

NUCLEAR CAREER GUIDE

THE CQI GUIDE TO QUALITY MANAGEMENT CAREERS IN NUCLEAR

Get skilled

Pathways in to quality management careers in nuclear

A vital role

An in-depth look at the roles available to quality professionals





ORION: AWE'S LASER FACILITY

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High-power lasers enable scientists to replicate, on a minute scale in a laboratory, the physical conditions to conduct research into high energy density physics phenomena, such that occur at the heart of a nuclear explosion. AWE pioneered this type of experimental facility and has led the way on research in this area.

The Orion laser heralds a new era of laser physics experiments. Designed primarily to support AWE's core work, Orion will also drive developments in fundamental science and it is also intended to support laser fusion energy research which could play a key role in developing energy for the future. When Orion is fully operational, it will be available for collaborative academic research. Housed in a building the size of a football field, Orion will give scientists the opportunity to study densities and temperatures found nowhere else on earth.

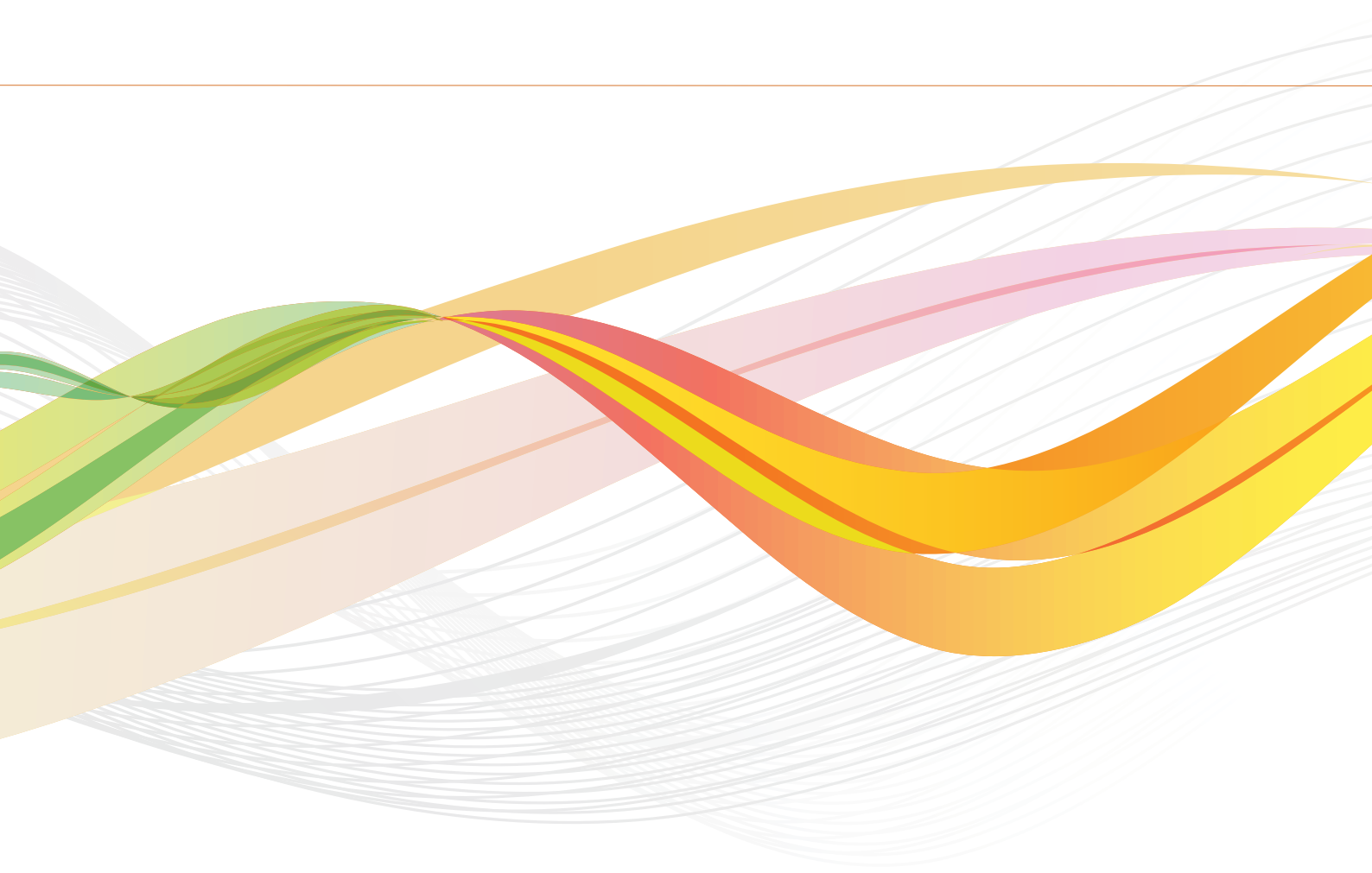


WELCOME

In recent years, fewer people have actively considered the idea of a career in the nuclear sector, but with the planned construction of new nuclear power stations in the UK and thousands of new jobs expected as a result, alongside a host of new qualifications and training to provide the necessary skills, there has never been a more exciting time to consider a career in this area.

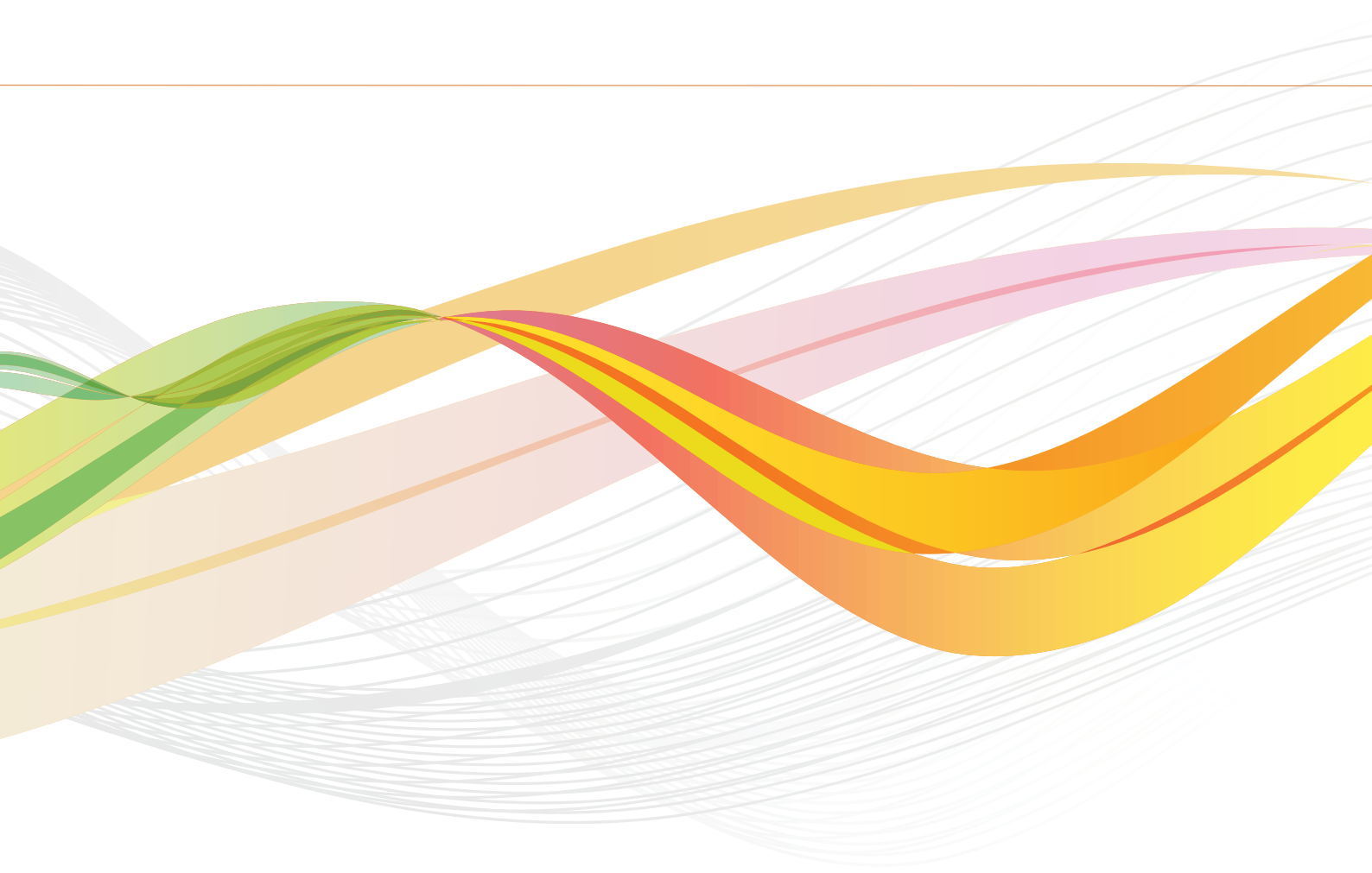
As the nuclear industry grows, the quality profession will be critical in meeting the challenges faced. It is quality professionals who will ensure organisations are equipped to deal with the fast pace of change that will be required, as well as focusing on the assurance of safety and environment that is so critical to nuclear.

The Chartered Quality Institute (CQI) has long supported quality professionals in the nuclear sector, both in civil nuclear and defence, and there are currently more than 300 quality practitioners benefiting from the professional recognition, networking opportunities and knowledge resources associated with CQI membership. Many also attend regular events hosted by CQI's Nuclear Special Interest Group (NucSIG) around the country to learn from others within the industry and make those all-important contacts. With this guide, CQI aims to give both employees and employers the information they need about quality management careers in nuclear. We hope you find it useful.



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INTRODUCTION



The quality function plays a significant role in many organisations across many sectors, but it has a particularly important task within the nuclear industry. This is an industry where quality systems are absolutely crucial to ensure the safety and assurance of the operations concerned, not only in terms of the people working directly with them, but also in relation to wider local, national and global communities.

The publication of this new Guide to Quality Management Careers in Nuclear demonstrates the CQI's continued commitment to maintaining the vitality of the quality profession by encouraging new entrants to this important and growing sector. It emphasises the importance of education and training and offers support to those at the start of their careers, as well as quality professionals considering a change in sector.

As Chief Executive, I am proud to represent the views of the CQI. Our role in promoting quality and the interests of the quality profession is vital to UK plc. I would be delighted to welcome all of you who read this guide to join us as you work towards developing your career in quality.

Simon Feary
CQI Chief Executive



With the anticipated expansion of the nuclear industry in the UK, created by the emerging nuclear new-build programme and the ongoing decommissioning of redundant facilities, the potential career opportunities for the quality professional in the nuclear sector could not be better.

The CQI Nuclear Special Interest Group (NucSIG) is striving to develop the capability of quality professionals within the nuclear industry through networking events aimed at sharing knowledge and experience as well as through the provision of guidance material such as the recently published Nuclear Quality Knowledge. This document, available free at www.thecqi.org/nuclear, highlights some of the differences and unique requirements of this highly regulated industry.

This guide to quality management careers in the nuclear industry is aimed at existing quality professionals who may be attracted to the industry at this exciting time, and those at the start of their careers who have just completed full-time education. I hope it encourages you to consider becoming a quality professional in the nuclear sector and I look forward to welcoming you at one of our events.

Geoff Edmondson, FCQI CQP
Chair, CQI Nuclear Special Interest Group

NUCLEAR REGENERATION

WITH NEW BUILD PROJECTS ON THE HORIZON, IT'S AN EXCITING TIME FOR THE NUCLEAR INDUSTRY IN THE UK AS IT GEARS UP FOR THE CHALLENGE OF RECRUITING AND TRAINING A BRAND NEW WORKFORCE



Career opportunities currently exist in nuclear energy as never before. Increasing energy demand and greater concern for our environment are leading to the expansion of nuclear power in the UK via the new build programme, while at the same time, the industry faces the loss of skilled personnel due to retirement over the next several years. The result is a range of challenging and rewarding job opportunities appearing all over the industry and all over the country.

As well as this breadth of opportunity, nuclear remains one of the few sectors in the UK able to provide a long-term, stable and rewarding career, with many nuclear workers spending their entire working lives within the industry. A career in the nuclear sector also offers

competitive pay, the potential for career development and challenging projects.

With all this on offer, it is no surprise that Clive Smith, Skills Development Director for Nuclear at Cogent, the Nuclear Sector Skills Council can so easily highlight the benefits of a career in

“1,000 new quality professional jobs in new build alone”

the sector. He says: “Who wouldn’t want to work in nuclear? It’s an industry with a long-term, stable future, good career development opportunities and it’s an industry where quality and safety are simply synonymous.”

New build, new jobs

Nuclear energy is a core focus for the UK government. It is seen as an affordable, low-carbon energy source that can meet the future energy needs of the UK population. To work towards meeting those needs, five new nuclear plants have so far been identified by the government for construction. The scale of this new programme means thousands of new jobs will be created and the first contract is expected to be awarded very soon, with the UK’s Rolls-Royce expected to win a substantial share of the build of the first plant and France’s Areva supplying the core of its nuclear reactor. At the same time as this new work begins to take shape, the decommissioning of existing nuclear plants will be ongoing with a steady



Torness Nuclear Power Station, near Dunbar, Scotland, UK. Opened in 1988, it was the last of the second generation nuclear power station to be built in the UK.

demand for skilled quality professionals.

The projected time span for new build and decommissioning stretches over the next 13 years. And, while the sector currently employs around 44,000 in civil nuclear and 14,000 in defence, recent estimates in the CQI's 2012 research report, *Nuclear Industry UK: Research into current and future quality professional skill needs*, expect overall employment in the sector to increase by 14,000 over the next 10 years, with demand for over 1,000 new quality professional jobs in new build alone. The report continues: "This is against a current estimated figure of 2,320 quality professionals employed in the nuclear sector."

On top of the need to attract new people to the industry to meet the needs of new build and decommissioning,

research by Cogent, *Power People – The Civil Nuclear Workforce 2009–2025*, demonstrates that the current nuclear workforce is on average older than the rest of the UK workforce, creating further vacancies. This is corroborated by the CQI's research, albeit focused on the quality segment of that workforce, which identifies an "anticipated high rate of attrition of quality professionals from the sector through retirement".

Over on the defence side of the nuclear industry, there is less evidence, according to the CQI's research, to suggest an increased demand for jobs in the next 10 years. The report states: "Demand, which is dependent upon government defence strategy, is expected to remain essentially constant, if anything with a small decrease

in overall employment during the next 13 years. The availability of skills may be affected by the demands in the new build in the civil sector."

Training up

While the overall increase in jobs in the nuclear industry is good news for individuals and the economy as a whole, the need to recruit and train a new workforce of this size represents a considerable challenge for the industry. Additionally, when it comes to quality professionals, the CQI's research has identified serious gaps in the sector's skills strategy.

The report states: "Cogent, and the other employer-led bodies for the sector, have identified future skills shortages which mirror the skillset of

quality professionals. However, it has failed to categorise these shortages and consequently runs the risk of failing to include the training and qualification needs for the quality profession in its plans."

Alastair Evans, spokesperson for the Nuclear Industry Association, admits that work needs to be done to address the need for quality skills. He says: "Further training is certainly needed in quality skills for the industry and we will work diligently with other bodies to address that need."

Time is also increasingly of the essence, as shown by the Nuclear Skills Risk Register published in Cogent's 2010 report, *Next Generation – Skills for New Build Nuclear*. The register identified quality control and quality assurance skills to be at high risk of skills deficit over the medium term (four to five years). This finding, when combined with the CQI's research that suggests the average training period for a quality professional is two years, makes the need for immediate action to address both the future skills base and potential shortages of quality professionals even more acute.

Encouragingly, the CQI report found a high recognition of the importance of quality across the nuclear sector, but added that "the professionals delivering it need to be formally recognised". It seems obvious that appropriate training programmes need to be established to address these skills gaps and the associated shortage of quality professionals, but according to the report, there is "no evidence to suggest that the sector has so far recognised these needs by incorporating professional quality qualifications into its detailed skills strategy".

Inspiring for the future

While there is clearly work to be done when it comes to addressing the future need for training and provision in quality skills in the nuclear sector, there are signs of a growing awareness of this issue. Certain employers hope that their experience can help to develop the necessary new build skills strategy.

Ian Mitchell, Director of Quality at BAE Systems Maritime – Submarine, explains: "In defence, we had to develop an improvement strategy to return our workforce to the required level of

THE EMPLOYER VIEW

Employers have been aware of the looming quality skills shortage in nuclear for some time. At Sellafield Ltd, Head of Quality Howard Cooper regrets what he perceives as stagnation in the industry since the mid-1990s, with the major focus on decommissioning.

He says: "There had been a perception that the UK didn't need nuclear power and we lost a focus on the recruitment and training of people – we certainly haven't maintained a growing cadre of quality professionals in nuclear. As a result, we've lost a lot of previously held knowledge and experienced employees and we now face a huge investment challenge."

At the same time, new build projects are luring many experienced employees into new roles. Howard explains: "New build is enticing the people we do have with the offer of a lot of money and there are significant opportunities across the nuclear sector in all functions – especially in quality."

On the defence side of the industry, Ian Mitchell, Director of Quality at BAE Systems Maritime – Submarine, is faced with the same issue. He says: "A major worry for me is losing people to the civil sector. There is a real problem in terms of a skills drain from defence to higher-paid jobs in the civil sector."

But despite the differing challenges they face, employers are in agreement when it comes to the benefits of a quality management career in nuclear. Mike Underwood, Senior Quality Consultant at Magnox Ltd, highlights the potential for flexibility: "New build will offer a variety of roles and once you're working in the industry, you can move around or stay on the same sort of project."

As well as the diversity on offer, quality professionals in nuclear are held in high regard due to the emphasis placed on quality and safety in the sector and because they generally have experience across a business. Mike says: "In nuclear, there is always a network of quality people working with you, either directly or indirectly. In other industries, it can be difficult to make your lone voice heard, but in nuclear you are taken seriously."

Developing quality skills also helps when it comes to developing your career. Quality is an outward-facing function that has impacts business-wide, as Ian Mitchell explains: "Working in quality gives you a good grounding across a business. It's possible to start off working in a quality role, before deciding on a specialism."

Meanwhile, Paul Murphy, Management Systems and Business Continuity Manager at Dounreay, believes there will also be openings for quality professionals moving across from other sectors as companies take the decision to broaden their recruitment criteria. "For example, a lead auditor from a similar highly regulated industry, such as pharmaceutical, would have many of the core quality skills needed to succeed in nuclear."

competence after a period of hiatus.

"It's a similar situation in civil nuclear for new build. After a 25-year lull in terms of recruitment and training, there are a lot of difficulties in terms of lack of skills. Through my chairmanship of the Nuclear Industry Association's Quality

Working group and participation in other groups such as the CQI Nuclear Special Interest Group and the CQI Defence Industry Group, I hope to support and influence the development of quality skills in nuclear."

While individual employers clearly

A GLOBAL VIEW

Nuclear generation currently **reduces UK carbon emissions** by between 7% and 14% and helps avoid about **2.4 billion tonnes** of global carbon emissions annually worldwide

Nuclear energy currently supplies around **16.5%** of the UK's electricity



There are currently over

401

commercial nuclear reactors operating in

30

countries, with a further

63

under construction

Nuclear power remains **one of the most affordable** sources of electricity worldwide

Sources: Nuclear Factbook 2011, Canadian Nuclear Association; Department of Energy and Climate Change; Nuclear Industry Association

have their part to play, the CQI's research primarily urges bodies such as Cogent and the National Skills Academy for Nuclear to urgently reassess the demand for quality professionals across the nuclear sector and adjust their current skills strategy as appropriate, with support from the Nuclear Industry Association as the representative body for the sector.

The CQI itself hopes to support this work through its NucSIG and its role as the Chartered body for quality management professionals.

Chair of NucSIG Geoff Edmondson explains that the group is considering what else it might do to support quality skills training in the sector. He says: "Our membership currently stands at around 300 and we have a lively programme of events, where our aim is to offer nuclear sector networking and opportunities to share quality experience and knowledge across the industry, but we're always aiming to improve what we can offer."

And CQI CEO Simon Feary has the last word. He says: "As the only

Chartered body for quality management professionals, the CQI exists to promote the importance of the quality management approach and the skills associated with it are absolutely vital to

the nuclear industry. We will work hard to support the ongoing work around the nuclear skills agenda over the next ten years and over the long term."

USEFUL LINKS

Department for Energy and Climate Change has a website section dedicated to the nuclear industry, with information on new build, existing nuclear plants and government policy
www.decc.gov.uk

Next Generation: Skills for New Build Nuclear, Cogent 2010 and Power People – the Civil Nuclear Workforce 2009–2025, Cogent 2009
www.cogent-ssc.com/research/nuclearresearch.php

The Nuclear Industry Association website has a range of reports and information on the civil nuclear industry
www.niauk.org

Nuclear Industry UK: Research into current and future quality professional skill needs, Roger Jeary, CQI 2012
www.thecqi.org/nuclear-research



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What are our objectives?

- To improve the commercial performance of the nuclear industry by supporting member companies to develop their businesses in the UK and overseas.
- To engage with the public, media and political spheres to promote better understanding of nuclear energy and its role within a low carbon energy mix.

How do we achieve this?

- Representing the industry to key audiences at home and abroad
- Providing tools for information sharing and networking
- Responding to Government consultations
- Producing publications, newsletters and briefings
- Organising events, meetings and conferences
- Facilitating working groups

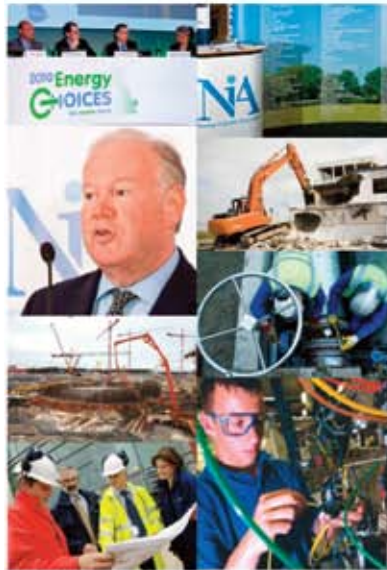
Who are we?

The NIA represents more than 260 companies across the supply chain. The diversity of NIA membership enables effective and constructive industry-wide interaction.

We believe nuclear energy is essential to meet Britain's future clean energy needs. Together with renewables, clean coal and energy efficiency, nuclear can reduce our carbon emissions. As part of a diversified energy mix, modern nuclear-generated energy can provide safe and reliable sources of power for Britain's homes, hospitals, schools and industries.

NIA member companies also have significant expertise in nuclear decommissioning and clean-up, with 19 nuclear sites in the UK currently being managed through the process.

The Nuclear Industry Association is the trade association for the civil nuclear industry in Great Britain



Current Members Summer 2012

SDX-RAY Limited
 Abbott Risk Consulting Limited
 Accenture
 Adleshaw Goddard LLP
 Aish Technologies Ltd
 ALE Limited
 Allen & Overy LLP
 Alstom Power
 Altira Proxa
 AMEC
 AN Technology (ANTECH)
 Aquila Nuclear Engineering
 Arcadis Vectra
 ArcelorMittal
 ARKVA
 AREVA Risk Management Consulting Ltd
 ARUP
 ASD metal services
 Asset and Land Group
 Asystem UK Ltd
 ASTIC Group Ltd
 ATB Laurence Scott Ltd
 Atkins Limited
 AWE plc
 Babcock International Group
 BAE Systems
 Balfour Beatty plc
 Balfour Beatty Engineering Services
 Balfour Beatty Major Civil Engineering
 Balfour Beatty Workplace Ltd
 BAM Nuttal Ltd
 Battelle Energy UK, LLC
 Bechtel Power Corporation
 Bergen Pipe Supports Limited
 Berwin Lighton Palmer
 Bird & Bird
 Birse Nuclear
 BIS ATG Limited
 BMT Kals Limited
 Boulting Group Ltd
 Brachman Ltd
 Bradtec Decon Technologies Ltd
 BRC Reinforcement Ltd
 Britain's Energy Coast Business Cluster
 Brown and Mason Ltd
 BSMB Ltd
 Bureau Veritas UK Limited
 Burges Salmon LLP
 Calder Group Ltd
 Cammell Laird
 CANTERRA UK Ltd
 Cape Industrial Services Ltd
 Capita Symonds
 Capula Ltd
 Cara Construction Ltd

Carillion plc
 Carpenter & Paterson Limited
 Caski Consulting Ltd
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 Centronic Ltd
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 Clifford Chance LLP
 Clyde & Co LLP
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 Corporate Risk Associates Limited
 Costain
 CRA Europe
 Craft Associates Limited
 DAHER Nuclear
 Dabon Nuclear Institute
 Darschem Engineering Ltd
 Davis Langdon, an AECOM Company
 Deborah Services Limited
 Deloitte
 Delta Controls
 DHL
 Direct Rail Services
 OJA Piper
 Doosan Babcock
 Dundas & Wilson
 DWF LLP
 Eadco Consulting Ltd
 EDF Energy
 EDS Group Holdings Ltd
 Energy Institute
 EnergySolutions EU Ltd
 Enersense International
 EngineeringUK
 Environmental Scientifics Group
 Ensen Global
 Ernst & Young
 ESI UK Ltd
 Eversheds LLP
 Facet Industrial UK Ltd
 Fenwick Elliott LLP
 Field Fisher Waterhouse LLP
 Fives Nordson
 Fluorine Flow Control
 Fluor Limited
 Fluoroc Ltd
 Frazer-Nash Consultancy Limited
 Freshfields Bruckhaus Deringer LLP
 Future Executive Search
 Gardner & Theobald LLP
 GE Hitachi Nuclear Energy
 GENII Engineering & Tech Training Ltd
 GJ Hearn

Gleeds
 Golder Associates (UK) Ltd
 Gowlings (UK) LLP
 Halcrow Group Ltd
 Harco Infrastructure
 Herbert Smith
 HSB (Great Britain) Ltd
 Hima-Sella Ltd
 Horizon Nuclear Power
 Hosokawa Micron Ltd
 HR Wallingford
 HSB Global Standards - Europe
 Human Performance and Leadership Ltd
 Hyde Group Nuclear Limited
 Hyder Consulting (UK) Limited
 Hydrock Group
 Idom - Merbrook Consulting Limited
 IHS
 IIS Consultants
 Imperial College London
 Industrial Exhibitions Limited
 International Nuclear Academy
 International Nuclear Services Limited
 Interserve Construction Limited
 Inurac
 J Murphy and Sons Limited
 JJ Churchill Ltd
 Jacobs Ltd
 Jetstream Europe Ltd
 KAEEFER C&D Limited
 KDC Contractors Ltd
 Keltray Ltd
 Kier Construction Ltd
 Kitson Environmental Europe Limited
 KorteQ Ltd
 LZ Business Consulting Limited
 L-3 Communications RISUR Ltd
 Lab Inspec Systems Ltd
 Laing O'Rourke
 LINEA Network (UK) Ltd
 Linklaters LLP
 Lloyd's Register
 LLW Repository Ltd
 LM Engineering Services Ltd
 LTI Metalltech Ltd
 Lyttington Precision Engineers
 M&W Group
 Mace Limited
 MacRoberts LLP
 Magnox Limited
 Marick Communications Ltd
 Mech-Tool Engineering Ltd
 Mersen UK Teeside Ltd
 Metal Improvement Company
 Metatek International

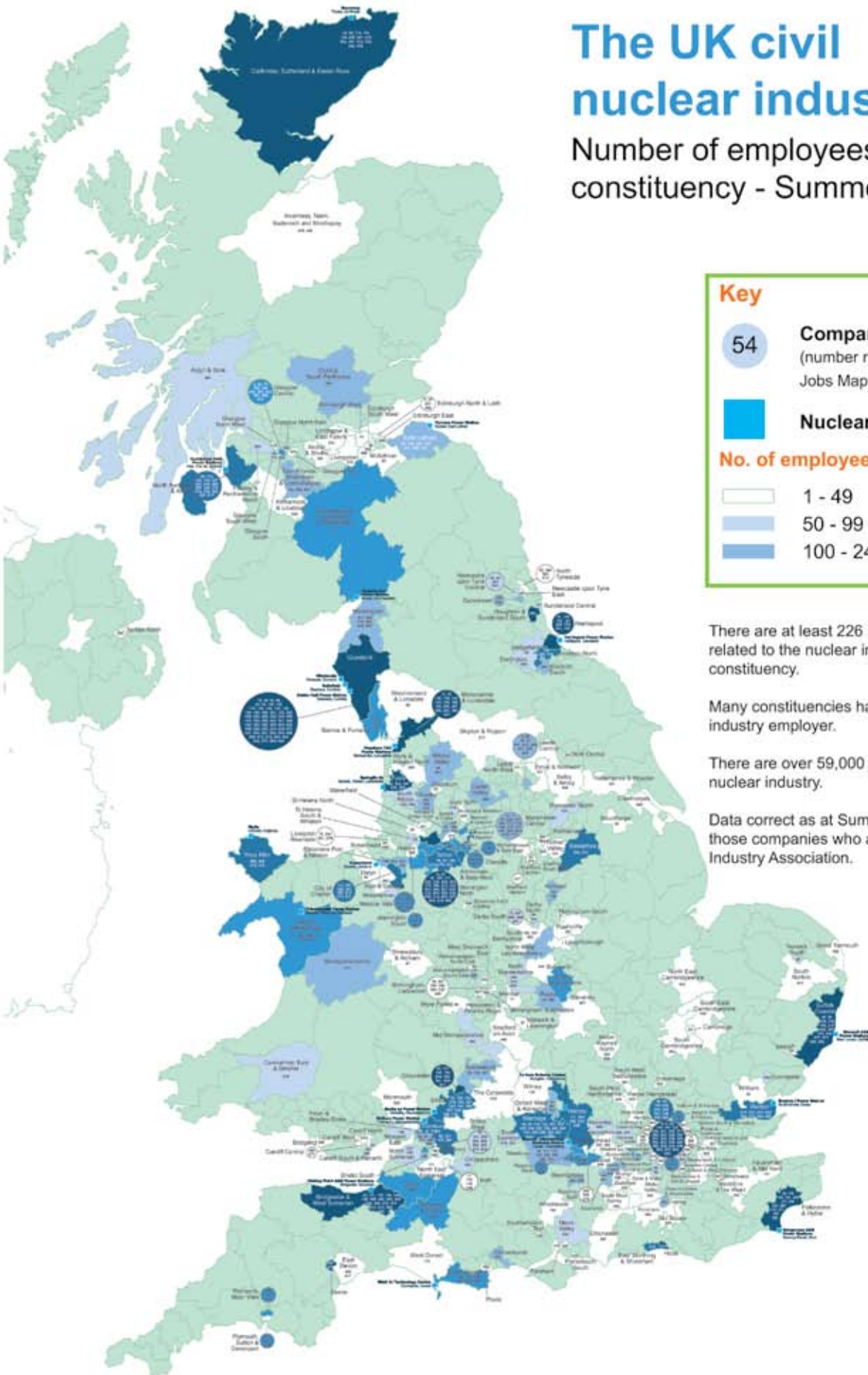
Miron Technologies (IST) Limited
 MMI Engineering Ltd
 Morgan Lewis
 Morgan Sindall plc
 Morson Projects Limited
 Mott MacDonald Ltd
 MWH UK Ltd
 MWH Treatment Ltd
 National Nuclear Laboratory
 National Physical Laboratory
 National Skills Academy for Nuclear
 New Build Nuclear Consulting Ltd
 NG Bailey
 NIS Ltd
 Norton Rose LLP
 NSG Environmental Ltd
 Nuclear Engineering Services Ltd
 Nuclear Risk Insurers Ltd
 Nuclear Technologies plc
 NuGeneration Ltd
 NUKEM Technologies GmbH
 Nu-Tech Associates
 Nuria
 ONE T Technologies UK
 Outokumpu Stainless Distribution Ltd
 Oxand
 PA Nuclear Engineering
 PP Plasma Ltd
 PacTec EPS Ltd
 Parsons Brinckerhoff Limited
 PaR Systems Limited
 Pcobed
 PDL Solutions (Europe) Ltd
 Pineart Masons LLP
 Portakabin Limited
 Poyry Energy Ltd
 PricewaterhouseCoopers LLP
 Procon Engineering
 Promanox, a Costain Group Company
 Provelio Limited
 Quinshield Limited
 Radior Limited
 REACT Engineering Limited
 Redhall Nuclear
 Rider Levett Bucknall UK Ltd
 Rodgers Leach Limited
 Rolls-Royce plc
 Rotary UK
 Rotork Controls Ltd
 RPS Group plc
 RSK Radiological Ltd
 Sanderson Watts Associates Ltd
 Sandvik Materials Technology
 Serens UK Ltd
 SCHOTT Electronic Packaging GmbH

Scottish Enterprise
 Sellafield Limited
 Senior Hargreaves
 Serck Services
 Serco Limited
 Shaw Group, Inc
 Sheffield Forgemasters International Ltd
 Shepherd Engineering Services
 Siemens plc
 Simon Carves Engineering Ltd
 Sir Robert McAlpine Ltd
 Skanska
 SNR Denton
 SPIE UK
 Spirax Sarco
 Springfields Fuels Ltd
 Stainless Metallcraft (Chatters) Ltd
 Structure Vision Ltd
 Studovak (UK) Limited
 Sweett (UK) Limited
 Tata Steel Projects
 Techint Engineering and Construction
 Tesvella plc
 THALES Transport and Security Ltd
 Thirty Nine Essex Street LLP
 Thompson Valves
 Tokyo Electric Power Company Inc
 Toshiba International (Europe) Ltd
 Trufo Marine Limited
 Turnbull & Scott (Engineers) Ltd
 TÜV Rheinland UK Limited
 TWI Ltd
 UK Atomic Energy Authority
 UK Power Network Services
 Ultra Electronics PCS
 Urenco Limited
 URS Corporation
 URS Scott Wilson
 Vattenfall AB
 Vector International Ltd
 VINCI Construction UK Ltd
 Weir Power & Industrial
 Westinghouse
 White & Case LLP
 Wragge & Co LLP
 Yorkton Ltd



The UK civil nuclear industry

Number of employees by parliamentary constituency - Summer 2011



Key

54

Company

(number refers to company listed in full Jobs Map available on NIA website)



Nuclear energy sites

No. of employees in each constituency

	1 - 49		250 - 499
	50 - 99		500 - 999
	100 - 249		1000+

There are at least 226 MPs who have employers related to the nuclear industry situated in their constituency.

Many constituencies have more than one nuclear industry employer.

There are over 59,000 jobs dependent on the UK civil nuclear industry.

Data correct as at Summer 2011 and represents only those companies who are members of the Nuclear Industry Association.

[DOWNLOAD THE FULL MAP](#)



A VITAL ROLE

AN IN-DEPTH LOOK AT THE DIFFERENT AREAS WHERE QUALITY PROFESSIONALS WORK IN THE NUCLEAR INDUSTRY

Working within quality in the nuclear industry means you could be employed on a whole range of diverse projects in different areas, coupled with the challenge of conforming to a host of regulations focused on maintaining the safety of your company, its employees and the wider world.

You might focus on a field more traditionally associated with quality in terms of audit or management systems, but you could just as easily concentrate on managing supply chain partners or the control of organisational change. Following a 40-year career in the nuclear sector, Geoff Edmondson, Chair of the CQI NucSIG, emphasises the diversity of his experience.

“For me, every day was different. I was dealing not only with people in my organisation, but also regulators, certification bodies and customers from all over the world. There were always new challenges and learning experiences as well as the satisfaction of helping to solve quality problems.”

At the moment, as the nuclear sector faces unprecedented demand for people with the right skills to support the new generation of nuclear power stations and the decommissioning of older sites, there has never been a better time to find out more about different quality-related activities within this growing industry, whether you're just starting out in your

career or looking to change sector. Here we take a look at what activities are managed by quality professionals in nuclear.

Management systems and audit

As is the case in many other sectors, formal management systems set up in accordance with defined standards such as ISO 9001 for quality management systems and ISO 14001 for environmental management systems are the norm in the nuclear industry with many nuclear site licence companies also expecting certain ISO standards to be adopted by their suppliers. What is different to other industries is that nuclear sites must conform to specific management system standards designed for them. In the UK, this means International Atomic Energy Agency Safety Standard GS-R-3, a standard very close in structure and approach to ISO 9001.

As a quality professional working on a nuclear site or for a company that supplies a nuclear site, you might work on or with a management system in a variety of ways. For instance, you might work on maintaining and developing a current management system, liaising with colleagues at different levels across the organisation to keep it up to date and fit for purpose. If you work for a company that supplies a nuclear site, you

might need to work on your company's management system to make sure it meets all the requirements of your supply contract.

Of course, in order to make sure that the system is working well and people are following its processes, regular audits need to take place. As safety is of such paramount importance in the nuclear sector, internal audits are not sufficient. Third-party audits by certification bodies as well as regular checks by regulators are all operations that a quality professional would oversee and monitor.

Audit is often cited as a key skill for quality professionals in any industry and it's certainly a useful skill to have when working in nuclear as Paul Murphy, Management Systems and Business Continuity Manager at Dounreay, highlights. He says: “Auditors need to use their own experience and develop their own credibility. It's not just about knowing the standards you're auditing against. Auditors need a passionate curiosity for digging out the right information and identifying where value is being added or taken away in a process.”

Safety and environment

“In the nuclear industry, safety is paramount and every role in the sector has an emphasis on safety behaviours and culture. However, quality professionals may have more of a focus on developing

CASE STUDY



KEN FLATTERS, MCQI CQP

Current role: Contractor working in quality assurance. I'm focused on linking the project nuclear quality assurance to company and regulatory requirements.

How did you first get into quality? I studied metallurgy at college and got my first job carrying out materials audits at a laboratory. From there I studied at university, both in metallurgy and quality and ended up working for the Ministry of Defence for 11 years. I've previously worked in quality roles at BNFL, AMEC and in different roles at Rolls Royce.

What has been your biggest achievement?

At Rolls Royce I've set up a structure and a system that can be applied to both defence and civil nuclear. I've made a big contribution to the company in the long term.

Why is working in a quality role in nuclear so exciting?

At the moment, the new build programme in the UK is about the future needs of the nation. The new power stations will be carbon-neutral, have more generating capacity and reduce the need for the old fossil-fuelled power stations. Anyone who gets the chance to be part of the new development will have the chance to make a huge impact on the country and future generations.

What does CQI membership mean to you?

CQI membership demonstrates that I have a range of competences at my disposal, gained both through academic study and on-the-job experience. Put simply, it helps my chances of getting employment.

CASE STUDY



YVONNE MAHAFFY, ACQI

Current role: Lead Quality Engineer, Waste & Effluent Disposition Directorate (Solid Waste Operating Unit), Sellafield Ltd. I lead a small team who work to ensure that customer and stakeholder requirements on product quality are communicated, understood and met. I am also responsible for ensuring that management system requirements are appropriately implemented. This is done via a programme of both internal and external audit and monitoring activities, outputs from which either highlight improvement opportunities or provide assurance to the organisation that processes and the supply chain are effective.

How did you first get into quality? Since becoming a Sellafield employee in 1991, I have been supported through a number of education programmes and, while completing a BA in Business Management, I needed a subject for my dissertation. At that time, the organisation was emerging from an unsettled period and morale was low so I decided to investigate its culture and whether people were focused on delivering quality products and services. Through my research, I was able to gain an understanding of quality management drivers and principles and this helped me greatly when I had the opportunity to move into the quality organisation later on that year (2000).

How would you like your career to develop?

I enjoy my current role, however I would like to accelerate into a position where I can influence the quality strategy and objectives of the business and to support the implementation of the Standard Nuclear Performance Model. This supports the process approach to planning and delivery of quality products and services.

and nurturing that culture," says Clive Smith, Skills Development Director for Nuclear at Cogent, the sector skills council for nuclear.

Safety is an obvious fundamental underlying requirement in the nuclear industry. Quality assurance and management systems must work together to assure the safety of workers and the public from potentially

harmful radiation. Standards such as the IAEA's Safety Standard GS-R-3 provide requirements and there are a raft of regulatory requirements both nationally according to the site licence conditions and internationally with the European Union directive under the EURATOM treaty and other IAEA guidance. Many nuclear companies also choose to gain certification to the

OHSAS 18001 standard for development of an occupational health and safety management system.

Organisational design

Effective management of organisational change is essential to all businesses, but for the UK nuclear industry, it is a legal requirement to effectively manage any changes that may have an

impact on nuclear safety and the wider environment.

To be considered as an effective and compliant nuclear organisation, a company must have sufficient people with the required qualifications and experience and these employees must be organised and managed to ensure that all tasks that may impact on nuclear safety and environmental compliance are carried out correctly.

As with any other industry, the nuclear industry continually faces change. In recent years, the economic deregulation of the electricity market, new build and the increasing use of contractors are just some of the challenges faced by organisations. However, what is different to other industries are the potentially devastating consequences if change is not effectively managed.

Records management

Records management is important within many industries, but there are specific challenges and obligations within the nuclear industry. Nuclear site licensees are required to maintain records to demonstrate compliance with the conditions of their nuclear site licences, including records of specifications given to their suppliers.

Records must also be retained for environmental regulations and commissioning activities plus records of plant construction and contamination levels are very important when it comes to decommissioning. Given that the life of a nuclear power station is usually long, these records often need to be generated and maintained over long periods of time.

It is clear how records management might fall within the remit of the quality professional as part of a management system. For example, there needs to be a clear definition of who is responsible for keeping records as well as a defined procedure to follow: all staff need to understand and commit to a disciplined approach to records management. In addition, security arrangements might need to be put in place, particularly if records include sensitive nuclear information.

Knowledge management

We all have access to a huge amount of information both at work and

outside our organisations. Knowledge management has become particularly important to nuclear companies as these sources of knowledge expand and as concern has grown that the current ageing nuclear workforce in the UK will mean a loss of knowledge that can never be replaced.

This area does not consistently fall to the quality professional within a nuclear company, but there is certainly a part to be played, as records and information must be kept in accordance with the management system.

Mike Underwood, Senior Quality Consultant at Magnox North, explains. "Knowledge management is a new kid on the block. It can sit within engineering, human resources or IT, but information storage is definitely an area where the quality professional is becoming more active."

Procurement

"Large, complex, one-off programmes cannot rely on a systems approach to quality," says Ian Mitchell, Director of

Quality at BAE Systems Maritime – Submarine. "Suppliers can be unfamiliar with nuclear requirements and we need to check their work. It is important that quality professionals carry out supply chain verification and build a good relationship with suppliers."

Very few nuclear site licence companies are able to undertake all nuclear safety-related work from within their own organisation. Specialist support can be outsourced for a range of functions from design and manufacture to activities such as inspection, third-party audits and records storage.

All of these suppliers need to be managed to ensure that requirements are met without issue and quality professionals can bring rigour and consistency to related supplier management processes.

Configuration management

A nuclear plant's lifespan can be many decades if not longer. Over this period the configuration of its site, its processes and its organisational structure will

USEFUL LINKS

Cogent, the sector skills council for nuclear, offers lists of job profiles, case study films and information on qualifications and career pathways
www.cogent-careers.com

Cogent's Skills Match tool allows individuals to check their skills and employers to benchmark their company competence profiles against the national Nuclear Job Contexts framework
www.cogent-skillsmatch.com

The National Skills Academy for Nuclear has a wealth of information for individuals and employers on job roles, qualifications and career pathways in the nuclear sector plus a jobs page
www.nuclear.nsacademy.co.uk

Quality Jobs is the official jobs board of the CQI. You can also sign up for free email job alerts
www.qualityjobs.org.uk

Download the CQI NucSIG's free Nuclear Quality Knowledge PDF for information on just about every facet of quality management
www.thecqi.org/nucsig

Download the CQI Salary Survey for the latest information on salaries, employment and market trends within the quality profession
www.thecqi.org/Documents/knowledge/QW%20salary%20survey%202011.pdf

CASE STUDY



HOWARD COOPER

Current role: Head of Quality at Sellafield Ltd. I've worked at Sellafield for 24 years and I've worked in quality for around 10 years. Quality involves a great combination of engineering, standards, systems knowledge and people skills, all of which I love.

How did you first get into quality? I spent my first ten years at Sellafield working in commissioning, operations and technical support roles. In 2000, I became a quality manager and my role broadened in 2003 to include the quality leadership of six of the major operating units on the Sellafield site. I was working to standardise the role and approach of the quality management teams supporting the business.

How has your career developed? In 2005, I took on the role of environment, health and safety and quality business office head to lead the deployment of programme management, programme controls and financial governance approaches in the EHS&Q area. My role has since broadened to include functional leadership for environment, health and safety projects and service delivery accountabilities in support of operations across the site, including process ownership for management systems and records processes.

How do you personally encourage new entrants to the nuclear industry? I have the role of Senior Coordinator (Physics) in support of the Sellafield Graduate Scheme. I'm also heavily involved with leadership development as an assessor and mentor on various leadership programmes at Sellafield. Working in quality is not always something that people think of as career opportunity, but there is so much variety and potential in quality roles.



TYPICAL JOB TITLES IN NUCLEAR

Auditor/Assessor

Inspector

Quality Control Manager

Quality Process Engineer

Quality Assurance

Quality Engineer

Safety Engineer

Source: Nuclear Industry UK,
Roger Jeary, CQJ 2012.
www.thecqi.org/nuclear-research

change a huge amount. These changes need to be carefully controlled and managed to ensure the safety of workers, the environment and the general public and the discipline of managing these changes is referred to as configuration management.

Effective configuration management can cover many areas, including:

- Plant design
- Inspection and test equipment
- Defined site management arrangements
- Controlled organisational change.

It is clear how quality professionals can be involved in this area with managing and documenting change of the different structures and processes involved in the configuration of a plant.

GET SKILLED

ALL THE INFORMATION YOU NEED ABOUT THE SKILLS, QUALIFICATIONS AND TRAINING FOR QUALITY MANAGEMENT CAREERS IN THE NUCLEAR INDUSTRY

Working in quality management roles in the nuclear sector requires the development and application of a number of skills. It is certainly important to develop the technical attributes needed to work in nuclear as well as your quality knowledge and related skills, but it is just as vital to foster the right interpersonal skills needed to succeed.

Howard Cooper is Head of Quality at Sellafield Ltd. He knows what is important to his organisation when recruiting quality professionals: an educational background with a technical basis, typically in engineering or science, combined with formally recognised quality qualifications. "We're looking for a solid educational background with a technical basis in an area such as engineering or science as well as a sound quality skillset."

In addition, he wants to see great influencing skills. He says: "Quality professionals often have to punch above their weight by liaising with people who are typically a grade or two above them within the organisation: the decision-makers. They need to be confident when it comes to persuading these senior colleagues to take action."

Geoff Edmondson, Chair of the CQI NucSIG is also keen to highlight the opportunities for a quality professional moving across to nuclear from another industry. He agrees that attitude is important. He cites an open mind and willingness to learn as key attributes for quality professionals in the nuclear sector:

"Quality professionals need to listen and they also need to be assertive when necessary. Technical skills can be acquired, but being able to tailor your approach to work with different people in a variety of situations is vital."

Getting started

There are a host of qualifications, training and employer-led learning opportunities available to support anyone attracted to working as a quality professional in the nuclear industry, for those just starting out or considering a career change. Faced with the challenges of an ageing workforce and the need for more skilled workers to work on new build projects, it has been clear for some time that nuclear companies and the government need to invest in a range of qualifications and training opportunities

"Technical skills can be acquired, but being able to tailor your approach to work with different people in a variety of situations is vital"

both to entice people into the industry and to develop the skills of those already working within the industry. As a result, a huge amount of development work has already taken place in recent years with more ongoing.

Clive Smith works as Skills Development Director for Nuclear at Cogent, the Sector Skills Council for Nuclear. He's been working on job contexts for the nuclear industry to provide employers with a basis for developing competency frameworks and training needs. "We realised that the Office for National Statistics was not capturing all the relevant labour market information for nuclear so we began to work on contexts to flesh out our descriptions of the different roles available."

This work has clearly been useful

in many ways to those looking for work, current industry employees and employers, but it has also resulted in the Nuclear Skills Passport – a database that employers are able to use to track staff training. It is particularly useful for larger companies with employees who work across several sites as it avoids repetition of training. For example, an employee may have completed induction training at one plant, making it unnecessary to complete the same course at another site. However, it can be difficult to prove that this is the case, meaning employees may end up repeating training unnecessarily.

The job contexts project does not currently explicitly cover quality-related roles and Clive believes that quality had not been seen as such a priority in the industry, but new build projects and the need to develop an associated supply chain is changing the industry's attitude towards quality. Clive is now working to establish a group of nuclear professionals to create job contexts for quality-related roles, plus he has a bigger outcome in mind. As Clive asks, "Why can't we ultimately establish standards that apply to the industry as a whole?"

The next generation

The nuclear sector has already begun to move in the right direction when it comes to attracting new entrants. Back in 2002, a report commissioned by the Health and Safety Executive stated: "if nuclear education were a patient in a hospital it would be in intensive care". It called for immediate action to improve the state of nuclear education in the UK, with a focus on the development of postgraduate courses in particular. Ten years on, the nuclear education landscape has been transformed.

10 QUESTIONS TO ASK ABOUT A TRAINING COURSE

- 1 How much does the course cost and are any bursaries, grants or other discounts available?
- 2 When does the course begin and end, what's the class size and how is it assessed?
- 3 Is the course predominantly theoretical, historical or practical?
- 4 Is the course accredited by an industry body and, if so, which one?
- 5 What qualification, if any, is attached to the course?
- 6 How much is taught by practising professionals in the nuclear industry?
- 7 Does the course include any practical work experience and, if so, where and for how long?
- 8 Does the curriculum cover the practical skills and context you will need (for example, will an audit course cover how to deal with various situations you might encounter as well as discussing the standards you will need to know to audit)?
- 9 What equipment, if any, is used on this course? How much is available, how old is it, and how many students share it?
- 10 What do people who have completed the course go on to do?

In 2004, a group called the Nuclear Technology Education Consortium (NTEC) was formed. Originally consisting of 11 higher education organisations, the group worked to provide over 20 possible Master's level courses in one NTEC programme. Designed to meet the needs of both full and part-time students, it was guided by the nuclear industry and its needs. Numbers of students on NTEC-designed courses have been growing year on year. Since 2009, some modules have been converted into a distance-learning format, more suitable for those already working full-time in the industry

or wishing to move across to nuclear.

At the same time, many nuclear companies, including Sellafield Ltd and EDF Energy, are investing heavily in apprentices and graduates. At Sellafield, the decision was taken to recruit school leavers as apprentices – something the company hadn't done for a long time – and there are now around 24 school leavers on design programmes. The company has also renewed its focus on professional qualifications, encouraging employees to work towards Chartered Quality Professional (CQP) status as well as other Chartered equivalents.

Sellafield Ltd Head of Quality,

Howard Cooper, is a strong advocate for appropriate quality qualifications. Over the past 12 to 18 months, he's been focused on stabilising training and competency requirements at Sellafield and upskilling existing personnel. Next, he plans to focus on improving recruitment and training, with the ultimate goal of creating a nuclear quality academy.

He says: "I want to educate the next generation of nuclear quality professionals and give them the skills and support they need to deliver. My next challenge is freeing up the people who are currently on the front line and have

the experience, wisdom and knowledge needed to train this new generation.”

Over at EDF Energy, £3.5m has already been invested in a custom-designed nuclear academy in Gloucestershire. Training up to 2,500 people annually at all levels up to graduate, the academy offers everything from in-house training for existing employees to introductory training for engineers who are just starting out in their careers.

In 2008, the company also launched its advanced nuclear apprentice scheme. Whereas previously each of its eight stations had run their own scheme, a common scheme was introduced two years ago. This is residential, with apprentices aged between 16 and 25 living at a military base while studying at the marine engineering training establishment HMS Sultan near Portsmouth. After two years, the apprentices go back to their ‘own’ power station, completing an NVQ level 3 in mechanical or electrical engineering or control and instrumentation.

EDF Energy Apprentice Coordinator, Faye Cook, said that the scheme benefits the candidates and the business equally. “The commitment from EDF and the apprentices is significant but rewarding for both. I see them develop over the years from young adults into mature responsible technicians who are a credit to themselves and the company.”

Continuing Professional Development

And what is happening around development for those already in the industry or seeking to move make a move across from another sector? In 2007 at BAE Systems Maritime – Submarine, Director of Quality Ian Mitchell started to focus on how best to develop quality capabilities within his team. He chose to work with CQI to increase levels of quality knowledge and professionalism both through encouraging his team to apply for CQI membership and the development of customised training courses delivered by CQI trainers. This was particularly important, as the company’s location in Barrow-in-Furness can make it difficult to access educational programmes.

Now, all employees in the quality function complete set three-day

CQI TRAINING

The CQI provides short training courses in the key aspects of quality management. All training courses are relevant to you if are in a quality management position: many are relevant to absolutely everyone in organisations as they provide key tools to enable you to design, measure and improve the way you work.

Find out more about CQI Training at www.thecqi.org/training

The CQI Certificate of Training in Quality Management Practices provides a planned and balanced programme of learning and is also a first step on the way to becoming a CQI Chartered Quality Professional.

GETTING QUALIFIED

The CQI also offers a range of professional qualifications delivered through CQI approved education centres. You can study part-time, through distance learning, using flexible learning opportunities and via private providers.

Our qualifications include

Level 3 Introductory:

Certificate in Quality Management

Level 5 Advanced:

Certificate in Systems Management

Certificate in Assuring Service and Product Quality

Certificate in Managing Supply Chain Quality

Certificate in Quality Improvement for Business

Certificate in Quality Management Systems Audit

Diploma in Quality Management

Find out more about CQI Qualifications at www.thecqi.org/qualifications

GETTING RECOGNISED

Once you have embarked on learning through CQI training or qualifications you have the opportunity for your quality management, assurance or improvement skills to be recognised through membership of the CQI. This will provide you with access to the range of membership resources and provide you with enhanced recognition with employers.

Find out more about CQI Membership at www.thecqi.org/membership

modules along with assignments, exams and other methods of continual assessment. This leads to the award of the CQI's Certificate of Training in Quality Management Practices. When an employee has also gained five years of experience in a quality-related role, he or she also becomes eligible to apply for Chartered membership of the CQI.

Ian says: "When we started the programme, we only had one Chartered Quality Professional within the team, but now we have 16 and one team member has achieved Fellow status. I expect to see another 12 or so become Chartered in 2012.

"There is no doubt that this has raised the profile of quality within the business as well as giving individuals' status and professional recognition. CQI has done a lot of good work for us."

Another initiative designed to equip individuals with the skills required for a role in the nuclear industry, whether they are already employed in nuclear or moving across from another sector, is the new Certificate of Nuclear Professionalism programme, developed by the National Skills Academy for Nuclear and the Open University with involvement from industry and other higher education bodies. It incorporates seven training modules delivered through employer-accredited training/learning, distance learning and traditional taught lessons, while building on employer workshops hosted by the Skills Academy and facilitated by Cranfield University.

This year, the first cohort of students passed through one of the certificate's modules at Aston Business School. The module on technical leadership exposed students to the issues, implications and interdependencies involved in leading a team to design and commission a technical solution by considering a case study which ran throughout the module. This helped to develop an awareness of what is involved in the role of technical leader and an introduction to the tools and techniques needed to navigate through a relevant industry situation.

Martin Field, Executive Development Director, Aston Business School says: "The participants who were from various levels within and external to industry really enjoyed the high interactivity of the module and the

USEFUL LINKS

The Certificate of Nuclear Professionalism is a higher education programme for professionals working in the nuclear industry.

www.nuclear.nsacademy.co.uk/products-services/certificate-nuclear-professionalism

Cogent's online Qualifications and Standards Prospectus allows the user to find out about all the qualifications, apprenticeships and training standards available in nuclear:

www.cogent-prospectus.com

Nuclear Liaison contains information on all undergraduate and postgraduate taught nuclear courses in the UK as well as major research groups and consortia. To help graduates, there are also links to company graduate training schemes and summer placements.

www.nuclearliaison.com

Nuclear Skills Passport is a system that offers all nuclear organisations instant secure web access to information on the nuclear skills base, offering a detailed overview of the training completed by their workforce as well as contracting organisations. For contractors, it provides a simple, highly secure method of aiding in the demonstration of Suitably Qualified and Experienced Person (SQEP).

www.nuclearskillspassport.co.uk

The Nuclear Technology Energy Consortium of UK universities and other organisations provides postgraduate education in nuclear science and technology.

www.ntec.ac.uk

collaboration between each other."

Bunmi Titiloye, who was part of the first cohort of students, agrees. "Being a potential new entrant to the nuclear sector, the case studies used on the technical leadership module gave me a clear understanding of the different stakeholders involved in the industry, their points of view and how to guide nuclear processes involving the multiple stakeholders with sometimes varied agendas to a suitable conclusion."

Your future

It is clear that there are many different pathways into a career in quality management in the nuclear industry, plus with the promise of new build opportunities, there has never been a better time to consider developing your skills or moving into a career in this sector. And whichever route you choose, there will always be something new to learn.

"In my career, I've worked across many different areas of quality within the nuclear industry. The skills of a quality professional can be useful in many different roles," says Mike Underwood, Senior Quality Consultant at Magnox North.

Paul Murphy, Management Systems and Business Continuity Manager at Dounreay, is also enthusiastic about the sheer range of skills that quality professionals are asked to develop.

He says: "Quality professionals get to work across the whole company and gain an insight into the different processes and activities in operation. In nuclear, you can acquire a working knowledge of a power station combined with specialist quality knowledge and it's absolutely fascinating to find out how everything works together."

THE CQI AND THE NUCLEAR SECTOR

Whether you're new to quality management or considering a move into a quality role in the nuclear sector, the CQI is the place to start. Get professional recognition, access to networking opportunities via the CQI Nuclear Special Interest Group and local CQI branch events, plus knowledge resources, discounts on training courses and a range of additional benefits.

And if you're an employer of quality professionals in the nuclear sector, get in touch to find out how the CQI can support career development in your organisation. Your company can join CQI as an organisational member and we can help with customised in-house training courses and qualifications to help your people to develop the skills you need to succeed as a business.

The CQI Nuclear Special Interest Group (NucSIG)

The CQI NucSIG offers significant support to quality professionals within nuclear. With 300 members, it is open to quality, safety and regulatory professionals including operators, construction personnel, regulators, service providers, consultants, certification body personnel and government personnel.

The group's vision is to be recognised as improving quality within the nuclear industry through the development of the capability of quality professionals in the nuclear sector. It works hard to provide a network to support best practice sharing and benchmarking, support the professional development of its members and to represent the interests of members in the nuclear sector through the CQI.

Geoff Edmondson, FCQI CQP, is Chair of the CQI NucSIG. He says: "Our main aim is to offer networking and opportunities to share experience and knowledge. Since the group launched in

2008, we have run a series of successful events, published the Nuclear Quality Knowledge document as an introduction to the industry and established an active LinkedIn group: Nuclear Special Interest Group (NucSIG).

"As our membership has grown and we have continued to receive good feedback, we are now looking at the possibility of offering training and even mentoring opportunities. Why not join us and extend your network of quality professionals in nuclear?"

CQI membership

As an employer of quality professionals in nuclear, Ian Mitchell, Director of Quality at BAE Systems Maritime – Submarine, sees CQI membership as a clear indicator of competence.

"Seeing that a potential employee has CQI membership gives us the knowledge that he or she has an understanding of the fundamentals of quality. The membership process is rigorous so we know that this person has achieved a certain level and standard within quality."

As well as visibly demonstrating your competence and ability to positively impact an organisation's capability to deliver quality and improvement, each type of CQI membership has a range of benefits designed to help you get the most out of being part of the quality management profession. It enhances your status with colleagues and employers alike and helps you stay ahead of the competition in your career.

As Ken Flatters, MCQI CQP, says: "CQI membership demonstrates that I have a range of competences at my disposal, gained both through academic study and on-the-job experience. Put simply, it helps my chances of getting employment."

Which grade is right for you?

Membership grades are awarded on a combination of experience and

qualifications and are designed to recognise your impact as a quality professional and help support your journey to becoming a Chartered Quality Professional. As you progress in your career, you can apply for the next grade to ensure your level always reflects your current position.

- Associate ACQI
- Practitioner PCQI
- Member, Chartered Quality Professional MCQI CQP
- Fellow, Chartered Quality Professional FCQI CQP

CQI qualifications

Thousands of quality professionals have taken the CQI's qualifications. As the only nationally accredited quality awarding body in the UK, the CQI believes education allows you to achieve your full potential through the acquisition of knowledge.

Yvonne Mahaffy, ACQI, says: "I have progressed from Admin Trainee through to Lead Quality Engineer at Sellafield Ltd. This journey has taken 21 years and has been achieved as a result of my dedication to Continual Professional Development. I enjoyed learning about the elements of quality via the CQI Diploma course."

CQI training

The CQI also offers a range of public training courses as well as in-company training that can be tailored to your requirements. CQI members receive 20% discount on CQI training courses.

IRCA

The International Register of Certificated Auditors (IRCA) is the world's original and largest international certification body for auditors of management systems. If you audit management systems in the nuclear industry, find out how you can get your competence recognised through auditor certification at www.irca.org

CASE STUDY



MEET THE MEMBER: RICHARD RAWLINSON, MCQI CQP

Current role

Senior Quality Engineer at BAE Systems Maritime – Submarine. I'm currently operating as an 'outworker' from the central quality assurance department. I'm working as an integrated member of various teams in the business supporting all aspects of quality, while helping to develop quality knowledge and a quality culture across the business.

How did you first get into quality?

During my engineering apprenticeship in the 1980s, I spent time in the quality department of a high-volume manufacturing business where I helped the business achieve BS 5750 certification. Of the many departments I worked in during my apprenticeship, I found quality the most interesting. After a number of years pursuing other disciplines, I decided I would like to return to a quality-related discipline so I enrolled to study the Institute of Quality Assurance (now the CQI) courses: Introduction to Quality Assurance and Statistical Analysis for the Control of Quality – I passed both with distinction. These courses paved the way, in particular the statistics course, for a job with my current employer, BAE Systems, working initially within reliability and safety before transferring internally to a quality role.

What has been your biggest achievement?

One of the most significant was on my last secondment. Working with all of my assigned operational areas, I facilitated the establishment and conduct of appropriate management frameworks. Together, we successfully drove the reduction of my assigned areas' quality metrics delinquency to zero. This, combined with education and the achievement of an improved quality culture, has significantly improved my assigned areas understanding and management of their quality issues going forward.

What does CQI membership mean to you?

Three main things: professional recognition, the opportunity to network with quality professionals from other industries and the chance to keep up to date with the latest news from the quality profession.

Information

Nuclear Quality Knowledge

Specifically targeted at those new to working in quality management within the nuclear sector, the Nuclear Quality Knowledge document was published in September 2011 by the CQI NucSIG. It covers all the main topics that you need to know about in one PDF. It is free to download from www.thecqi.org/nuclear

CQI Body of Quality Knowledge

Consult the CQI Body of Quality Knowledge for information on just about every facet of quality management – it can help individual quality professionals to assess their skills and serve as the basis of a competency framework for quality roles for employers.

www.thecqi.org/Knowledge-Hub/Knowledge-portal

Qualityworld

QW is the CQI's monthly membership magazine. Already the UK's leading independent quality publication, it aims to be the world's main source of up-to-date information on the world of quality and its latest tools and techniques.

www.thecqi.org/qualityworld

CQI blog

Read the latest updates from CQI CEO Simon Feary on topics key to quality

www.thecqi.info

QW Express

More than 16,500 quality professionals worldwide currently receive QW Express, the monthly e-newsletter from the CQI. Packed full of expert opinions on the quality industry's hot topics, it brings you the latest news on quality every month.

www.thecqi.org/QW-express

CPD Update

Sent monthly to CQI members, this email update covers all the latest CQI membership, networking and training opportunities.



EMPLOYER PROFILE

SELLAFIELD LTD



Aerial view of Sellafield
Courtesy of Sellafield

Quality is a vital part of Sellafield Ltd's business. While there are many facets and aspects to the delivery of quality, those that are fundamental to both the success and failure of quality are the performance and behaviour of people. All our staff are professional, dedicated and strive to continually improve quality across our sites.

Whatever we do on site – reprocessing, waste management, finance or training – is underpinned by quality. Delivery of quality is the responsibility of every employee.

We have put into place simple and effective management systems that

govern all aspects of our business and ensure we have a workforce that is quality aware. Plant operators

“We encourage people to achieve Chartered Quality Professional status”
Howard Cooper,
Head of Quality

are managed by a rigorous system of suitably qualified and experienced people.

Sellafield Ltd has held ISO 9001 certification since 1994 and we work in accordance with the requirements of this standard and IAEA GS-R-3.

Training and development

Sellafield Ltd's performance management process enables employees and their managers to review their role, expectations, performance, behaviour and development opportunities. Employees have clear and documented job roles and responsibilities with clear links to company objectives. This process gives employees the opportunity to discuss

their future career path.

Employees also receive a detailed site induction programme and safety training on joining Sellafield Ltd. Training includes a range of technical and behavioural and leadership training programmes as appropriate to support the particular job role. Every employee has a performance management agreement and development plan.

High achievers are developed through the company's talent pool – part of Sellafield Ltd's talent management process. Following nominations from line managers and endorsement at employee development groups, employees go through a selection process to get involved in the scheme, a structured two-year programme of accelerated personal development and mentoring. During this period, employees will work on site-wide projects and also community projects where appropriate.

A dedicated head of profession for quality, Howard Cooper, is accountable for maintaining and developing the health of the quality community across our organisation.

The quality community

Sellafield Ltd shares best practice with other industries and organisations, working with quality organisations such as the British Quality Foundation and the CQI. Sellafield Ltd as a company is a member of both the BQF and the CQI. We benefit from benchmarking opportunities within the BQF network and, over the past three years in partnership with the CQI, we have run extremely successful business excellence events promoting the positive impact quality roles have in the nuclear industry and celebrating World Quality Day.

The company promotes individual CQI membership to employees and supports employees' personal development through the grades of professional quality recognition. Howard

QUICK OVERVIEW: SELLAFIELD LTD

Location

The company has sites at Sellafield in Cumbria and Capenhurst in Cheshire, as well as an extensive engineering design capability based at Risley in Warrington.

Number of employees

9,500 (more than 10,000 if agency and contract supplied workers are included)

Number of vacancies (annually)

Around 10 in quality roles. Typical quality roles available: Process engineering, environmental management, auditing, project management.

Starting salary/benefits

Commensurate with a competitive, global organisation, Sellafield Ltd offers employees the rewards they would expect. These include attractive starting salaries, performance-related pay and bonuses, regular salary reviews, a combined nuclear pension plan, annual bonus and staff discount schemes.

Major clients/partners

Sellafield Ltd is responsible for safely delivering decommissioning, reprocessing and nuclear waste management activities on behalf of the Nuclear Decommissioning Authority (NDA). Now under the ownership of Nuclear Management Partners (NMP), Sellafield Ltd has the largest concentration of nuclear expertise in Europe, with more than 50 years of experience. NMP brings together the global nuclear experience of American company URS, British company AMEC and French company Areva to deliver the safe acceleration of hazard and risk reduction across Sellafield Ltd.

Areas of work

Due to the diverse nature of Sellafield Ltd, activities include the support of decommissioning, reprocessing and nuclear waste management activities, including engineering, environmental, and project management work.

Graduate scheme

The Sellafield Ltd Graduate Development Scheme is a two-year structured programme aimed at developing individuals both at a personal level and a business level. Graduates are supported and expected to gain Chartered status within their relevant professional discipline, as well as being encouraged to go on secondment to other companies and departments across the nuclear industry.

Work experience offered

Work experience places are offered in a wide range of disciplines including commercial disciplines, physics, chemistry, civil, mechanical, electrical and chemical engineering, project management and environmental management.

www.sellafieldsites.com/careers

Cooper, Head of Quality, confirms: "We encourage people to achieve Chartered Quality Professional status or equivalent Chartered qualifications. The competency requirements as laid out in the CQI's Body of Quality Knowledge also offer a useful means of establishing and testing skillsets."

We encourage employees to

attend CQI training programmes to share best practice and benefit from networking opportunities with other quality professionals. We also suggest that employees might join the CQI's Nuclear Special Interest Group and our Head of Quality, Howard Cooper, is a representative on its Steering Group.

EMPLOYER PROFILE

EDF ENERGY

EDF Energy is one of the UK's largest energy companies, producing around one-sixth of the nation's electricity from its nuclear power stations, wind farms, coal and gas power stations and combined heat and power plants. The safe and secure operation of eight existing nuclear power stations at sites across the country makes EDF Energy the UK's largest generator of low-carbon electricity.

“Membership of institutes, such as the CQI, is also encouraged to aid sharing of new ideas and best practice”

We have also published plans to build four new nuclear plants, subject to the right investment framework. These new plants could generate enough low carbon electricity for about 40% of Britain's homes, as well as creating around 1,400 directly employed permanent jobs for more than 60 years and thousands of direct and indirect jobs over the construction period.

Quality

Ruma Deb is Head of Quality for EDF Energy Nuclear Generation. She says: “Nuclear safety is our overriding priority and this is true for all aspects of EDF Energy Nuclear Generation. We apply different levels of control to different processes depending on the safety significance and risk associated with each process to ensure we target and focus on key areas.

“The quality of our product – electricity – is never in question, as if we do not satisfy electricity grid requirements; we are unable to transmit our product. However, attention to quality in planning, operation and maintenance enables us to consistently meet the grid requirements as planned.

“Good quality contributes to

a safe and successful business, regulatory compliance and continuous improvement. We can't afford not to have good quality!”

Commitment to training

EDF Energy has developed a mix of training programmes based on a range of learning methods. Training centres include nuclear power station control room simulators and offer purpose-built workshops where trainees can learn about control and instrumentation and receive electrical and mechanical training.

At the heart of this investment in training is a £3.5m Nuclear Power Academy, opened in May 2008. This academy forms part of our commitment to creating world-leading nuclear professionals and maintaining the technical capability of the EDF workforce, while being an active part of the wider focus in the UK on the nuclear skills agenda and training for nuclear power.

When it comes to quality assurance, we believe it is best achieved by people with a clear understanding of the requirements needing to be satisfied.

Ruma explains: “To achieve good quality, we need people with clear responsibilities, accountabilities and authority, the right level of competence and a good questioning attitude based on sound judgement and common sense. They also need to use the appropriate methods of working and the right tools and equipment.”

To be most effective, people need to be provided with necessary resources and a working environment appropriate to the task. “Training is extremely important. As well as formal training, there is also on-the-job training before qualification. Independent verification is used on an ongoing basis to ensure a high standard is maintained. Membership of institutes such as the CQI is also encouraged to aid sharing of new ideas and best practice.”





Hinkley Point B in Somerset
Courtesy of EDF Energy

QUICK OVERVIEW: EDF

Location

Currently operates eight nuclear power stations with a combined capacity of almost 9,000 megawatts: Hunterston B, Hinkley Point B, Dungeness B, Hartlepool, Heysham 1, Heysham 2, Torness and Sizewell B. Plans to construct four new power stations across the UK.

Number of employees

Around 15,000 at locations across the UK. Starting salary/benefits: Competitive salary and generous holiday entitlement as well as a final salary pension scheme, healthcare scheme, discretionary bonus plan and a package of flexible benefits.

Major clients/partners

EDF is the official energy utilities partner and sustainability partner of the London 2012 Olympic and Paralympic Games. The company also won the UK's largest ever electricity supply contract by annual volume following a successful tender process run by the Government Procurement Service in 2011. From April 2012, EDF Energy will supply electricity and energy related additional goods, works and services to the NHS, Ministry of Defence, Ministry of Justice, Metropolitan Police, London Underground, the Highways Agency and other bodies across central and local government.

Areas of work

Operation of eight nuclear power plants and plans for nuclear new build. It is likely that there will be opportunities to develop your career in this direction as this business unit expands.

Graduate scheme

Schemes in nuclear science and engineering as well as for analysts, business project analysts, human factors, human resources, finance and marketing. The nuclear graduate scheme runs for 12 months and graduates spend time at the Barnwood office in Gloucester as well as experiencing placements at two of EDF's power stations. The schemes will reopen for entry in autumn 2012.

Work experience offered

Industrial placements are aimed at undergraduates who can work full-time for 12 months as part of their university course. These are paid placements and you can apply to work in nuclear science and engineering as well as other areas such as business management and technology, supply chain, brand group, sustainability and health and safety. The schemes reopen for entry in autumn 2012. EDF Energy also offers summer internships in nuclear science and engineering as well as six-month internships in a range of areas.

www.edfenergy.com/careers

EMPLOYER PROFILE

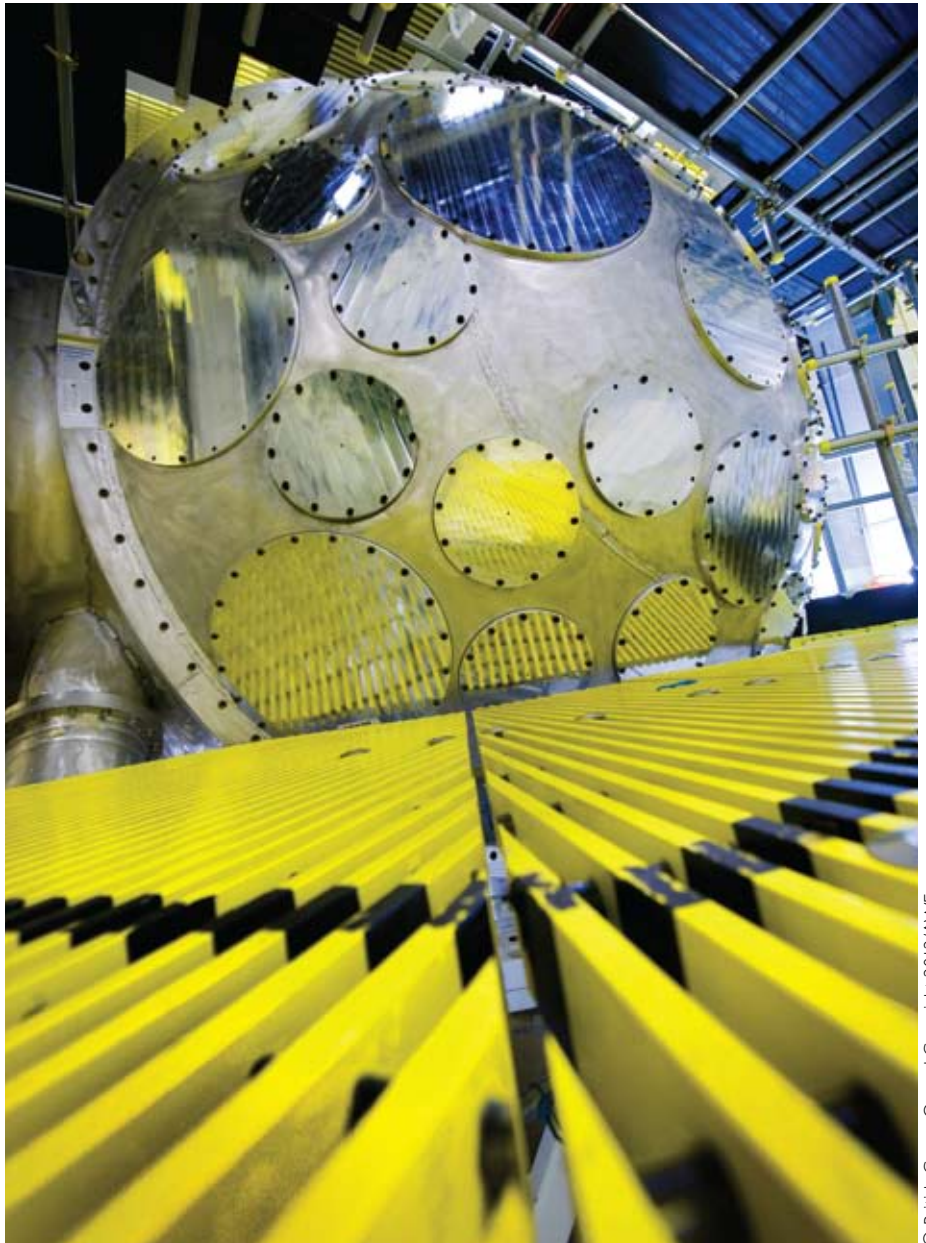
AWE plc



AWE plays a crucial role in the defence of the United Kingdom, by providing and maintaining the warheads for the country's nuclear deterrent. We are a centre of scientific, engineering and technological excellence, with some of the most advanced research, design and production facilities in the world. Our unique expertise also assists the UK Government in developing and delivering a range of innovative and integrated support services, including national nuclear security and counter-terrorism solutions.

As a nuclear licensed site, maintaining exceptional safety, security, environmental and quality standards is at the heart of everything we do. At any one time, we could have around 10,000 people across our three sites, so embedding quality has to be part of our business culture. Getting this culture and approach implemented across AWE has come to mean moving to a 'total quality' mindset. AWE has adopted a way of working and a set of attitudes, behaviours, tools and techniques to support and develop quality and make it part of 'business as usual'.

AWE is a CQI Company Member



and AWE employees are active in their local CQI branches and within the CQI NucSIG. When it comes to celebrating World Quality Day, AWE has also run a series of successful events, providing an excellent opportunity to promote quality within the company as something that affects us all in our day-to-day lives and not just those who are in a quality role.

At AWE, quality roles are regularly available across the company. To find out about current opportunities, just visit our website www.awe.co.uk

Training and development

Across AWE, developing your abilities is a real priority. We have an unwavering commitment to safety so you'll receive plenty of practical training and education in this area.

The detail of your development plan will depend on the area you join, your ambitions and business needs. Where appropriate, we may fund professional qualifications. For instance, quality professionals from across AWE have previously studied for the CQI Diploma in Quality Management (NVQ level 5),

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QUICK OVERVIEW: AWE plc

Location

The company has two major sites in Berkshire: AWE Aldermaston and AWE Burghfield. There is a further facility where seismological research is undertaken in support of the Comprehensive Nuclear Test Ban Treaty.

Areas of work

AWE employs around 4,500 staff and over 2,000 contractors, whose work covers a vast range of disciplines. We employ scientists, engineers, technicians, crafts-people, quality, security and safety specialists, as well as business and administrative experts – many of whom are leaders in their field.

Starting salary/benefits

AWE applies a pay and grading framework across the entire company that's designed to make sure all employees are recognised and rewarded for the contribution they make and the skills and experience they bring. Benefits include 28 days' holiday, final salary pension scheme and others.

Major clients/partners

AWE is contracted to the Ministry of Defence (MOD) through a government-owned / contractor operated (GOCO) arrangement. While our sites and facilities remain in government ownership, their management, day-to-day operations and the maintenance of Britain's nuclear stockpile is contracted to a private company: AWE Management Limited (AWE ML). AWE ML is formed of three equal shareholders:

Serco – an international service company that improves the quality and efficiency of essential services to millions of people around the world

Lockheed Martin – a global company that employs about 126,000 people worldwide. Principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services

Jacobs Engineering Group – providers of industrial maintenance, fabrication, construction and maintenance management technology to primary process industries

AWE plc is the company that AWE ML has delegated to deliver the contract. It employs the workforce, maintains the nuclear site operating licences and discharge authorisations, and its directors have total responsibility for the day-to-day management and operations.

The MOD, apart from being our customer, has a keen interest in AWE plc and monitors our operations and performance, and along with other regulators and legislative bodies assures high safety and security standards are maintained at all times.

AWE requires substantial provision of works, goods and services from the supply chain – in other words, we procure thousands of products and services every year. This means that we do business with a wide range of suppliers who must meet our requirements in a timely and cost effective manner.

AWE also has a strong Technical Outreach programme which is at the core of developing our relationship with the UK's science, engineering and technology community. Through our links with institutions such as universities, professional bodies and government agencies, we can build upon and share knowledge for mutual benefit.

Graduates

AWE has opportunities for degree, MSc and PhD graduates from science, engineering, business and assurance disciplines. Applications are accepted throughout the year.

Apprenticeships

You can apply for an apprenticeship at AWE in four technical areas: electronics, electrical maintenance, mechanical maintenance and precision machining. Apprenticeships last three or four years and whichever route you take, you'll also attend a technical college where you can study for anything from a diploma in engineering to a BTEC national certificate or possibly an HNC.

www.awe.co.uk/careers/Careers_AWE_0fbdf.html

run in partnership with Birmingham City University and AWE Production Operations.

Professional recognition

We recognise the importance of professional membership, both for our employees and our organisation as a whole. They underline our

technical capabilities and demonstrate our commitment to professional standards. AWE will also pay for your membership of up to two relevant professional bodies every year: the CQI could be one of them. In fact, the CQI is already well represented at AWE with a membership in excess of 60 quality professionals from across all

areas of the business.

Neville Rogers, MCQI CQP, says: "AWE has a long association with the CQI and we are very keen to see the CQI support the development of quality professionals in our organisation and across the industry to provide recognisable and transferable skills."

WHERE NEXT?

LINKS AND RESOURCES

▶ CQI VIDEOS

Find out more about quality management and the nuclear sector with the short videos on the CQI Web Manager YouTube channel.

www.youtube.com/cqiwebmanager



▶ QUALITYWORLD

You can use the QW site to read about quality topics, best practice and the latest news. CQI members can also gain access to previous articles from 2008 onwards.

www.thecqi.org/qualityworld



▶ TWITTER

Some key Twitter accounts

IAEA Nuclear Sciences and Applications, securing a better future for all with nuclear technologies

[@IAEANA](https://twitter.com/IAEANA)

National Skills Academy for Nuclear, developing and promoting excellence in skills for the nuclear industry

[@NSA_Nuclear](https://twitter.com/NSA_Nuclear)

Qualityworld

All the latest news and talking points in quality from the only UK monthly magazine dedicated to entirely to quality

[@Qualityworld](https://twitter.com/Qualityworld)



▶ LINKEDIN

Key LinkedIn groups

- CQI United Kingdom
- Nuclear Special Interest Group (NucSIG)
- Matchtech: Power and Nuclear
- Nuclear Power – the next generation
- Nuclear Safety
- UK Nuclear Industry



▶ QW EXPRESS

Get news, interviews and the latest jobs in QW Express, the free monthly email
www.thecqi.org/QW-express

▶ QUALITYJOBS

Quality Jobs
www.qualityjobs.org.uk

▶ TRADE ASSOCIATIONS

International Atomic Energy Agency (IAEA)
www.iaea.or.at

Nuclear Industry Association (NIA)
www.niauk.org

The Nuclear Institute (NI)
www.nuclearinst.com

World Association of Nuclear Operators (WANO)
www.wano.org.uk



JOIN THE CQI — HERE'S HOW

There's a level of membership suitable wherever you are in your career. For further information please visit www.thecqi.org/membership or T: 020 7245 6722



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