



**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*<sup>™</sup>) 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)
- 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 supplier to OL3 NPP in Finland
- IEC 61508 SIL determination in South Africa (>300 SIFs)
- IEC 61513/62138 & RCC-E qualification for Flamanville 3 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

- Mentoring manufacturers for product certification to IEC 61508
- Implementation of a Category B process control system to meet IEC 61513/62138 & RCC-E standards (wrote the SQAP, specified the FB language, demonstrated predictability per RCC-E, 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 the classification portion of *exida's* IEC61513/61226 course and co-taught it (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 61513, 61226, 62340, 61838, 62671, etc.).
- Project leader for 2009 revision to IEC 61838, and currently project leader for new IEC standard 62671 (in draft).

### Recent Publications / Presentations

*Applying IEC Standards to Categorizing Safety-Related I&C Functions in CANDU Plants*, 26<sup>th</sup> 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