)
- IEC 61513/62138 & RCC-E qualification for FA3 NPP in France
- conceived and managed a reverse-engineering project following IEC 61513/62138 in Canada

Credentials

Certified Functional Safety Expert (CFSE), 2009
Professional Engineer, 1973 Province of Ontario, Canada
M.A.Sc. University of Toronto, 1971 (Electrical Engineering)
B.A.Sc. University of Toronto, 1969 (Engineering Science)

Professional Profile

Key Assignments and Projects

- Mentored supplier for product certification to IEC 61508 SIL 1
- Implementation of a Category B process control system to meet IEC 61513/62138 & RCC-E standards (wrote the FSMP, designed FB language, etc.)
- SIL verification for BMS and O&G projects
- SIL determination: ~ 300 SIFs for a nuclear fuel manufacturing plant
- Design and execution of an IEC 61513/62138 compliant reverse-engineering program for a Canadian nuclear facility
- Design and implementation of digital retrofits in U.S. nuclear facilities

Teaching

- Developed and taught the classification portion of *exida's* IEC61513/61226 course (2006, 2008)
- Introduction to 61508 (2007, 2008)

Standards Committees

- a Canadian delegate to the IEC technical sub-committee SC45A "Instrumentation and Control of Nuclear Facilities" (IEC 61838, 61226, 62340, 61513 and 61500).
- Project leader for 2009 revision to IEC 61838.

Recent Publications / Presentations

Applying IEC Standards to Categorizing Safety-Related I&C Functions in CANDU Plants, 26th Annual Conference of the Canadian Nuclear Society, Toronto, June 2005.

Retrofit - Related Publications/Presentations

- *PROTROL Digital Feedwater Control System for Peach Bottom Atomic Power Station*, R.D. Fournier, T. Cabrey and K.V. Tran, 1989 EPRI Conference on Plant Control and Automation
- *Digital Control and Protection Retrofits in Nuclear Power Plants*, R.D. Fournier (AECL), M. Hammer (Northern States Power), K.H. Sun (EPRI), 1987 International Meeting on Nuclear Power Plant Operation

Languages

English and French