

Personal View: The Changing Role of the Engineer in the Nuclear Industry

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HAD you asked me 10, 15 or 20 years ago to summarize into one phrase the role of the engineer in the nuclear industry, it would quite simply be 'To ensure the maximum efficiency and safety of the plant and equipment'.

If you were to ask me today, the summary would be the same, but there the similarity ends. The difference lies in how that objective is achieved.

Much has been written by many on the subject of the management of change in organizations. The nuclear power industry, perhaps more than most, knows what change is about. Although itself remaining in the public sector, the UK nuclear industry felt the shock waves of the privatization of the electricity supply industry in 1990. This, along with the removal of the operational and financial screens behind which the industry had previously operated, has rippled throughout the nuclear power companies. For the first time, the nuclear generators, stripped of their financial safety nets, needed to demonstrate commercial viability and, while at first glance the onus might have been assumed to be on the boards of directors and their financial advisors, it quickly became clear to me that if Scottish Nuclear was to make any significant headway, *everyone* in the company would have to play a part. It was about changing culture, about making everyone aware that we were now competing in a commercial environment.

For our 2,000 staff this meant operating the plant more, much more *efficiently* without compromising in any way the company's policy of *safety, quality and excellence*. It is perhaps this emphasis on safety that distinguishes the role of a nuclear engineer from that of most other engineers. This necessary balance of safety and costs is not easy to achieve and the engineers in our industry have found themselves assuming broader roles, and greater responsibilities than ever before.

Ask a nuclear engineer what they enjoy most about their job and the answer most often will be 'The technical challenge and opportunities'. For this reason we have always been able to attract and retain the best technicians and technologists. We now needed more than technical excellence from our engineers and the challenge was to find a way to

depart from our tradition without destroying its strengths. A strategy for training and developing *all* of our staff had to be carefully planned and quickly implemented.

A customized management development programme with the emphasis on commercial awareness was the starting point, followed by a skills development programme tailored to develop all staff. Clearly the corporate culture had to be developed which would allow these new skills to be maximized. One mechanism used to achieve this was total quality management, and Scottish Nuclear's TOP programme was launched. TOP being the acronym for Target Outstanding Performance. Now our engineers, even the most junior, find themselves being encouraged to take responsibility for continuously seeking ways to improve how they do their job as well as working on improvement teams to help their colleagues from other disciplines do their job better. The challenging mission—to become a world-class nuclear generating company. The concept of the internal customer/supplier has often changed the engineer's role from practitioner to consultant—a major turnaround in how he or she approaches the task in hand, requiring a new way of thinking. Commercial viability meant looking at how we resourced our many projects, and our engineers had to develop advanced project and people management skills, bringing in contractors to meet job requirements, which in turn created the need for increased levels of supervisory skills.

While we at Scottish Nuclear can be proud of our operational and nuclear safety record, Chernobyl reminded us of the global consequences of a nuclear incident. Engineers in the industry have been quick to take positive steps to exchange information to help improve safety worldwide. Indeed many of our engineers participated in one of 21 planned project visits to other nuclear utilities worldwide, investing and assessing their practices and performance, exchanging ideas and information with their counterparts in Japan, Canada, USA, France, etc. Others have hosted similar project visits from overseas nuclear companies, or become involved in passing on their expertise via

our twinning project with Smolensk nuclear power plant at Desnogorsk in Russia. Yet others are working with engineers at Kozlodni in Bulgaria and Khmel'nitski in northern Ukraine. We have contributed towards improving safety systems and safety culture in the operation of eastern European reactors, but there is still much to be done. The benefits are clear—a wealth of information, experience and knowledge has been exchanged, for this has been a two-way process, and the effect on our engineers is very visible: they are better informed, they are aware of the dangers of complacency and their contribution to our future is greater.

This development training, for that is what it is, is vital if we are to realize the full potential of our engineers and thus ensure the ongoing success of Scottish Nuclear.

Whether they are fuel route design engineers working on the vital fine-tuning of the fuel-handling process to ensure maximum efficiency of on-load refuelling, reactor physicists modelling reactor core physics, or mechanical engineers responsible for the design, performance analysis and overall safety of the mechanical plant, the engineers and scientists in the nuclear industry will be working with state-of-the-art technology. Indeed our engineers constantly work with technology developers and suppliers, pioneering systems that will take us onto the next phase of technical development.

The good news is that since its inception in 1990 Scottish Nuclear has turned a significant loss round to a £67 m. profit at the year end 31 March 1993. Good progress, but there is no room for complacency; we still have much to achieve to secure our future. As producers of around 50% of Scotland's electricity requirements, we must compete commercially in the marketplace. We must drive down our costs, push up our output and at all times operate safely. Our continued success depends on identifying and developing the potential of talented, enthusiastic employees. We recruit graduate engineers and scientists in the expectation that they will make a valuable contribution to the com-

pany's future growth and success. We need to ensure that we have call upon a supply of graduates who are not only technically adept but who are able to develop the consultancy role, the financial and personnel management skills that the nuclear engineer today must have.

Our engineers are aware of their role, not only as managers of the plant and equipment, but as caretakers of their profession. They act as mentors, formally and informally, to the company's trainees as well as vocational/industrial placement students. They participate in engineering awareness projects such as Entra's Insight, workshadow initiatives, careers information seminars, serve on engineering institution panels and many more educational/industrial liaison projects. They work closely with schools and universities, developing course content in line with industrial requirements and ensuring that the brightest young people are aware of the tremendously challenging and satisfying career which awaits them in the nuclear industry.

The role of the engineer in the nuclear industry is changing—and, changing for the better: better for the engineer in terms of job satisfaction and career development, better for the organization in terms of improved use of its valuable human resources. This is a young industry and our engineers operate in a dynamic environment where there is much to discover and develop. In these days of core and peripheral workforces, the engineer cannot assume 'key employee' status because of his/her specialist knowledge—knowledge can be contracted in (and back out again). If the engineer wants to develop his or her role in the changing organization (and I speak now not only of the nuclear industry), he/she has to be able to demonstrate not only technical knowledge but commercial and financial awareness and an ability to contribute to the strategic corporate objectives.

In short, the engineer in the nuclear industry today is responsible, yes, for the efficiency of the plant, but has a key role to play in the economic, efficient and effective running of the company as a successful commercial organization.

James Hann CBE, CIMgt, FCIM, FIP, HonFINucE has a substantial record of business achievement in a number of industries. Educated at Peter Symonds School in Winchester, he studied business management at l'Institut pour l'Etude de Methodes de Direction de l'Enterprise (IMEDE) in Lausanne, Switzerland from 1965 to 1966. In late 1972, he became the Chief Executive of Seaforth Maritime Limited, the newly formed Scottish shipping, engineering and transport company set up to serve the growing North Sea offshore oil and gas industry. Under his direction, it grew from three employees to 950 and to eight divisions trading throughout the world—in Norway, The Netherlands, Canada, the USA and the USSR. Previously he was Managing Director of one of Unigate plc's subsidiary companies. In 1986 he embarked on a new career as a pluralist. In addition to his appointment at Scottish Nuclear, he is an independent director of William Baird plc and chairman of the Northern Lighthouse Board, which is responsible for all navigation buoys and lighthouses around Scotland's coast. In 1977 he was awarded the CBE for services to the offshore industry. He was appointed Chairman of Scottish Nuclear on 31 March 1990, and in 1992 was awarded an Honorary Fellowship by the Institution of Nuclear Engineers for services to the nuclear industry.