

# NUCLEAR SAFETY



# newsletter

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***Editor: Kulvinder McDonald***  
***Nuclear Safety Directorate,***  
***HSE, St Peter's House,***  
***Balliol Road, Merseyside L20 3LZ***

## Editorial

**W**e have delayed the publication of this issue of our newsletter because of the heavy workload on the Directorate over the last few months. I hope it has not caused too much inconvenience. The additional work we have had to cope with has stretched us to the limit but I am happy to say that the Executive has agreed to increase the number of nuclear inspectors and our case for additional funding is currently being considered by the Treasury. In order to fill my current vacancies and in anticipation of the decision to increase my staff cadre, we are currently conducting a recruitment exercise to try and attract the top quality engineers and scientists we need to continue the high standards of nuclear safety regulation HSE has provided for the people of this country.

Since the last newsletter much has happened. We have continued to develop our internal processes in our quest for regulatory excellence. This was the theme of a special one-day seminar to celebrate the 40th anniversary of the introduction of the Nuclear Installations Act and our 25 years in HSE. We feel that this is an important milestone and we have included a special report on the day in this issue. We were all delighted to receive a message of support from the Minister of State for Energy, Mrs Liddell, and for the support and contribution of the new Chair of the Health and Safety Commission, Bill Callaghan.

The Y2K computer problem was a major issue for us. We have been working with the licensees for several years to identify, check and rectify safety-related systems at all our nuclear licensed sites. Licensees were required to submit a safety case for continued operation over the millennium date change and these were assessed by a dedicated team of inspectors in NII. All but one licensee provided an adequate safety case. The one that did not was shut down over the period and we required special restart procedures to demonstrate no safety systems had been affected. Even though licensees provided adequate safety cases, we took the prudent action of manning our Bootle emergency room over the period and had our full emergency response teams on standby. I myself was in the Nuclear Emergency Briefing Room in London on New Year's Eve. Thanks to all the hard work put in by the nuclear industry and my staff, we had no major incidents on the night.

We completed and published our report on the safety management audit of British Energy in January. The audit examined the adequacy of British Energy's central technical resources. British Energy have now to produce an action plan to show how each of the 103 recommendations are to be addressed. We are satisfied that current BE operations are safe but the audit findings are aimed at ensuring that BE will be able to discharge its responsibilities as a nuclear licensee in the future.

On 18 February we published three reports on BNFL. In relation to the storage of highly active fission products, we concluded that the current storage arrangements are safe but we want to see a clear strategy to reduce liquid volumes, through vitrification, by 2015. We have given BNFL until 18 August 2000 to agree this strategy. If agreement is not achieved by this date we will impose volume reduction rates to achieve buffer storage stocks by 2015. The other two reports addressed the findings of our investigations into the control and supervision of safety-related operations at Sellafield and the falsification of quality assurance records associated with the manufacture of MOX fuel.

These reports attracted considerable media interest. BNFL provided their response to these reports on 18 April. The proposed managerial changes and the action plans to address our recommendations provide a good foundation to deliver the improvements at Sellafield. We shall be closely monitoring BNFL's delivery of their commitments.

Over recent months we have also been handling the major project of the relicensing of the new contractor who will be running the Atomic Weapons Establishment at Aldermaston and Burghfield. We looked at the safety management prospectus for each of the applicants and advised the MOD accordingly. Once the new contractor had been appointed we reviewed their detailed arrangements for licence compliance and, as a result of satisfactory performance, I was able to issue new licences for Aldermaston and Burghfield on 1 April.

We have a great deal to do in the coming months to assess the adequacy of the responses from British Energy and BNFL, and maintain our normal regulatory inspection programme. I want to thank all of my staff in NSD who have worked so hard and look forward to the success of our recruitment exercise to help reduce their workload in the future.

**Laurence Williams**  
*Director of Nuclear Safety and  
HM Chief Inspector of Nuclear Installations*

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## NII 40th anniversary

**N**II celebrated its 40th anniversary by holding a conference in the Queen Elizabeth II Conference Centre on 24 November 1999.

The Inspectorate was formed under one of the provisions of the first Nuclear Installations Act 1959, a decision which followed the Fleck Inquiry into the fire at Windscale Pile 1 in 1957. This remains the UK's worst nuclear accident. Over the years the Inspectorate has been faced with many changes and challenges. Changes have included those in technology, policy, public attitudes and industry structure. Challenges have included participation in major public inquiries, responding to accidents such as Three Mile Island and Chernobyl, and providing assistance to Eastern European regulators. They have all played a part forming NII as we know it today.

Time does not stand still and NII fully expects to respond to the changes and challenges of the future. Two of these are undoubtedly freedom of information and a deregulated industry structure. Both of these, and HSC's strategic themes of greater engagement and openness, are bringing NII into greater contact with a wider range of stakeholders.

### *Aims of the conference*

The conference had two main aims. Firstly, to share with our stakeholders a broad view of the challenges for the nuclear safety regulators.

Secondly, and just as important, to hear the views of a range of stakeholders. NII is committed to taking these views seriously in its determination to achieve regulatory excellence. To enable us to meet these aims we wanted to invite representatives from the UK Industry, overseas regulators, Government departments, pressure groups including Friends of the Earth, CND, Greenpeace and the media.

### *Arranging the conference*

Work on the conference began early last summer by NSD's Division 2 Administration Team under the leadership of Bill Ascroft-Hutton. Bill and the team, together with HSE's Directorate of Information and Advisory Services (DIAS) spent time during the summer months working on planning the conference. This included, among other things, choosing the right venue for the occasion. Due to the importance of the event, they selected the QE2 Conference Centre as it was in a central location, provided superb conference facilities, and also offered excellent views of the new Millennium Wheel, Houses of Parliament and Westminster Abbey!

The team were kept busy for some weeks producing information packs and phoning and faxing people worldwide to invite them to the event, while DIAS kept track of the acceptances. The international invitations proved very successful with guests attending from such countries as Canada, Australia, Switzerland, France and America. Closer to home, the event attracted some MPs, despite it being held on the same day as Prime Minister's question time. Sam Harbison (the previous NII Chief Inspector), John Rimington (HSE's previous Director General), and colleagues from DETR and DTI attended. Pressure groups such as Friends of the Earth expressed their thanks at not only being invited to join in NII's celebrations but also at being asked to address the conference.

### *On the day*

The day itself started early for the admin team and Barry Shaw from DIAS who met at the QE2 centre at 07.00 am to start to organise the registration desk, the technical presentations and the information packs. Laurence Williams, the Chief Inspector, and NSD's three Deputy Chief Inspectors, Dick Pape, Jim Furness and John Cowley, were also on hand early to make last-minute checks to their presentations and also to greet the guests as they arrived.

The presenters on the day came from NII and from a diverse range of organisations. Laurence Williams opened the event by welcoming all the

guests to NII's 40th and HSE's 25th anniversaries. He stated that NSD recognises that it must satisfy its key stakeholders: the public, government and licensees. That is why they were asked join in this event so they could give their views on how they see NII and what they expect from a nuclear safety regulator. He introduced a video message from the Minister of State for Energy, Helen Liddell (the Minister was out of the country, and unable to attend in person). Mr Williams then took everyone on a trip down 'Memory Lane' with a brief history of the development of NII over the last 40 years.

HSC's new Chair, Bill Callaghan, followed Mr Williams on the podium where he gave his thoughts on the importance of safety both for workers and for members of the public from work activities. He was followed by the NII DCIs who spoke about the regulatory challenges that have influenced the direction of NII, our current challenges and nuclear regulation into the new millennium.

Next came Lorraine Mann from Scotland Against Nuclear Dumping. Lorraine provided an entertaining speech on how a small public interest group can influence and support better nuclear safety regulation. Lorraine was followed by two speakers from UK licensees. Firstly, AWE's John Crofts, who spoke about the licensees approach to openness, and then Andrew Clements from British Energy, who presented his views on operating nuclear installations in a deregulated environment. ITN's Science Correspondent Lawrence McGinty then took the stand to tell the conference what the media wants from its nuclear regulator. Rachel Western from Friends of the Earth completed the presentations by giving her views on what the public needs from NII.

An open forum completed the day. All the speakers were invited back up onto the stage to answer questions from the floor. This proved to be a lively session with NSD's senior management and the industry representatives responding to probing questions from, among others, Greenpeace and CND. Overall, the day was a great success. We've received positive feedback from those who attended and we've sent out numerous information packs in response to enquiries from organisations who couldn't attend or have since heard about the event.

In conclusion, this conference was not just about celebrating NII's 40th anniversary, but was part of our commitment to find out what our stakeholders want from us in our pursuit of regulatory excellence. All those involved would agree that this event was hugely successful in helping us achieve our aim.

# **Dounreay Safety Audit**

## **- progress report one**

### **year on**

**H**SE published a progress report on 30 September 1999, reporting jointly for both HSE and the Scottish Environment Protection Agency (SEPA), on the position reached by the United Kingdom Atomic Energy Authority (UKAEA) in responding to the recommendations of the 1998 HSE/SEPA Safety Audit of Dounreay. This was the first of a proposed series of annual reports which are intended to be in addition to both written and oral quarterly reports given to the Dounreay Local Liaison Committee by the NII Site Inspectors.

The progress report gave an overview of progress, selecting specific recommendations for mention where these were of particular significance, and described the arrangements for monitoring and closing out recommendations.

Overall HSE/SEPA regarded UKAEA's approach and progress on the Audit recommendations to be satisfactory. This continues to be the case, and UKAEA continues to show strong commitment to the task.

### ***1998 HSE/SEPA Safety Audit of Dounreay***

Following publication of the Safety Audit on 1 September 1998, the UKAEA produced an initial response three months later, on 30 November, entitled *Dounreay: The Way Ahead*. Since then HSE/SEPA have had extensive discussions with UKAEA, resulting in further clarification of the interpretation of certain recommendations and the bringing forward of some timescales.

The aim of many of the Audit recommendations was to provide the basis for a programme of work which would strengthen UKAEA's management of safety system to enable it to fulfil its duties as a nuclear licensee better. Their implementation should result in improvements to the organisation, systems, procedures, work programmes, plant state etc which will then become part of the normal routine business. Although some recommendations can be closed out by undertaking perhaps only one specific action, many will need time to become fully incorporated into routine UKAEA business.

### ***Current position***

The position by the end of March 2000 was that six recommendations had been formally closed out, a further 16 had been essentially completed and had been moved into the review phase, and the responses to another 46 were with HSE/SEPA for assessment. Eight other recommendations were considered by UKAEA to be complete, and it was collating the evidence to support that view. Of the remaining 67, the large majority are considered to be on programme, and HSE/SEPA are aware of and accept the reasons for the delays to the handful that were behind programme.

When UKAEA launched its initial action plan it was clear that a key to its success was the need to recruit around 70 new engineering and scientific staff. UKAEA has worked energetically to seek recruits, and has been successful in meeting its numeric targets, although gaps remain in some specialist discipline areas.

The wider situation at Dounreay is that some decommissioning work continues and several new projects have started. However, operations in the

Fuel Cycle Area (FCA) remain shut down under direction from HSE, although a limited consent was given to allow movement of pre-prepared enriched uranium targets for medical isotope production. Safety justifications to formats agreed with both HSE and SEPA are awaited for the restart of FCA operations.

### *Further information*

Copies of the 1998 HSE/SEPA Safety Report of Dounreay, the September 1999 HSE/SEPA Progress Report, and the NII Site Inspectors' Quarterly Reports to the Dounreay Local Liaison Committee can be accessed via the internet on: <http://www.hse.gov.uk/nsdhome.htm>

# BNFL's chemical plant sites

**I**n the February 1999 issue of the *Nuclear safety newsletter* we reported on the safety case improvement programme at BNFL and the new methods being applied to the company's programme of periodic safety reviews. Since then some 12 safety cases at BNFL's Sellafield site and one at its Springfields site have been submitted to NII. The ongoing assessment of those cases and the feedback of improvement points has enabled the new safety case process to be further refined and strengthened.

Nuclear Site Licences require there to be an adequate safety case for all operations which may affect safety and for there to be arrangements for their periodic review. NII expects these arrangements to require both interim reviews to take account of recent modifications and operating experience, as well as a comprehensive and systematic review of the safety case, the plant, processes and management at least every 10 years. The 10-year periodic safety reviews are expected to make comparisons with modern standards and identify worthwhile improvements, and to also take a forward look to ensure that ageing affects will not undermine the case before its next major review. For older facilities approaching the end of their lives, NII will not accept an argument of a short remaining life as an excuse for not improving a plant which falls short of the required standards.

For its part, NII establishes a Decision Date by which it will make a decision on the acceptability of continued operation of the plant or operation under review. Submission of the periodic review is normally one year before the Decision Date. For BNFL's Sellafield site there are almost 80 safety cases for which NII has now agreed firm Decision Dates on a rolling programme on a 10-year cycle. At NII's request, BNFL has included in its rolling programme a site-wide safety case that draws the total programme together, in an overview, and addresses site-wide topics not in the individual safety cases, such as site management arrangements, training, site emergency arrangements, radiological protection, radioactive waste management and dependencies on common services etc.

Similar programmes have been developed for BNFL's Springfields and Capenhurst sites. BNFL has decided that the current round of reviews will include the rewriting of each case using the methods and format developed in the safety case improvement programme.

For sites such as power reactors, which only have a single site periodic safety review, NII has published its findings at the Decision Date. For a multi-plant site like Sellafield, it expects to make a public statement annually on the periodic reviews it has assessed over the past year.

One plant safety case which has been of particular public interest has been that for the B215 Highly Active Liquor Evaporation and Storage Plant. NII published a review of the safety of B215 in a report in 1995 based mainly on the first periodic review carried out by BNFL in 1989. Since that time, NII has continued its assessment of the current (1994) safety case and the further responses of BNFL to key issues. An updated report based on this further assessment was published on 18 February 2000. One of the key findings was the absence of adequate engineering justification of the plant's systems and structures and a use of probabilistic results to justify not making worthwhile improvements. It was the generic aspect of these issues which led to the safety case improvement programme mentioned above. As a result, NII asked BNFL to bring forward its next periodic safety review of B215 and a revised case incorporating the identified improvements was submitted to NII at the end of September 1999. NII is in the process of assessing the revised case and intends to publish its findings later this year.

# Dungeness B weld defects

Each reactor at Dungeness B has eight boiler units inside the shell of the reactor pressure vessel. These include eight superheater headers which operate at very high steam pressure. Towards the end of its biennial shutdown, Reactor 21 was being prepared for the repair of a leak in a superheater tubeplate - the place where individual boiler tubes are brought together. During this work, indications of significant defects were noticed in an adjacent weld joining the tubeplate to the superheater header. Preliminary inspections of the weld confirmed that there appeared to be significant defects in it. BEGL promptly and prudently decided to shut down the other Dungeness B reactor as a precautionary measure.

The defective weld has been inspected ultrasonically and this has confirmed that defects exist all the way round the weld and extend to a depth of up to 50 mm in the 80 mm-thick, stainless-steel header. Samples have been removed for metallurgical examination and they indicate the use of inappropriate weld material. The design is such that it can tolerate a fully circumferential defect like this of around 53 mm. The fact that a defect up to 50 mm deep has been found is clearly a concern to BEGL and ourselves.

The discovery has called into question the build quality of a series of welds manufactured using a well established automatic welding method known as submerged arc. To re-establish confidence that failure of the welds in the penetrations can be shown to be infrequent, BEGL are inspecting all such steam penetration welds and are attempting to inspect all such accessible gas side welds for rogue ferritic material. One further steam side weld on Reactor 21 has been shown to contain a small amount of rogue material. Safety cases are being reviewed and, where appropriate, changes made to ensure that penetration weld failures are covered by consequence of failure arguments or failure shown to be incredible. Safety cases will have to be made, and agreed by NII, prior to return to power of each of the Dungeness B reactors. BEGL are currently focusing their efforts on getting R22 back in service as there will be a delay while they devise and implement a repair strategy for the defective R21 welds.

The Dungeness B penetration design differs considerably from that of other AGRs. In the light of the defective weld at Dungeness B, BEGL has made a case for continued operation of their other stations which has been accepted. The adventitious discovery of the defects lends further weight to the value and importance of speculative inspection, even where expert opinion predicts no problems, and reminds us of the fallibility of even well specified manufacturing processes.

# Nuclear Safety Advisory Committee

The Nuclear Safety Advisory Committee (NuSAC) met on 11 November 1999 at HSE's headquarters in London. At the meeting the Committee discussed a number of issues, including:

- the progress of the integration of BNFL and Magnox Electric;
- safety management arrangements at isotope production facilities (discussions focused on the structure of the company, business and safety management arrangement at the three Nycomed Amersham sites in the UK and how the sites comply with corporate and legislative requirement);
- presentations from NSD and Hunting BRAE on the two years of experience of licensing AWE sites;
- the organisational changes within British Energy since privatisation, how change is a key safety issue and the importance of licensee governance; and
- an update on how the UK's nuclear industry and regulator are addressing possible computer systems' millennium date change problems.

The agenda also included discussions on: REPPiR, indicating the progress that has been made with the draft regulations and consultation; emergency exercise reviews; and the NII report on BNFL Sellafield safety at B215 high level waste plant which was published on 18 February 2000.

# International

## WENRA

The Western European Nuclear Regulators Association (WENRA) was set up early in 1999 by the regulators of those countries in Western Europe that have nuclear power programmes. Its objectives are:

- to develop a common approach to nuclear safety and regulation, in particular within the European Union;
- to provide the European Union with an independent capability to examine nuclear safety and regulation in applicant countries; and
- to evaluate and achieve a common approach to nuclear safety and regulatory issues which arise.

The member countries are: Belgium, Finland, France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland and the UK.

At the time the European Commission (EC) was involved in negotiations with the Candidate Countries (CC) on nuclear safety issues, although nuclear safety was not part of the competence. Rather than the EC attempting to duplicate competences already effective in member states, it was felt that the WENRA regulators could contribute. WENRA is not directly related to the EU, this is emphasised by the membership of Switzerland.

To date, the main output has been a brief report on nuclear safety in the CCs, this gave the views of WENRA, and the technical support organisations (TSOs), on the effectiveness of the regulatory body, on the state of nuclear safety at the power plant and on the design issues of the plant concerned. The original report was published in March 1999 and it is planned to update it by the end of 2000.

The Association will keep the European Union Institutions and Member States informed of its activities, it is prepared to consider requests from these Institutions and Member States for advice on nuclear safety and regulatory matters and it will ensure appropriate opportunities for colleagues from other Member States of the European Union to participate in its work.

Small groups have been set up to look at regulation in the member countries of radioactive waste, reactor design and transport but progress is slow.

### *Information exchange arrangement*

Laurence Williams and his Swedish counterpart, Lars Högberg, signed and exchanged an information exchange arrangement (IEA) between HSE and the Swedish Nuclear Power Inspectorate (SKI) on 3 November 1999 which will run initially until 2004. The IEA formalises the close working relationship NSD has had with SKI over many years, including a six-month secondment of one of SKI's inspectors to NSD in 1994.

# Further information

Unless otherwise stated, HSE priced and free publications are available by mail order from HSE Books, PO Box 1999, Sudbury, Suffolk CO10 2WA. Tel: 01787 881165 Fax: 01787 313995. Website: [www.hsebooks.co.uk](http://www.hsebooks.co.uk)

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For other enquiries ring HSE's InfoLine Tel: 08701 545500, or write to HSE's Information Centre, Broad Lane, Sheffield S3 7HQ. Website: [www.hse.gov.uk](http://www.hse.gov.uk)

If you wish to receive further copies of this newsletter they are available from John Hicks, 3NW Rose Court, 2 Southwark Bridge, London SE1 9HS.

Single copies of HSE's Quarterly Statement of Nuclear Incidents at Nuclear Installations can be obtained free from the Information Centre, HSE, Room 004, St Peter's House, Stanley Precinct, Bootle L20 3LZ.

HSE's Nuclear Safety Directorate now has its own homepage on the Internet. This can be accessed on: <http://www.hse.gov.uk/nsdhome.htm>

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## Your views

The Editor welcomes your views about the newsletter or the work of NSD. While we do not undertake to publish individual letters, comments about the scope and depth of coverage will help us in assessing the impact of the newsletter and to ensure that it remains relevant and informative.

*Nuclear safety newsletter* is published in February, June and October