



Nuclear Quality: Working together to get it right

How should various links in the supply chain interact with quality and safety regulators to carry out successful projects more effectively?

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Author: Mike Underwood, NucSIG Secretary

Presentations

1. Simon Feary
2. Keith Parker
3. Lionel Westall
4. jon Alcock
5. Mamdouh El Shanawany
6. Dave Wilson

Nuclear Quality Knowledge (NQK)

Background

The Nuclear Quality Knowledge (NQK) produced by CQI's Nuclear Special Interest Group (NucSIG) is a valuable resource for quality professionals and managers. It has just been revised and was re-launched at a combined Institute of Mechanical Engineers and Chartered Quality Institute (CQI) Event, entitled "Working together to get it right" held in London on 1st May. NQK is aimed primarily at quality practitioners new to the industry or supply chain. It provides an industry overview, introduction to key concepts and chapters on a number of key topic areas. The individual chapters point to important standards, guides and other material that deal with the topic areas in more detail.

It aims to highlight the differences or nuances that a professional will experience on joining or supplying the nuclear sector, and which are a consequence of the special hazards and regulatory requirements that apply. This is sometimes called the "Nuclear Delta". NQK is endorsed by the Nuclear Institute, Office for Nuclear Regulation (ONR) and the Nuclear Industries Association.

The latest version of NQK follows extensive research undertaken in June 2012 by the CQI which examined current and future quality management skill shortages in the nuclear industry. The research was based on a questionnaire shared with quality professionals in the nuclear sector which revealed that 50% planned to retire within the next 10 years, this unfortunately coinciding



with the expected upsurge in requirement for these and other professional skills in the nuclear sector and its supply chain to support nuclear new build.

The key messages from the London event were:

- The importance of quality and raising the profile of the quality profession
- The need for leaders at all levels to understand quality, particularly in relation to nuclear safety and leaders "walking the talk "
- The key role of the nuclear supply chain and the need for close and open relationships – a partnership approach is required

NQK Contents

NQK gives newcomers to the nuclear industry a perspective on important topics from professionals who have worked in the industry often all of their lives.

The NQK project leader and a principal contributor is Iain McNair, a civil engineer and former Principal Inspector with NII/ONR. Iain has experience in nuclear construction projects from his early days with NNC at Torness and Faslane, before he joined the NII where he worked on co-ordinating the UK contribution to the IAEA's first stab at a management system standard - 50CQA. Later Iain specialised on the regulation of nuclear construction projects and latterly the nuclear security. Iain is the editor of the NQK's scene setting chapters including **Background** which sets out the international context in which nuclear operates and the UK legislative framework and **Leadership and Management** which highlights the critical importance of leadership to engender a healthy nuclear safety culture and the importance of management system standards including IAEA's more recent standard, GSR3. Iain also wrote the **History of UK Nuclear** which gives an overview of the "six era" of UK nuclear covering civil and military developments.

Sellafield Limited through the involvement of their Head of Supply Chain Development, Stuart Allen and Andrew Mullinder, Head of Quality, Major Projects made a significant contribution by editing chapters on **Supply Chain** and **Project Management**. Stuart highlights the importance of the specification to both parties to a contract; discusses nuclear quality grading; sourcing and oversight issues and the challenges posed by globalisation of the market place. Andrew majors on the importance of using a properly structured gated project delivery process; the need for a keen nuclear safety focus throughout a project and details typical project quality requirements.

Bob Dixon's chapter on **Product Quality** draws on a career in quality management, starting in the 70's at Hinkley Point B and Hartlepool when they were construction sites. After quality management roles with CEGB, Balfour Beatty, Siemens and London Underground, Bob is now part of EDF New Build's Project Delivery Team. Bob's chapter discusses quality planning; inspection and test plans; certification; traceability; qualification and particular issues around EDF's UK EPR new build requirements.



Mike Underwood, now a freelance consultant, gained his nuclear quality and supply management experience in roles at Springfields, BNFL Corporate and latterly Magnox. He edited the chapter on **Operational Management** which focuses on issues that are crucial during the often long operational phase of a plant when stability and conservative behaviour is key to nuclear safety preservation. This includes topics such as people management; asset management; radiological control, emergency preparedness and security.

Research Sites Restoration Limited (RSRL)'s Richard Hibbert based at Harwell edited **Knowledge and Information Management**. Richard, after several UKAEA roles including corporate quality manager is now RSRL's Head of Quality and Management System. The importance of an effective Knowledge Management programme is explored to cope with the three different types of knowledge and the realisation that despite extensive documentation most knowledge is tacit. The regulatory requirements, standards and guidance associated with nuclear Records Management are presented.

The chapter, **International Approaches** which focuses on arrangements in France and USA was edited by Susan JM Shaw, RSRL's Quality Engineer based at Winfrith. The chapter considers the needs of a UK based nuclear professional either working in an international environment or receiving goods from overseas. Because nuclear is a global industry with a limited number of design organisations and a large supply chain, virtually no country operates independently; yet each country has its own legal and regulatory system including codes and standards. In the interests of safety and economy, buyers need to consider how the approaches of any supplier, or sub-tier supplier, fits into the national requirements they have to satisfy; and vice-versa.

ONR's Dave Morgan gained over 20 years quality experience at Aldermaston and then Magnox's operational and decommissioning sites before becoming an ONR Inspector – Quality Management Specialist. In Dave's chapter **Assessment and Improvement** NQK captures the various ways that assessment of management systems can be undertaken; the importance of independent challenge; the use of Operating Experience Feedback (OEF); non-conformity and event investigation; bench marking and continual improvement.

In the production of NQK, the CQI NucSIG Steering Group is very grateful to the contributions made by members and associates working for Sellafield, BAM Nuttall, BAe Systems, EDF, RSRL, DSRL, DNV, L2 Business Consulting, ONR and UKAS.