



Peter Clarke, PhD, CChem
Senior Safety Consultant, exida Asia Pacific

Fields of Competence

Chemical Process Management
Process Risk Analysis
Workplace Safety Management
Technical Communications and Training
IEC Functional Safety – IEC 61508, 61511

Experience Summary

Dr. Clarke has over 12 years of experience in the oil & gas, chemicals, pharmaceuticals and biotechnology sector, and spent several years as a university teacher in the field of business and technical communications.

1992-1997, with Bioprocessing Ltd, a small manufacturer of protein separation technology products:

- Developed novel protein separation solutions
- Trained in Occupational Safety & Health, and served as Health & Safety Coordinator

1997-2000, with Robinson Brothers Ltd, a fine chemicals manufacturer:

- Plant Manager for 3 process units
- Responsible for all aspects of production, safety, ISO9000 and GMP compliance, training, troubleshooting, and waste management

2002-2003, with Pharmacia Ltd, a major pharmaceuticals manufacturer:

- Shift Facilitator for 3 process units
- Responsible for all aspects of production, safety, ISO9000 and GMP compliance, training and troubleshooting

2005-2008, instructor at The Chinese University of Hong Kong:

- Development and delivery of classroom and online learning materials in language instruction, communications
- Specialised in technical and business communications

2008-2010, with ERM Ltd, a risk management consultancy:

- Senior Risk Consultant
- Specialised in HAZOP, SIL selection, LOPA, Safety Case and Alarm Management studies

2011-present, with exida Asia Pacific:

- Senior Safety Consultant
- Specialised in SIL selection, Alarm Management, Functional Safety training and PHA

Professional Profile

Credentials

- Certified Functional Safety Expert, 2011
- Chartered Chemist, 1999
- UK National General Certificate in Occupational Safety & Health, 1996
- PhD University of Durham, UK, 1991 (Industrial Chemistry)
- BA University of Oxford, 1988 (Chemistry)

Key Assignments and Projects (Summary)

- Chaired HAZOP, CHAZOP, SIL selection and Fault Tree Analysis studies for numerous major oil & gas, petrochemical and downstream new-build and upgrade projects, especially LNG, refinery units and polymer plants
- Wrote COMAH Safety Case for Hongkong Electric's Lamma Island natural gas power plant
- Chaired Alarm Management Studies for natural gas processing plant (8,000 alarms), brownfield offshore facilities (around 10,000 alarms per site), greenfield refinery unit (1,700 alarms), and mining operations (1,800 alarms)
- Performed SIL verification studies for oil, gas, chemical and FMCG facilities
- Conducted several courses and seminars on IEC61511 and CFSE exam preparation
- Delivered product training on *exida's* exSILentia[®] and SILAlarm[®] software

Languages

- English – primary
- Chinese (Cantonese), Dutch, French – moderate

Publications

- *Setting the Standard*, article on benefits of complying with IEC 61511, *Control Engineering Asia*, May 2011, cover story.
- *SIL without Slips*, article on avoiding common errors associated with IEC 61511, *Control Engineering Asia*, May 2012, cover story.

Listing of projects completed since 2011

LOPA – Rio Tinto, Australia

Facilitated one day Layer of Protection Analysis workshop on major hazards for new iron ore stacker system

SIL Verification – KPA, Australia

Executed SIL verification study on 15 SIFs

SIL Selection – Cabot, China

Facilitated 3-day SIL selection workshop for upgrade of activated carbon plant

Safety Lifecycle seminar – Korea

Presented one day seminar on the basics of the Safety Lifecycle in Seoul, Korea. About 10 delegates attended.

Functional Safety training – China, Indonesia, Malaysia

Presented three 4.5 day courses on IEC 61508/IEC 61511, the Safety Lifecycle, and preparation for the CFSE exam in Shanghai, China; Bali, Indonesia; and Kuala Lumpur, Malaysia. About 10 delegates attended each course.

SIL capability audit – China

Performed 2 day audit of design and manufacturing procedures for a manufacturer of slam shut valves, Chengdu, China. The audit resulted in the valves receiving SIL 3 certification.

SIL capability audit – India

Performed 4 day audit of design and manufacturing procedures for a manufacturer of valves and actuators, Mumbai, India. The audit resulted in the equipment receiving SIL 3 certification.

exSILentia training – Malaysia, Indonesia

Provided two hands-on 2 day training programs for the use of exida's exSILentia software package to new users in Kuala Lumpur, Malaysia and Jakarta, Indonesia.

HAZOP and e-HAZOP – Australia

Facilitated a 4-day process hazards analysis workshop for a new bitumen handling facility in Brisbane, Australia. This consisted of a 2 day control systems HAZOP, and a 2 day electrical systems HAZOP.

SILAlarm training – Malaysia

Provided a hands-on 2 day training program for the use of exida's SILAlarm alarm management software package to new users in Kuala Lumpur, Malaysia.

Fault Tree Analysis – Singapore

Facilitated a 4 day FTA for specified high risk scenarios on a new North Sea FPSO facility for BP.

Alarm Rationalization – Malaysia

Facilitated a 5 day alarm rationalization workshop for an existing offshore oil rig. Around 8,000 alarms existing within the Emerson DeltaV DCS were reviewed.

HAZOP study – Kuwait

Facilitated a 3 day control systems HAZOP for a KNPC refinery upgrade project in Kuwait. The entire control system was reviewed and a number of recommendations issued.

Alarm Rationalization – Trinidad

Facilitated a 15 day alarm rationalization workshop, followed by a 2 day HAZOP review, for a new Petrotrin refinery unit. Around 1,700 alarms were reviewed, and advanced alarming schemes developed for programming into the Honeywell Experion DCS.

Alarm Rationalization – USA

Facilitated a 4 day alarm rationalization workshop, and provided training and alarm data preparation workshops, for a new LPG export facility in Australia. The target DCS will be implemented in an Emerson DeltaV system.

Safety Lifecycle support – India

Facilitated a 4 day SIL selection workshop for a greenfield FMCG production facility in India for Unilever. All safety loops provided in the ESD, DCS and F&G systems were considered. This was followed by a SIL verification calculation on around 30 SIFs. A full Safety Requirements Specification was also prepared.

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Professional Profile

SILAlarm training and Alarm Rationalization kickstart – Malaysia

Provided a 2 day hands on training program on exida's SILAlarm software, followed by facilitation of a 2 day alarm rationalization workshop. This was intended to train in-house facilitators and kickstart the rationalization of an offshore oil facility with around 10,000 alarms.

Safety Lifecycle document consulting – Australia

Provided extensive consultancy support to a major mining client on preparation of documents and procedures to support full compliance with the IEC 61511 safety lifecycle.

Alarm Rationalization – USA

Facilitated a 10 day alarm rationalization workshop for an existing Rio Tinto mining operation. Around 1,800 alarms were reviewed, and advanced alarming schemes developed for programming into the Emerson DeltaV DCS.

Functional Safety Analysis seminar – India

Presented two day seminar on risk analysis techniques for the Safety Lifecycle in Mumbai, India. About 25 delegates attended. The seminar focused particularly on the LOPA technique, and included extensive practical round-table exercises.

Alarm Rationalization – Malaysia

Facilitated a 5 day alarm rationalization workshop for an offshore gas facility in Sarawak, Malaysia. Several hundred alarms existing within the Emerson DeltaV DCS were reviewed in detail. Training was provided to support in-house continuation of the rationalization effort.