HSE

Health and Safety Executive

Nuclear *Newsletter*

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Contents

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General issues

Overview

This issue covers the period 1 June–30 September 2007. As in the last period, the high level of activity has continued. There are continuing challenges from ageing plant, both in the nuclear power plant and nuclear chemical plant sectors.

Our resourcing pressures continue and the international environment is becoming more complex. Funding constraints on the Nuclear Decommissioning Authority (NDA)-owned sites are delaying decommissioning and we are in discussion with the licensees and NDA on potential safety implications.

A Programme Board has been set up and arrangements for closer co-operation with other nuclear regulators are well advanced.

Generic design assessment

As noted before, all our work in this area is being undertaken on a contingency basis, pending the outcome of the government's consultation. If the government's decision is that there is no future role for nuclear power then all further work in this area can be curtailed.

We have completed Step 1 of the generic design assessment (GDA) process. All work is currently on target with the following major milestones achieved:

- the public involvement process became operational on 10 September 2007; and
- the International Atomic Energy Agency (IAEA) started on its review on the same date.

Step 2 of the GDA is currently underway; this involves reviewing the four candidate designs (see below) against high-level safety assessment principles focusing on the design concepts.

Steps 3 and 4 of the GDA focus on the detailed evidence provided by the requesting parties to support the high-level safety claims.

A major impediment to the full start of Step 3 is the potential lack of inspectors to resource the project. The Health and Safety Commission (HSC) has to be consulted before Step 3 can start.

Throughout the GDA process HSE will seek to take advantage of assessments of the proposed designs undertaken previously by overseas nuclear safety regulators. For example, where detailed independent analyses of nuclear safety issues or validation of computer codes are available, HSE will seek to make use of them. HSE assesses on a sampling basis and therefore the availability of additional information will help target resources to best effect.

To ensure that generic design assessment is carried out in an open and transparent manner, the public will be given access to the Safety, Security and Environmental Report prepared for the design by the requesting party (RP) (except for any information that cannot be published due to commercial confidentiality or security issues). This information will be published on the RPs' own websites. RPs will update the information on their websites if the submissions to the regulators change or if further information is provided. The public will then be given an opportunity to make comments to RPs, who will be asked to respond to the issues raised.

The addresses of the RPs' websites are:

- ACR 1000 (AECL): **www.aecl-uk.co.uk**
- ESBWR (GE-Hitachi): **www.gehgenericdesignassessment.co.uk**
- EPR (Areva): **www.epr-reactor.co.uk**
- AP1000 (Westinghouse): **www.ukap1000application.com**

Further information can also be found on the website of the Joint Programme Office (JPO) (www.hse.gov.uk/newreactors) set up by the nuclear regulators to oversee the GDA process. There are links to the RP sites from HSE's and the Environment Agency's websites.

Amendment of the Fees Regulations in relation to charging of potential licensees and to cover HSE's non-nuclear activities

With a significant number of operating companies (many from overseas) showing interest in new build in the UK, there are increasing demands on HSE's limited time and resources as these operators consider whether they might wish to become a UK licensee. Such preliminary discussions are not easily covered by charges under the Nuclear Installations Act. HSE is therefore looking into the possibility that costs of such work could be recovered by suitable provisions in the Health and Safety (Fees) Regulations. Unless and until such regulations are introduced, HSE will be limiting the interactions it has with potential nuclear operators. The next revision to these regulations will come into force in April 2008.

At present HSE does not charge for non-nuclear activities on nuclear licensed sites. In parallel with similar changes on charging for non-nuclear major hazard sites, HSE is proposing to charge for such activities. This may add around 2% to existing charges to nuclear site licensees.

Governance of strategic projects

We have created a number of strategic projects as part of our drive for continuous improvement of the Directorate. They are grouped under the themes of business processes, people issues, disciplined delivery, nuclear regulation, consolidation of Nuclear Directorate (ND) and other strategic projects. Each theme is led by a division head with another division head providing a challenge function.

Recently we have created a governance team to oversee the totality of these projects. The team provides the management board with regular reports on progress, particularly resourcing and priorities.

Sellafield Ltd competition

ND continues to participate in the activities relating to the competition for ownership of Sellafield Ltd. As will be discussed later, the competition relies upon Windscale being relicensed to Sellafield Ltd from UKAEA prior to the contract award. Relicensing is currently scheduled for 1 April 2008. Other activities currently underway concern discussions around the most appropriate way to transition the successful bidder's secondees into the Site Licensed Company structure within the allocated transition period.

Site visits

HM Chief Inspector for Nuclear Installations (HMCI) has continued with his site visits programme. Over this period Dr Weightman visited URENCO Capenhurst on 1 June 2007, Vulcan on 20-21 June 2007, Berkeley on 11 July 2007 and Rolls Royce, Derby on 21 September 2007. He was pleased with the increasing attention to standards of nuclear safety but noted the need to continue such work and sustain it in the longer term. He has also visited a Canadian nuclear power station at Darlington.

UKAEA

The programme for restructuring UKAEA is continuing. The issues over the proposed number of site licensee staff being allocated to the parent body organisation have been resolved. Issues relating to the impact that NDA funding cuts will have upon the proposed Harwell and Winfrith structures have arisen and have resulted in the proposal to relicense these sites after the dates for Windscale and Dounreay of 1 April 2008. This delay does not impact upon the current declared NDA competition programme. Other work is progressing to schedule and it is anticipated that licence instruments permitting Dounreay and Windscale to enter shadow working will be issued shortly.

Studsvik proposal for a metal recycling facility

A licence application has been received and Studsvik has commenced public body notification. The safety case and safety management prospectus have also been received and are being assessed. The most likely licensing date is January 2008.

Low-level waste repository (LLWR)

The LLWR at Drigg has now been relicensed. All identified PCM (plutonium-contaminated material) was removed before relicensing. The successful bidder for ownership of LLWR has been announced as the consortium led by Washington Group. Discussions are currently underway to manage the change process to bring the parent body organisation secondees into the Site Licensee Company.

Windscale

As stated earlier, the Windscale site needs to be relicensed before the completion of the BNGSL competition. The issue surrounding the future position of UKAEA staff appears to be resolved, the main issue now being that there are several vacancies in important safety-related roles that need to be filled before the structure can operate in 'shadow mode'. Both UKAEA and Sellafield Ltd have worked well together to identify contingencies in the event that the vacancies cannot be filled. Currently the programme is on schedule for relicensing on 1 April 2008. The contract award for ownership of Sellafield Ltd is due to be announced in August 2008.

Magnox Electric Limited (ME)

Work to relicense the Magnox South sites is continuing. ND has carried out several inspections relating to ME's desire to enter into shadow working. Although no major problems have arisen there have been a number of new items identified and some of the existing longer-standing issues, especially relating to safety case production, remain to be resolved. This is now likely to impact upon relicensing timescales, which would in turn impact upon current competition timescales. However, there have been some indications that this competition could be delayed. ND is continuing to support NDA's preparations to compete the Magnox South sites and gave a presentation representing all the regulators at an industry day in Windsor on 14 June 2007.

Nuclear Decommissioning Authority (NDA)

NDA has provided further details of its proposed spending and the likely individual site implications. ND is examining this proposal and will be communicating to NDA shortly but, given the timescales, could not give other than an outline response in the first instance. Because of the impact of the proposed cuts to work programmes in some areas, ND is putting into place a working group to decide its own priorities for work across the NDA sites as a whole and will be providing more detailed comments when this working group has reported.

As well as work relating to funding, and the restructuring and attendant competition support work, there are a number of other either NDA-initiated or NDA-related work programmes for ND:

- setting up the National Nuclear Laboratory at Sellafield;
- setting up the Nuclear Academy;

- establishing shared services for Site Licensed Companies (SLCs) at NDA sites;
- the future position of International Nuclear Services (INS), which deals with transport (including flasks); and
- examining whether NDA is having an undue influence on the behaviour of SLCs in relation to the licensees' responsibilities.

Communication and stakeholder engagement

Work has begun to take the Communication and Stakeholder Engagement (CASE) Strategic Project forward. A stocktake of previous work (both research and other reports/inputs) has been undertaken to inform ND's communications priorities and CASE Strategy development. The latter is being updated during the autumn to reflect the changing operating environment, ND's desire for greater transparency and the Directorate's wider responsibilities following the transfer of the Office for Civil Nuclear Security (OCNS) and the United Kingdom Safeguards Office (UKSO).

A meeting was held with representatives of non-governmental organisations (NGOs) (Greenpeace, Friends of the Earth, Nuclear Free Local Authorities) on 14 June 2007. The purpose of the meeting was to provide more information about the role of ND as the independent nuclear regulator for safety and security (the latter following the addition of OCNS in April 2007), and explain the regulatory processes used, particularly the generic design assessment system introduced in 2007. Associated opportunities for public involvement were discussed.

A working group has been formed between ND and the Safety Directors' Forum to consider how we can interface and work together more effectively, particularly at a strategic level. It met for the first time on 31 August 2007 and work is to continue in the autumn.

Echo Research Ltd has provided a 12-month retrospective positioning report of media coverage April 2006–March 2007. This will inform ND of what has been said about nuclear safety and security and will help ND plan to interact more effectively with influential intermediaries, such as the media, as well as taking opportunities to address reported shortfalls in our ability to communicate key messages effectively.

The third edition of the nuclear e-bulletin, which provides an update of the latest news and information from ND, was issued in August. Those registered for this service have increased to nearly 1400.

There were seven freedom of information (FOI) requests and two items of correspondence from MPs during the period covered by this report.

Nuclear research

HSC approved the 2007/08 Nuclear Safety Research (NSR) programme at its meeting on 5 June 2007.

An external contractor was engaged to apply its technical expertise to review the Nuclear Research Index (NRI), to identify inconsistencies between the status of issues in the NRI and the entries in the most recent licensee Nuclear Research Schedules and to identify inconsistencies between the progress that has been made addressing an issue and the priority of that issue. The contractor also examined the way each issue and strategy statement is presented and made suggestions for improving clarity. The inconsistencies and suggested presentational improvements were agreed with each of ND's research technical representatives and then fed into the 2007 NRI update. This 2007 NRI update was completed, apart from the human factors section, by the beginning of September 2007. The human factors section was discussed with the ND Nuclear Topic Group in September to finalise the 2007 NRI update. The completed 2007 NRI will be presented to the Nuclear Safety Advisory Committee (NuSAC) RG6 (successor to NuSAC Sub-committee on Research) on 2 October 2007.

A root and branch review of the Human Factors Programme, involving ND and the licensees, is planned for November 2007. The outcome of this review will be used to inform the 2008 update of the NRI.

Staffing

HSE has agreed to a large recruitment campaign aimed initially at increasing the number of nuclear inspectors this calendar year by around 20% (the maximum we can assimilate over a relatively short period). Such levels of recruitment will have to continue in future years. Success will depend, to a large extent, on providing an appropriate salary package.

Operational issues

Operating power reactors

Dungeness B

Both reactors operated throughout the period, although the power output of Reactor 22 was reduced in mid-August 2007 by approximately 30% in order to continue operating until serviceable fuel plug units (FPU's) became available. The fuel route underwent a major maintenance outage that lasted the whole reporting period. At the time of writing the fuel route was undergoing final commissioning before being returned to service.

On 14 July 2007 the collapse of a metal staircase, which was access to a two-storey temporary cabin, resulted in a serious injury to an employee. The station reviewed its arrangements and implemented several major improvements. This incident was also referred to HSE's Construction Division for possible attention at a national level.

There were no Licence Instruments issued during the period. Anticipated Licence Instruments to permission the replacement data processing system and to permission installation and operation of the FPU crimping machine remain postponed due to the continuing technical and contractual problems encountered on the projects.

Hartlepool

Reactor 1 ran at close to full load throughout the period until it entered its three-yearly outage three days early in September 2007. The power was slightly below full capacity from mid-July 2007 owing to a fault with the main boiler feed pump live steam governor valve. Reactor 2 operated at full load throughout the reporting period except for a day at reduced load to allow repairs to instrumentation on the main boiler feed pump and a ten-day refuelling outage in July 2007.

An International Nuclear Event Scale (INES) 0 rated event was reported in July 2007 due to a safety case inconsistency in which several valves were incorrectly specified to require nuclear-rated actuators, when in fact they were not. The plant installed was capable of fulfilling its safety function throughout. An INES 0 event was reported in August 2007 because Reactor 1 entered a four-hour urgent shutdown state for a period of 35 minutes when a poorly written and applied test procedure resulted in a secondary cooling system being inadvertently isolated. An INES 0 event occurred in September 2007 when Reactor 1 was manually tripped three days ahead of its scheduled outage owing to falling de-aerator levels. The initiator in this event was the random failure of a sightglass to an emergency boiler feed pump, which caused a water spray onto adjacent pumps resulting in their electrical protection tripping. The outage includes an extensive programme of boiler closure unit (BCU) inspection work.

Licence Instrument 518 was issued during the period giving agreement to a modification to refurbish the essential cooling water system (ECW) buried cast iron seawater pipework. Licence Instrument 519 was also issued giving agreement to a modification to change the type of lubricating oil used in the gas circulators. Licence Instrument 520 was issued giving agreement to a modification to replace reactor safety circuit equipment, which was becoming obsolete. No notable enforcement activity was deemed necessary in the reporting period.

Heysham 1

The Heysham 1 reactors have maintained a satisfactory safety performance during the period. Reactor 1 shut down on 30 May 2007 for its scheduled three-yearly periodic shutdown and returned to service on 26 August 2007. Reactor 2 operated steadily at 90% load throughout the quarter. HSE granted consent for Reactor 1 to start up on 2 August 2007, ie day 64. The first attempt at restart was halted owing to leaking seals in the main

steam pipework and problems with the turbine thrust bearing lubricating oil strainer. The station eventually returned to service on Sunday 26 August 2007.

We inspected several aspects of the outage including: the integrity of the steel primary pressure boundary; the pre-stressed concrete pressure vessel; the inspection and radiographic examination of BCUs; and the maintenance of the electrical and mechanical systems. We also examined the arrangements for radiological protection, quality assurance and industrial safety. Other inspection activities included control of modifications, progress with defects and industrial safety. We are satisfied that overall BEGL and its contractors carried out the outage in a thorough and professional manner, although the station continues to experience issues in relation to records of the qualifications and experience of contractor personnel. We concluded that BEGL had satisfactorily completed the 2007 periodic shutdown of Reactor 1 and that the position in respect of safety case development and emergent issues was adequate.

British Energy is continuing to develop the safety case for justifying an increase in temperature limits for the top dome and thus restore Reactor 2 to full load operation. The Category 1 case for these 'incredibility of failure' components was scheduled to go to the September 2007 meeting of the Nuclear Safety Committee (NSC) but is now not expected to go before November 2007. Operating at reduced load does affect boiler operation but we have assessed the licensee's case on boiler conditions and concluded that Reactor 2 may continue to operate at the reduced load subject to regular surveillance confirming that top dome temperatures comply with technical specification limits.

The extensive programme of inspection and radiological examination of BCUs completed during Reactor 1's periodic shutdown has gone a long way to meeting our expectations in regard to establishing the condition of these safety-critical components on this reactor. BEGL has made good progress with the case for the integrity of the primary hold-down studs and the current condition of the wire wound pre-stressing system. However, because several BCUs are exposed to wetting from pressure vessel cooling water (PVCW) leaks, we are pursuing improvements in the means of detecting a wire break.

The station has confirmed that it has secured the necessary funding to replace all the remaining buried and cast-in-concrete cast iron components of the ECW system with glass-coated carbon steel components. We have issued a Licence Instrument agreeing to the Paper of Principle for this refurbishment project. The station has let contracts and we will monitor progress and inspect the quality of the work, which is scheduled to be completed by April 2008.

The Reactor 1 periodic shutdown saw the first of several modifications that address water ingress arising from boiler tube leaks and boiler spine failure. During forthcoming refuel outages and the 2008 Reactor 2 periodic shutdown, the station will implement: reactor vessel flood detection (RVFD); vessel over pressure equipment (VOPE); automatic quadrant feed trip (AQFT); and (diverse) off-load moisture monitoring system ((D)OLMMS). HSE is monitoring the progress and quality of these modifications, which are scheduled to be placed into service on both reactors by November 2008.

Heysham 2

The station had an unplanned automatic shutdown of Reactor 7 in early August 2007. This originated from an error while a craftsman was performing scheduled electrical maintenance work. Coincidentally, back-up electrical equipment was unavailable and this had the consequential effect of a feed valve to a boiler remaining open. This boiler was overfilled and damage was sustained to some valves. The station performed the necessary remedial work and produced a safety case to return the reactor to service some three weeks later. The station has provided us with the outcome of its investigation into the circumstances surrounding this event. As a result, an initiative to improve human performance standards and expectations has been launched at the station.

Reactor 8 operated throughout the period without any significant problems.

The results of the licensee's investigation into the INES 1 rated event related to lifting the neutron source plug during the Reactor 8 outage in April 2007 has been provided. Corrective actions have been identified that will reduce the likelihood of a recurrence; these are acceptable to us.

In addition, the biannual fuel route outage to complete scheduled maintenance work was successfully concluded in July 2007.

Hinkley Point B

Before this reporting period, both reactors at Hinkley Point B had been shut down for a programme of boiler tube inspections. Reactor 3 was returned to service on 23 May 2007 and Reactor 4 on 13 June 2007. The reactors were returned to service at reduced power, to comply with safety case limits on boiler temperatures.

There have been no significant incidents on the site during the reporting period.

Hunterston B

Throughout the period both reactors have been operated at around 60% power to remain within the safety case limits on bifurcation temperature and superheat margin at the upper transition joints. Demonstration of compliance with these parameters remains under scrutiny and additional surveillance requirements have recently been introduced. Each reactor has been shut down once during the reporting period, as summarised below.

A contractor has been engaged to assist us in monitoring licensee's progress to close out the periodic safety review (PSR) shortfalls and initial meetings have been held with the licensees to agree reporting format. Early indications are that there has been some slippage of a number of commitments and we will continue to scrutinise the associated safety significance with a view to securing improvements as appropriate.

Reactor 3 was shut down in early June 2007 to repair a leak from the condensate system. On return to service it was a tripped owing to complications arising from the low power operating regime. The station adopted a thorough approach to improving arrangements as a result of this event, and the reactor was returned to service satisfactorily later in the month. Reactor 4 was taken out of service in July 2007 to replace feed tube plate orifices, to improve low power operation. It is now back in service.

An INES 1 rated event was reported in late July 2007 related to an incorrect material being used for seals in the control rod standpipe extensions, used during rod exchanges. Use of the extensions was embargoed until the seals had been restored to specification. Our investigation is still in progress.

Oldbury

Reactor 2: Following replacement of the faulty transformer involved in the electrical failure in late May 2007, Magnox Electric experienced problems with excessive vibration on the number 2 turbine-alternator. The unit was taken out of service for investigation, but no clear cause was found and work continues to locate the problem. The reactor has now been returned to power supplying steam to turbine-alternator number 1 and has been operating in this configuration since mid-August 2007. We continue to work to ensure that the licensee has a satisfactory safety case for the graphite core's operation to the planned end of generation.

Graphite safety case, Reactor 1: We are working with the licensee to resolve outstanding issues before the issue of consent for continued operation of Reactor 1. In the mean time, the company continues to conduct camera inspections of the reactor core graphite. The inspection team has completed about 50% of the most affected channels and has reported no significant defects.

Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations (EIADR): Public consultation on the Environmental Statement for decommissioning Oldbury power station under EIADR has been closed and we are considering the responses. Most of the task is completed and final work is in hand addressing some outstanding issues with the licensee.

Sizewell B

Sizewell B returned from a four-day forced outage on turbine No 1 at the beginning of June 2007. This was to carry out a repair to one of the generator transformers. The reactor was reduced to 50% of full power during this period. Since then Sizewell B has returned to full power and operated continuously with no unplanned trips and no INES 1 events.

The annual Level 1 emergency exercise was held on 4 July 2007 where a number of learning opportunities were identified, including the initial strategic actions to be

completed by the control room staff before the emergency control centre takes control of the event. The station agreed to implement the automatic call-down system 'RapidReach' to free up critical time in the early phase of an event. This will be demonstrated to us later in the year.

Torness

During the recent period of operation, no faults have occurred that have exceeded the design basis for the station and its safety case, and no events have been reported above INES 1, which corresponds to a plant anomaly.

The station has conducted a periodic shutdown of Reactor 1 in accordance with the arrangements made to comply with Licence Condition 30. During the outage they have carried out work to maintain plant, correct adverse plant conditions and improve plant condition. We inspected the licensee's preparations for the outage, inspected work carried out during the outage and monitored the licensee's process to ensure that the reactor is safe to return to service and operate for a further period. The licensee confirmed that all necessary work had been carried out satisfactorily; that no matters affecting return to service remained unresolved and requested HSE grant consent for Reactor 1 to be started up. We granted consent, and the reactor was returned to operation during week beginning 17 September 2007.

Isotopic content of spent fuel (update of last report): The station has reported that they have received a letter from the EC Directorate General for Energy and Transport – Directorate H – Nuclear Energy (Euratom), asking them to correct the reports made containing miscalculations for all Torness spent fuel shipments affected. Euratom indicated that they are prepared to discuss options for providing the corrected information. In the interim they have been asked to provide details of the corrective actions they are taking to change management procedures, particularly in view of the introduction of the NUMAS accounting system. The station is engaged in work to provide the information requested by Euratom. They also reported that UKSO and the Department for Transport are aware that the station proposes to respond to the Euratom requirements directly, while keeping these departments informed.

Wylfa

There have been no significant nuclear safety events. Replacement of turbo alternator 1 condenser tubes has continued throughout the reporting period. Consequently, when steam plant permitted, one reactor has operated at full power and one at half power.

Reactor 1 was manually tripped on 6 April 2007 to begin its biennial periodic shutdown following about 22 months of steady operation with occasional unplanned shutdowns. During the outage, the licensee's compliance with a range of licence conditions was inspected under our Operational Magnox Reactor Integrated Intervention Strategy (IIS) Plan. In addition, visits were also made to inspect work programmes associated with electrical engineering, structural integrity, health physics, and conventional safety. The outage start-up meeting was held on 13 June 2007. Actions were confirmed at this meeting that needed to be completed before the issue of a start-up consent. These were primarily associated with completion of graphite core inspections, repairs to in-vessel components, and the cast iron seawater cooling ring main safety case. A consent to reactor start up was issued on 7 August 2007.

Towards the end of July 2007 there was a controlled shutdown of Reactor 2 in response to a boiler leak. During its start up in August leaks were found in a turbine steam line that caused further delay in bringing the reactor back to full power. A controlled shutdown of Reactor 1 occurred in August 2007 in response to problems found during routine testing of a turbine overspeed ring. For a period of time both reactors were shut down. While in this state an operating rule breach occurred when guaranteed supplies switchboard 1B was taken out of service for defect maintenance coincident with two out of three diesel generators being declared as unavailable. There was no direct nuclear significance attached to this event. Once the error was discovered by the incoming shift, one of the two unavailable diesel generators was synchronised manually and confirmed to be available. Guaranteed supplies switchboard 1B was returned to service.

In March 2007 an issue arose with regard to meeting the 'reactor at power' insulation resistance acceptance criteria for calibrating safety circuit thermocouples fitted to fuel elements. Investigation

by the station found that this was due to changes in the production process following takeover of the supplier. Thermocouples manufactured in this way were to be installed during the 2007 Reactor 1 outage. Before installation, the station produced a safety case justification for their use that included introducing enhancements to the factory testing process and a requirement for confirmatory checks during power raise. The results of the start-up checks will be reported through the station's plant modification arrangements. We followed these developments and did not identify any issue that prevented the thermocouples being used during the next period of reactor operation.

An improved deterministic nuclear fire hazard safety case was issued to HSE after consideration by the licensee's Nuclear Safety Committee. Work continues with the new supporting probabilistic safety analysis (PSA) that is still planned to be available in the first half of 2008.

During the Reactor 1 biennial outage, the final periodic safety review (PSR)-related modification associated with the seismic safety case was completed. The only other outstanding PSR-related permission is associated with demonstrating that all seismic modifications are adequate for routine operational service.

Previously we reported to NuSAC that four non-contract tie rods were erroneously installed during the Reactor 1 statutory outage in 2005. Following this discovery the station gave a commitment to attempt to replace these during the 2007 outage. We are content that all incorrect material was removed and replaced with appropriate specification steel.

Our inspections confirm that the station's proactive response to the Oldbury transformer fire event considered the implications and whether there was the potential for a similar event at Wylfa. The outcome was that although transformer bush failures do occur within the power industry, the station was in a robust position and did not have reason to anticipate imminent failure of its equipment.

The Sulphur Content of Liquid Fuels (England and Wales) Regulations 2007: Agreement has been reached between the station and regulators so that the station can continue to use current fuel stocks, held in compliance with the requirements of the nuclear site licence, without being vulnerable to intervention under these new regulations that come into effect at the beginning of 2008.

In 1990, it was discovered that 16 spent fuel elements in dry store cell 4 (DSC4) had been affected by a roof leak, resulting in corrosion of the magnox cladding. We have continued to hold regular meetings with the project team to monitor progress and development of the detailed safety case to recover the fuel elements and dispatch them off site for further treatment while minimising the spread of contamination. Final design of both the recovery equipment and fuel transfer machine upgrade is nearing completion. At a meeting in September 2007 we did not object in principle to a proposal to be presented to the licensee's Nuclear Safety Committee (NSC) to suspend progress on the manufacture of the damaged fuel recovery equipment for about six months. This will provide opportunity to investigate recent proposals to recover the fuel using existing equipment and facilities within the diverse discharge route. This has the potential to be a simpler recovery process with potential for safety benefit and provide cost savings that have the potential to be reallocated to fund other work programmes.

A Magnox Electric restructuring shadow working readiness inspection was completed at the end of August 2007. A number of issues associated with the corporate centre were identified and reported to our shadow working project team.

Wylfa has submitted to HSE its Pre-Application Scoping Report for the decommissioning of Wylfa power station under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations. The Scoping Report is currently out for public consultation until 26 October 2007.

Decommissioning/defuelling power reactors

Berkeley

We have undertaken a reactive investigation following the overflow of treated effluent within the active effluent treatment plant (AETP). Although the effluent was within the authorised specification for discharge to the environment, the investigation has found that Berkeley is not compliant with Licence Condition 34. Berkeley has put a site-wide improvement plan in place and is reviewing relevant operational and maintenance management arrangements and revalidating plant across the site.

The contracts for the active waste vaults removal and the new intermediate-level waste (ILW) store construction projects were due to be awarded in August 2007. Owing to the funding shortfall, staff and supply chain contractors have been informed that this has been deferred. These are the main decommissioning projects at Berkeley and levels of uncertainty regarding the future for staff on site are high.

Bradwell

Removal of asbestos-based lagging from the boilers is nearing completion and progress with cooling pond clean up and encapsulation of mobile ILW sludges continues.

We observed a Level 1 emergency exercise in June 2007 and judged that the site had demonstrated emergency arrangements to a good standard. We noted at the annual regulatory review meeting in July 2007 that the site had demonstrated a good safety performance over the previous year.

The way ahead with planned decommissioning projects is uncertain as a result of the funding changes.

Calder Hall

The licensee carried out a safe demolition of the Calder Hall cooling towers on 29 September 2007 using explosives, after receiving our agreement in a Licence Instrument. This was only after we were satisfied with the licensee's case for, inter alia, potential impacts on other Sellafield plant. We observed a well-implemented operation on the day. Calder Hall has continued to install the new fuel route equipment for final defuelling of the reactors, and for Reactor 4 this is complete. We have inspected this and have been satisfied with the proposals and progress. One issue has been the engineering difficulties the licensee has had to address where there is an interface between old and new plant.

Chapelcross

Preparations for defuelling are continuing at Chapelcross. On the first reactor, the site is finalising the preparation and review of instructions to operate the new plant that has been installed and is training the operators in preparation for starting the first fuel moves.

Chapelcross Level 1 emergency exercise 'Gerda' was held on 23 May 2007. We found that the site's response was not adequate, principally as a result of the length of time to recover casualties. We therefore required the site to provide a further demonstration of its arrangements. Since the exercise in May 2007, Magnox Electric has undertaken a significant amount of training and practising in preparation for the redemonstration, which is scheduled for October 2007

Dungeness A

Safety performance at Dungeness A in the reporting period has been acceptable and no events have been rated above INES 0. The reactors are now permanently shut down and on forced cooling. The post-operation and defuelling safety case (PODSC) has not yet been fully accepted and this may delay the shadow working proposals (shadow working being the trail period when the two halves of Magnox Electric demonstrate they can act as independent licensees). We have approved, however, the new set of operating rules that were justified in the PODSC and this will allow the passive cooling phase to begin once it has been demonstrated that the required temperature criteria can be met. Bulk defuelling of one of the Dungeness A reactors may commence shortly. However, this does rely upon Sellafield resolving its reprocessing issues.

Financial constraints threaten to limit most of the planned decommissioning projects. All that remains this financial year is defuelling, dissolution of fuel element debris and some minor works.

The main part of the budget is meeting the fixed costs of the station. We are now discussing decommissioning progress corporately with the licensee.

Hinkley Point A

Investigation into the electrical incident reported to the last meeting is still progressing as additional evidence of past performance is reviewed. There have been no further events rated above INES 0.

The Hinkley Point A site is part of Magnox South and has been affected by the latest round of funding constraints for financial year 2007/08. Some projects have been deferred; in particular, the project for dealing with solid ILW may be deferred for several years. The level of funding for future years remains uncertain.

Hunterston A

The ponds building inspection, reported to the last meeting, has progressed and been closed out, with the licensee addressing all of the issues with just one remaining outstanding. The licensee has responded well to the issues raised on conventional safety by the HSE Field Operations Directorate (FOD) inspector.

A dropped-load incident reported at the last meeting has been investigated by HSE. The investigation identified a number of contractor supervision, incident reporting, lifting regulations and licence condition issues, and concluded that we should write to the licensee and contractor requiring a programme of improvements against the findings. The licensee completed a comprehensive review of its own and pre-empted most of our conclusions. Following implementation of required improvements, the work has restarted and has been completed without further incident.

No issues above INES 0 have been reported.

A Level 1 emergency exercise took place in June 2007 and the licensee demonstrated that its arrangements under Licence Condition 11 were adequate.

The Hunterston A site has not yet reported its anticipated funding situation for the rest of this year and future years. Initial indications are that the situation is not as constraining as for the southern Magnox sites, but it is still not clear how revised funding arrangements will affect individual sites such as Hunterston A.

Sizewell A

Safety performance at Sizewell A in the reporting period has been acceptable; no events have been rated above INES 0. The reactors are now permanently shut down and on forced cooling. The post-operation and defuelling safety case (PODSC) has not yet been fully accepted and this may impact upon shadow working proposals. However, we have approved the new set of operating rules that were justified in the PODSC and this will allow entry into the passive cooling phase once it has been demonstrated that the required temperature criteria can be met.

The uncontrolled loss of cooling pond water event, previously reported, resulted in the Site Director and other senior site managers being called to a meeting at our Bootle HQ on 14 June 2007 to explain how they had complied with our Direction that was issued under Licence Condition 15(4). At Sizewell A, considerable pond system enhancements have been taking place this year to avoid a reoccurrence of the event. A revised pond safety case is currently being produced for the modified, and improved, cooling pond. Magnox Electric has been informed that we do not intend to take further regulatory action with regard to this event as the company has responded positively.

Trawsfynydd

Decommissioning, waste retrieval and conditioning activities are progressing, covering both solid and liquid ILWs. Active commissioning trials on fuel element debris (FED) boxes 6 and 7 continue. Progress with recovering FED from the North FED vaults has been delayed. No progress has been made with recovering wet ILWs from the pond north void.

The construction of the ILW store is nearing completion with mechanical plant, such as the main overhead travelling cranes, installed. Civil engineering and preparation of buildings for Safestore continues, with the proposed installation of the reactor building capping roofs with HSE for assessment.

Deteriorating reactor buildings at Trawsfynydd have led to rainwater ingress. This water ingress causes the building structures to deteriorate, increases corrosion of the reactor pressure vessels, and the higher in-vessel humidity results in abnormal gaseous discharges. The site has been asked to ensure the ongoing viability of these buildings by implementing roof repairs to minimise water ingress. As a result of our interventions urgent roof work has started at Trawsfynydd.

On Thursday 9 September 2007 the site director stood the site down and spoke to over 500 staff and contractors to recognise the efforts made by individuals as Trawsfynydd passed a year without a lost-time accident (LTA), days away case rate (DACR) or total recordable incident rate (TRIR). This is a significant achievement for the site from the backdrop of where they were 18 months ago when the site recorded a number of LTA's in quick succession and suffered a maintenance schedule breach (rated INES Level 1).

Nuclear fuel cycle facilities – Sellafield Ltd

Sellafield mixed oxide plant (SMP) contamination event

On 10 January 2007 a contamination event occurred within SMP involving five workers. Biological sampling initiated by BNGSL has confirmed that the doses received by the workers were all less than the annual limit for intake.

In early June 2007 we met with MOX plant management to feed back the principal findings from our investigation into the event and to discuss the actions required to rectify the identified shortcomings. The main areas for improvement were associated with: an improved approach to plant training; improvements to safety culture; and revisions to management and procedural controls. The actions were put to Sellafield Ltd in writing and it responded by providing a programme of work to address them. The affected plant has now been decontaminated and is likely to return to normal operation in the near future.

Sellafield MOX plant (SMP) commissioning and operation

The changes necessary to manufacture different fuel assemblies for the second campaign went smoothly. This involved the permissioning of two Category B plant modification proposals for the changes in the assembly construction and handling area necessary to cope with the larger, longer and heavier fuel assemblies.

Operation of the plant under Stage 5 Active Commissioning only permits operation up to and including the completion of this second campaign of fuel assembly production. Discussions have therefore started on the regulation of the next phase of operation of SMP. We consider that there is a need to gain our permission to a further phase of active commissioning to allow a programme of improvements to be made to the plant to increase its production throughput and the management of the arisings of operational residues.

The current 'consent to operate' safety case submission now requires alignment with plant improvements; discussions have started on the updating of this submission as part of the further stage of commissioning referenced above.

Waste treatment complex (WTC) – supercompactor glovebox event

An event occurred on 24 October 2006 involving a major injury to a worker in the WTC, caused by inadequate control of emergency stop and isolation systems associated with the supercompactor glovebox. The licensee undertook a Board of Inquiry into the event, and we carried out an independent investigation, culminating in the issue of an Improvement Notice on 20 March 2007. The licensee's response includes developing a programme of work to improve compliance with Provision and Use of Work Equipment Regulations 1998, regulations 11, 15, 16 and 19, starting with an in-depth machinery-based risk assessment. The licensee has completed a number of improvements in the supercompactor glovebox, and has presented its proposals for a three-stage restart of WTC. These are currently being formalised in an overarching strategy paper.

Central waste handling facility (CWHF) contamination event

On 11 July 2007, during diamond core drilling work to remove an area of radiation from the floor of the CWHF, an incident involving two contractors occurred. We were informed of the potential for one of the contractors to have received a dose in excess of the statutory limit on 4 August 2007. On 20 August 2007, following some preliminary enquiries, we decided that an investigation into the incident was warranted. The investigation is being carried out in line with HSE guidance. Initial interviews with plutonium finishing and storage (PF&S) staff involved in the incident have been completed and we are now taking witness statements from a number of people interviewed.

A letter was sent to the PF&S Head of Manufacturing indicating that we did not wish any core drilling work to be carried out in the CWHF or the associated conversion plant (finishing line) until a way forward had been discussed with us. The letter also indicated that we wished to discuss Sellafield Ltd's proposed plans to recover the CWHF work area before such work was commenced. Further regulatory action is under consideration.

Thermal oxide reprocessing plant (THORP)

In June 2007 we issued a Licence Instrument agreeing to the limited use of evaporator C within highly active liquor evaporation and storage (HALES) for THORP liquors. This use covers liquors from the reprocessing of dissolved fuel, held within the three buffer tanks since the feed clarification cell event, and from the shearing and reprocessing of up to 33 te of irradiated fuel. Reprocessing of two of the buffer tanks commenced in July 2007 and was completed later that month. Fuel shearing also commenced in July 2007 and was completed in August 2007. Advanced gas-cooled reactor (AGR) fuel was selected for shearing and comprised mostly fuel with suspected cladding failure. The licensee hopes to commence the reprocessing of the sheared fuel, together with the contents of the third buffer tank, in early October 2007.

In late August 2007 the licensee applied to commence the active commissioning of the multi-element bottle (MEB) export facility. The export of MEBs will provide much needed buffer capacity for incoming AGR fuel in the receipt and storage ponds.

Strategy for longer-term management of oxide fuel

In September 2007 a meeting was held between the plant owners (NDA), the licensee (Sellafield Ltd), and regulators (NII, OCNS and the Environment Agency) to establish the terms of reference for a forum that will consider and advise on the management of spent oxide fuels, such as those from AGRs, that are on the site now and that may arrive in the future. The Forum, to be called the Oxide Operating Strategy Regulatory Forum (OOSRF), will take into account the national strategy for spent fuel being developed by NDA, and a key deliverable will be an acceptable oxide operating plan, analogous to the magnox operating programme. Terms of reference were agreed and the Forum is planning to meet regularly.

Fuel handling plant (FHP)

The cessation of decanning in the fuel handling plant earlier in the year led to the shortage of fuel skips and the position was reached in early June 2007 where Sellafield Ltd suspended flask traffic between the stations and the FHP. This resulted in fuel removed from operating reactors having to be stored at the station sites. Flask traffic was restored following the restart of decanning in July 2007.

Magnox reprocessing operations

Reprocessing operations restarted in July 2007 after rectification of the difficulties experienced with downstream plants (the highly active liquor evaporators, Magnox encapsulation plant).

During an inspection in June 2007 the licensee found that the pressure vessel of the only operational thermal denitration reactor for converting uranyl nitrate to powder had suffered deformation (believed to be caused by high temperature creep). This resulted in it having to be shut down. To allow reprocessing operations to restart in July 2007 existing limited uranyl nitrate buffer storage had to be used. If the reactor is not repaired to programme (scheduled for September/October 2007) there is a possibility that additional buffer storage using an existing tank will be required. We have discussed the issue of additional buffer storage with the licensee and indicated that we would only wish to see the tank used as a one-off short-term measure, and we are disappointed that the licensee has had to resort to this measure.

We continue to meet regularly with other principal stakeholders to discuss the key issues surrounding the reprocessing of fuel in accordance with the magnox operating programme.

An inter-governmental agreement between Sweden and the UK was signed around nine years ago for Sellafield to reprocess 4.8 te of uranium fuel from a research reactor that was shut down in 1970. The fuel has been identified in the magnox operating programme for a number of years. The licensee has indicated to us that it intends to import the fuel onto the Sellafield site in the near future.

Highly active liquor (HAL) stocks specification

The licensee continues to provide us with monthly reports summarising the quantities of highly active liquor (HAL) contained in the highly active storage tanks (HASTs). These figures, supported by our inspection activities, are used to judge whether the licensee continues to meet the HAL specification (Licence Instrument 343) issued in 2001. The specification provides a limit on the amount of HAL that can be stored at any time and promotes HAL stocks reduction. Satisfactory performance of waste vitrification plant (WVP), the extended outage at THORP and recent problems with the HALES evaporators have meant that HAL stocks are currently well below the levels required by the specification. Consequently we are content that the licensee has kept within the requirements of the specification.

HSE's 2006 biennial review of the HAL stocks specification recommends, among other things, tightening the specification to lock-in gains arising from the THORP outage. Work is now ongoing to implement the review recommendations, which will lead to the specification being reissued. In the meantime we will continue to regulate the HAL stocks according to the existing specification.

Highly active storage tanks (HASTs) integrity

HAST cooling components have suffered over the years from corrosion and a number of cooling coils have been declared failed. A failure causes a breakthrough of activity into the cooling water circuits which can lead to a radioactive release if not properly managed. HAST cooling coil failure rates and the location of recent failed coils has led to uncertainties over the ability of the newer HASTs to service the needs of the HAL stocks strategy. If the plant starts to deteriorate more quickly, then the ability of HALES to receive raffinates will be prejudiced (with knock-on consequences).

The licensee's present contingency plan includes a project to dose the cooling water circuits with nitrates as a way of stopping, or at least reducing the rate of, corrosion failures. At present we have a number of outstanding issues connected with nitrate dosing. One of the options to insure against these problems would be to build smaller, inherently safer replacement HASTs. For these to be effective on sensible timescales, work would need to start as soon as possible. We wish to see new HAST designs developed to a stage where their viability could be judged alongside other options under consideration. The licensee is in the process of evaluating the need for replacement HASTs as part of its response to the recommendations of our 2006 biennial review of the HAL stocks specification.

Highly active (HA) evaporator integrity

There are currently three evaporators within HALES (referred to as Evaporators A, B and C). They are used to evaporate highly active (HA) raffinate produced during reprocessing and to process effluent from the waste vitrification plant (WVP). Once concentrated through evaporation, the raffinate is called highly active liquor (HAL). HAL is stored in the HALES facility before feeding to WVP for vitrification, which immobilises the waste for long-term storage and eventual disposal. Evaporators A and B are currently shut down because of coil failures and are both subject to investigation and modification to enable them to return to service at the end of 2007 and in 2008 respectively. Evaporator C is operational and is processing THORP liquors from the feed clarification cell (FCC) event plus liquors from a small amount of shearing used to dilute the FCC liquors, and also magnox liquors and WVP effluents. At present the licensee has not provided a justification for the further use of Evaporator C to process additional THORP liquors.

We continue to engage the licensee on the provision of new evaporative capacity. Groundworks for Evaporator D are well advanced, and we anticipate

receiving the pre-construction safety case in October 2007. We are working closely with the licensee, the Environment Agency and NDA on opportunities to accelerate Evaporator D while ensuring that the safety of design and construction is not compromised. The licensee is responding to our prompting by also considering the need for further evaporative capacity (Evaporator E).

Waste vitrification plant (WVP)

All three lines were in outage at the start of April 2007, which lasted until early May. Since then, both Line 1 and Line 2 have performed well. Problems with the glass frit feed system on Line 3 affected HAL feed, reducing the number of containers produced in the quarter. There have been no significant effects on HAL stocks reduction.

WVP continues to experience difficulties with the processing of radioactive waste from the breakdown cells, after a period of an improved performance. These cells hold a significant amount of waste that originates largely from failed vitrification components removed during vitrification line rebuilds. If waste volumes accumulate to an extent that further rebuilds are not possible then it may become difficult to maintain progress with vitrification, which in turn could have consequences for HAL stocks reduction. We have expressed concern that the licensee does not appear to apply sufficient management focus to clearing the waste and could not demonstrate complete control of the waste because of the absence of a detailed waste inventory, matters which will be followed up by letter. However, we recognise the efforts that are being applied to clear radioactive waste from operational cells, and we note the operational constraints within WVP.

Residue export facility (REF)

This plant is required to send vitrified waste canisters to the licensee's reprocessing customers. REF is progressing reasonably well, although it is running slightly behind programme. Inactive commissioning is proceeding in stages. We continue to maintain regular contact on this strategically important project in advance of the start of active commissioning in 2007. Regulatory issues include the necessary interfaces with other facilities at Sellafield to ensure the safe and timely export overseas of containers of high-level waste (in accordance with government policy on waste substitution). Standards of housekeeping and health and safety on REF remain generally good, although efforts continue to be made by the licensee to learn from a number of minor conventional safety incidents and to improve safety awareness. A request for agreement to active commissioning is expected to be submitted in September 2007.

Plutonium finishing and storage (PF&S)

On 10 October 2005 we issued the licensee with a consent under Licence Condition 31(2) to restart feeds to the conditioning vessels of finishing line 5 at Sellafield. This consent was subject to 13 commitments from the licensee to address safety-related issues arising from HSE's assessment of its submission for restart of the plant. Currently, the only outstanding commitment is the provision of a permanent neutron monitoring system in the finishing line gloveboxes. While the design and installation of the permanent neutron monitoring system has been progressed, plant operation has been supported by interim arrangements based on manual surveys. Withdrawal from the interim system was originally rescheduled from May 2006 to April 2007, but this date has continued to slip as a result of resources and funding issues and is now expected by end 2007. We have raised issues about the delay and requested the licensee to undertake a comprehensive review of their current interim arrangements and identify any potential improvements that could be made to support continued operation in the absence of a permanent installed system. This review is expected shortly. We propose to discuss this topic at the next Magnox Regulatory Level 3 meeting in September 2007 and will consider if any further regulatory action is warranted.

Floc retrieval plant

The licensee submitted an application for consent to operate at the end of April 2007. However, following consideration of the information supporting their application and a joint inspection of the facility with the Environment Agency, we considered that further commissioning was appropriate. Although the active commissioning of the facility is mostly complete a number of operational aspects require revision following experience gained during commissioning. After further discussions a strategy has

now been established to form a basis for a further extension of the active commissioning phase of B241. Accordingly, the licensee withdrew their application for consent and submitted a request for an agreement to a further extension of active commissioning phase supported by a committed and resourced programme of work and justification for continued safe operation. In response, after due consideration, we issued a Licence Instrument agreeing to the extension during July 2007.

However, there have been further operational problems and the licensee has discovered contamination in an inactive water supply to the floc pump. As a result of this there has been no operation of the B241 facility since June 2007 while the mechanism of the contamination has been investigated and any necessary modifications made to the affected system. Floc transfers are not expected to recommence until November 2007.

Encapsulated product stores (EPS)

Site preparation work for EPS3 has now been completed. Inactive commissioning is programmed for completion early 2011, followed by active commissioning. The predicted earliest date for EPS2 to be full is mid-2011, so the programmes are very tight.

Repeat emergency exercise

A repeat Level 1 nuclear exercise for the Sellafield site was carried out during June 2007. This arose from shortfalls, identified from a demonstration exercise in November 2006, in the licensee's arrangements for managing the evacuation of staff from a building suffering a criticality incident.

Although the licensee was able to demonstrate acceptable improvement in the control of evacuees from a criticality event, further issues did arise that need to be addressed. These centred on command and control issues in the site Emergency Control Centre and the Incident Control Centre. The exercise, scheduled to be demonstrated in November 2007, is being designed to challenge this area to allow the opportunity for demonstration of improvements that the licensee have made.

Strategic interventions

We are pursuing a number of strategic interventions with the aim of securing long-term site-wide safety improvements by applying leverage at the highest level within Sellafield Ltd. These interventions are focused mainly at across-site issues where evidence has been accumulated by inspection effort and we consider that longer-term improvement plans are needed. These interventions are aimed at securing improvements in such areas as: safety case quality; corporate capability; safety governance; safety culture; operational experience/feedback; strategic decision making; hazard reduction; and asset care, along with an increased focus on high-level waste (HLW).

One area which is progressing well is the Sellafield Corporate Intervention Strategy (SCIS). This is a suite of interventions in which we are seeking to work with the licensee to help it improve its management for safety and safety culture. During the period, we interviewed several of the licensee's directors to discuss their approach to leadership and to fostering a positive safety culture. These were constructive and useful, provided reassurance concerning the directors' commitment to nuclear safety, and identified some areas for further consideration. Discussions also took place on the progress that the licensee is making in providing an organisational baseline that shows it has the structures, resources and competencies to manage safety. This area requires development by the licensee with further discussions taking place in October 2007. A meeting was held to discuss the company's corporate approach to identifying and delivering the competencies and resources that it needs in the future. These included issues such as competence standards, the funding of training in areas such as leadership and management and measures to secure the continued availability of suitable resource. Meetings were held on key performance indicators and it is planned that a set will be agreed in the near future.

Management of ageing plant: Recent events and inspections at Sellafield have called into question the licensee's management of ageing plant. In response we have has developed an intervention for 2007/08 to gather data on the current status of facilities and the adequacy of improvement strategies. This work is being carried out by our site inspectors as part of their planned inspections for compliance

with Licence Condition 28 (examination, inspection, maintenance and testing). To date, responses received from site inspectors indicate that the need for good standards of management of ageing plant is recognised but that the rate of progress to raise standards is too slow.

Stakeholder engagement

In the last quarter, we have undertaken a number of initiatives to improve communication with stakeholders with interest in the Sellafield site.

US Nuclear Regulatory Commission (NRC) visit: Presentations were given to US NRC regulators and a joint visit to Sellafield was carried out 10–12 September 2007, providing a better understanding of reprocessing technology.

Visit of new HSC Commissioner, Robin Dahlberg: The new HSC commissioner held discussions with our staff and visited Sellafield on 24/25 July 2007.

Benchmarking against Licence Condition 23 at Sellafield

Benchmarking inspections began with an inspection at Hartlepool nuclear power station in June 2007. The inspection was carried out against a series of expectations derived from relevant IAEA guidance, supplemented by a specifically developed question set. The benchmark question set provides a tool for systematically gathering information across various nuclear installations, from which revised inspection guidance will eventually be developed.

The inspection at Hartlepool was very informative and a report will be sent to British Energy in the near future.

At the end of September 2007 a benchmarking inspection will take place at Sellafield, covering several high-hazard plants.

Legacy ponds and silos

Ensuring the safe retrieval and passive storage of sludge and fuel from these plants remains a high priority. Overall, good progress continues to be made against the agreed programmes of plant safety enhancements to meet modern standards as far as reasonably practicable and preparations for waste retrieval to meet relevant specifications. While recognising and supporting the importance of waste retrieval activities we continue to challenge the licensee on the need to maintain an appropriate high focus on day-to-day nuclear safety. Within this context our plant inspections, and Sellafield reported incidents, have identified the need for further improvements in a number of areas, and we continue to monitor progress against resulting improvement programmes. We also continue to press for the liquor activity reduction programme for the B38 original and first extension buildings to be brought forward.

Progress is also being made on the design and construction of supporting new waste processing and storage plants, however, the availability of these plants in time to support the waste retrieval programmes remains challenging. We continue to press for improvements.

On 4 August 2007 a small spike of hydrogen was released from within Compartment 7 (C7) of building B38 following the shutdown of a cooler associated with this silo. The first extension nitrogen inerting system was deployed to keep hydrogen levels within operational limits. The performance of the inerting was not as efficient as expected and during subsequent investigations it was found that the C7 ventilation inlet damper was in the wrong position. We are monitoring Sellafield's investigation into the cause of this incident, both the hydrogen spike and the plant configuration issue, before determining whether to take further action.

On 17 September 2007, during routine inspection of the condition of the building B30 D Bay down dropper pipework, a through hole in the pipe was identified. There was no escape of pond water, which confirmed that the pipe was isolated by unconfirmed means such as shut valves or compacted sludge. The nuclear safety issue around the uncertainty and poor condition of this pipework is well known and significant emphasis is placed on the adequacy of contingency measures to deal with any leakage of pond water. We are currently discussing the implications of this finding with Sellafield.

On 19 September 2007 the power supplies to building B38 3rd Extension were lost. This impacted on the availability of the ventilation system and instruments monitoring the 3rd Extension

silos. A building emergency was declared to facilitate a co-ordinated response. Standby battery supplies were deployed until the normal power supplies were restored and the plant returned to normal, which was within three hours of the start of the incident. We are monitoring Sellafield's investigation into the cause of this incident before deciding on any appropriate action.

Other fuel cycle plants

Low-level waste repository (LLWR)

Following presentation of NuSAC paper 2007 P13 *Guidance on the bulk storage of radioactive waste on licensed sites* at the last meeting, ND has received comments from NuSAC. These have been discussed with Marion Hill, as the collator, and we are drawing together our plan for engagement and further discussion with our stakeholders in line with the proposals put forward in the paper.

Springfields Fuels Ltd

The licensee continues to develop the programme to process the legacy residues currently held on site. The licensee will use some of the magnox plants to process some of these legacy residues. These plants were originally due to be decommissioned in the next few years. We will ensure that the licensee demonstrates that the facilities used to process the residues are fit for purpose. Further improvements have been made across the site regarding the storage of waste and residues.

We remain satisfied with the recent safety performance on the site.

URENCO – Capenhurst

Enrichment equipment is continuing to be installed in the latest extension to one of the site enrichment plants and a large new raft storage area has been completed. The design work for the next major project on the site, the tails management facility, is also progressing. This facility is composed of a suite of plants, which will deconvert the URENCO stock of 'hex tails' materials into a more stable oxide form.

Recent inspections of the licensee have raised no significant issues.

Nuclear research facilities

UKAEA general – restructuring project

We have committed significant assessment effort on UKAEA's submissions to support the restructuring and future relicensing of the UKAEA Dounreay, Windscale and Harwell/Winfrith sites. To date, one licence instrument to begin the process of transferring UKAEA Windscale to Sellafield Limited has been issued. This assessment work has had an impact on the scale of compliance inspection across the sites.

UKAEA – Windscale

Discussions have been held on the granting of a licence for the Windscale site to Sellafield Ltd to replace that held by UKAEA. (We cannot legally transfer a licence but revoke and grant a new one.) A new licence for the Windscale site is planned for April 2008. Before the new licence is granted it is intended that there will be a period of approximately six months shadow working of the new management structures and procedures. UKAEA has now submitted the management of change (MoC) proposals covering the setting up of the shadow working arrangements, which we are currently reviewing. The monitoring and review of the shadow working arrangements will form a significant part of our inspection programme during the next few months.

We are continuing our oversight of the progress being made by UKAEA on the programme of improvements to the B13 facility. Video footage of the CCTV investigations down the fuel channels in the fire-affected zone in Pile 1 has been viewed and discussed with the Piles project team. UKAEA has reported that the Pile 1 fuel and isotope removal prototype equipment has now been shipped from the USA and should be installed in the off-site test facility by September/October 2007. Further updates on the Windscale AGR/Western Area decommissioning project work have been obtained from the project team. Discussions have also been held with UKAEA relating to the proposed programme to decommission the B14 facility.

UKAEA still continues to develop its thinking, in conjunction with Nexia, on how to improve the management of B13

and their operational interactions. Improvements are key to the effective delivery of the engineering improvement plan and UKAEA is still investigating the required improvements to the ventilation system.

UKAEA – Harwell and Winfrith

The NDA funding cuts have significantly altered the decommissioning plans for both Harwell and Winfrith, with the latter now expected to be placed into long-term care and maintenance for a period of at least ten years. We have sought both clarification and explanation from UKAEA for the changes and deferrals.

GE Healthcare Ltd

At the Cardiff site NII carried out an inspection of waste facilities and waste records jointly with the Environment Agency.

The two small licensed sites at Harwell have been brought under the line management of the Amersham site. We received and assessed an associated organisational change submission.

GE Healthcare Ltd delivered an improved safety case for Cells 2 and 3 at Harwell, thus complying with our required instruction to submit such a case (in compliance with Licence Condition 23) or cease operation.

Imperial College

We attended a further meeting at OCNS with Imperial College and NDA. Until it becomes clear, probably in October 2007, whether NDA will obtain funds to decommission the reactor, the College has suspended its project for planning defuelling and decommissioning.

The site inspector visited the main Kensington campus to meet the Director of Risk Management, who has taken over from the retiring College Secretary as the link between the reactor centre and the College management board. We received and assessed an associated organisational change submission.

We issued our Pre Application Opinion as to the content of the environmental statement for the Imperial College Consort Reactor under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations on 7 June 2007. The opinion was copied to all the consultees of the public consultation for information and is available on the nuclear pages of the HSE website: **www.hse.gov.uk/nuclear/consult.htm**.

Sellafield Ltd – Capenhurst

The licensee's ongoing decommissioning projects continue to deliver tangible reductions in the site's nuclear hazards. The decommissioning demolition work has restarted, following the delay due to the discovery of a bat colony. Funding constraints are now delaying the timing of the despatch (for recycling at Springfields Fuels Ltd) of the recovered enriched uranium residues, which arose from the recent processing of redundant plant equipment.

In contrast to the licensee disposing of a record quantity of solid low-level and very low-level radioactive waste in the 2006/07 financial year, and as a result of the lack of available funding, no solid low-level waste is planned to be disposed of to the LLWR in 2007/08. Very low-level solid radioactive waste disposals have recently been reinstated.

Our inspection is currently directed towards assessment of the proposed site organisational changes, to ensure that the size and shape of the site organisation remains licensable, as decommissioning projects are completed.

The site safety representatives continue to make an exemplary contribution to the site safety culture.

UKAEA – Dounreay

Dounreay cementation plant recovery

As reported in the last report, recovery work following the materials testing reactor raffinate spill in 2005 is progressing safely and in line with the dose budget.

Enforcement action

Following a plutonium intake at a facility on the Dounreay site we submitted a report to the Procurator Fiscal. The case against UKAEA for alleged breaches of Section 2 of the Health and Safety at Work etc Act 1974 was heard at Wick Sheriff's Court on 12 July 2007. UKAEA entered a guilty plea and were fined £15 000.

Safety cases

The Dounreay Nuclear Safety Committee has reviewed the arrangements for safety case production and the use of extensions. The Committee discussed its working group findings during the meeting held on 23 May 2007. The reviews concluded that there were issues regarding the production of safety cases and their visibility to management and actions have been taken to address those issues. We will continue to monitor the situation through our inspection programme.

Dounreay fast reactor (DFR) and the prototype fast reactor (PFR)

The NaK disposal plant at DFR has successfully completed the inactive commissioning phase. We are now assessing the Pre-active Commissioning Safety Report and undertaking plant inspections with a view to coming to a decision on agreeing to the active commissioning phase.

We have has been regulating the project for removing and treating the breeder elements from the DFR reactor core. A Licence Instrument was issued in August 2007, giving our agreement to the remaining construction, installation and setting to work activities for the project.

Return of UKAEA fuel from France

Natural uranium oxide fuel that had been slightly irradiated in the Zero Energy Breeder Reactor (ZEBRA) at Winfrith has been transferred to Dounreay for storage. Before transfer to Dounreay the fuel had been on loan to France. UKAEA did not seek NII agreement before receiving this fuel under Dounreay Licence Instrument 47, issued 12 December 1997, and which requires UKAEA to gain our agreement before any receipts of irradiated fuel at Dounreay.

Taking account of the low hazard presented by this particular material, and in line with HSE's Enforcement Management Model, we have written to UKAEA to reinforce the position that our formal agreement will be required before any further irradiated nuclear fuel is transferred to the site.

Defence nuclear sites

Defence facility regulation

Across the defence nuclear sector we are continuing with our planned intervention activities and in general we are satisfied that safety performance at the defence facilities inspected by us, namely Aldermaston and Burghfield (Atomic Weapons Establishments (AWE)), Devonport (Devonport Royal Dockyard Ltd (DRDL)), HM Naval Base Devonport, Barrow (BAE Systems Marine (BAESM)), Derby (Rolls Royce Marine Power Operations Ltd (RRMPOL)), HM Naval Base Clyde, Rosyth (Rosyth Royal Dockyard Ltd (RRDL)) and the Vulcan Naval Reactor Test Establishment at Dounreay, continues to be satisfactory.

We continue to pursue intervention strategies that are based around project and programme working across both the weapons and propulsion sectors of the defence nuclear industry. The strategies and plans reflect the joint regulatory approach adopted by NII and MoD's Defence Nuclear Safety Regulator (DNSR). The partnering approach on the whole appears to be functioning well, ensuring efficient and effective use of resources between the two regulatory bodies.

A major intervention being pursued within the defence sector is the 'right-first-time safety case' project where we are actively seeking to influence the licensees to review their arrangements for safety case production to ensure that the process contains inherent features of a high reliability due process. This is a priority, targeted intervention intended to lead to the delivery of good quality safety submissions that are right first time, presenting a robust demonstration of safety that requires little or no iteration with the regulator.

MoD general – UK Staged Improvement Programme (SIP)

We have continued to engage with the MoD UK-SIP and the through life management plans for the MoD-related sites, with the purpose of informing investment decisions across the enterprise that is the MoD Naval Nuclear Propulsion Programme. Early regulatory engagement with the process remains a high priority to ensure that appropriate attention is given to nuclear

safety-related improvement projects with subsequent delivery, and risk reduction to a properly prioritised operational programme. It is expected that the outcomes of the UK SIP will be discussed at senior levels during the last quarter of this year.

Devonport

The acquisition of Devonport Management Limited (DML) by Babcock International Group PLC is now complete. We have monitored the developments since the acquisition and have engaged with relevant stakeholders and senior management to ensure potential organisational changes are properly conceived and implemented as required by the site licence. Currently the licensee (DRDL) and its corporate and operational leadership and management structures remain unchanged and we are confident that nuclear safety-related activities taking place at the site remain secure through the licensee's existing arrangements.

We continue to monitor MoD's progress towards implementation of the strategy for dealing with laid-up submarines at Devonport before the start of decommissioning via the future nuclear facilities (FNF) project. Little has changed since the last report: three fuelled submarines remain stored at Devonport awaiting the defuel, de-equip and lay-up preparations (DDLP) process, which cannot commence until improvements to the existing dockyard facilities are completed; funding for the FNF project is secure and the detailed design and analysis work is proceeding; we continue to press for an improvement to the timescale of 2012 for completion of the new facilities. We remain satisfied that, subject to satisfactory monitoring arrangements, the redundant submarines can be safely stored in a fuelled state until the new facilities are brought into service.

We advised in our report for the previous period that following our investigation into an event within the low-level refuelling facility and the issue of an Improvement Notice, that the licensee has recognised the learning opportunity and put in place a site-wide improvement plan to address the issues raised during our investigation. We have monitored the licensee's progress against this programme and are confident that it will deliver improvements to safety behaviours on the Devonport site.

Rosyth

The work to decommission the majority of the facilities used for nuclear activities (RD83 Project) continues to progress safely and to programme. To date 99.7% by weight of material from decommissioning has been recycled. Dismantling of the large hammer head refuelling crane has now commenced and is progressing well. As part of the site through life management plan, preferred routes for removing waste from the site have been established with our guidance and encouragement. A 'best practicable environmental option' process is being undertaken to confirm the disposal route for resin wastes as an integrated approach to resin waste across the defence nuclear sites and facilities. The overall project objective remains to establish conditions such that the site can be de-licensed.

Barrow

The milestones of core load in Astute Boat 1 and active commissioning (power range testing) have been delayed to November 2007 and March 2008 respectively. We have amended our planned intervention activity accordingly to ensure that nuclear safety receives the appropriate level of attention. We continue to work in partnership with the licensee to support its programmes for continuous improvement of safety performance and are encouraging the development of its arrangements for learning from experience and the campaign to embed a positive safety culture within its workforce.

In July 2007, we observed an exercise based on a submarine nuclear reactor accident, which provided the annual Level 1 demonstration of the on-site emergency arrangements and the Level 2 test of the off-site emergency plan required by the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR 2001). We judged the exercise a satisfactory demonstration of the off-site plan, but aspects of the on-site arrangements were not demonstrated adequately. Consequently, we require the licensee to undertake a further Level 1 exercise to demonstrate the adequacy of its on-site arrangements before the start of active commissioning.

Following a radiography incident on board *Astute*, where two people who were unconnected with radiography remained

within the designated controlled area, we served an Improvement Notice on BAE Systems that requires the company to introduce safe systems of work that ensure all reasonably practicable measures are taken to prevent similar events occurring in the future. The site inspector is monitoring the company's response to the notice to ensure timely compliance with the schedule of requirements.

Derby

We have completed the assessment of the licensee's periodic safety review (PSR) submission for the Neptune Test Reactor. We have concluded that normal operation of the Neptune Reactor and associated facilities can continue while a programme of work to implement a number of improvements is progressed.

Portland nuclear submarine operational berth

We have witnessed the testing of the off-site emergency arrangements, put in place by Dorset County Council for the operational berth at Portland Port in accordance with REPPIR 2001, through a number of targeted emergency exercises. We will shortly make a statement before the planned used of a nuclear powered submarine berth later this year.

AWE (Atomic Weapons Establishment)

In accordance with our Integrated Intervention Strategy (IIS), we continue to have early engagement with AWE on significant projects to ensure our regulatory expectations are given due consideration early in the decision-making and optioneering process, thereby minimising future potential regulatory risk. A formal hierarchical framework of regulator/licensee meetings has now been established that involves other regulators (DNSR and the Environment Agency), which is working well, where important milestones and regulatory hold points are discussed.

As part of our regulatory activities we are continuing to assess periodic reviews of safety (PRS) for three particular facilities at AWE. During this work various issues were identified, which highlighted some consistent themes across the three submissions regarding their quality and content. These have been raised with AWE, which has agreed to take them forward during an internal review of its PRS process.

Parts of the AWE site suffered from flooding in July 2007, particularly the Burghfield site, which has delayed remediation work identified by the PRS and affected the emergency arrangements infrastructure, which is now being supplemented by temporary arrangements. We believe that AWE has managed the response to the flooding well and taken appropriate actions during the recovery. AWE is undertaking a full investigation as part of its review, learn and improve process to determine why the event occurred and is looking at ways to minimise the risk of a repeat event. We are continuing to work with AWE and MoD's Nuclear Weapon Regulator to ensure that recovery and reinstatement of operations are undertaken in an appropriate and safe manner. AWE has been advised that it should complete recovery operations, including satisfying us that the emergency arrangements meet the standards laid out in the site emergency plan, before contemplating attempting to resume operational activities.

An article in *New Scientist* referred to the periodic review of safety undertaken at AWE Burghfield, in which AWE themselves identified a number of 'shortfalls' against modern standards. We believe that this set of shortfalls identified by AWE as a result of the PRS is comprehensive. While many of these are minor, others have a greater safety significance and so should be addressed before those with low safety significance. To ensure that sufficient priority is attached to addressing each of the shortfalls, we are currently permissioning operations at AWE Burghfield in line with our regulatory powers. In the event that remediation of a particular shortfall is overdue, we have asked AWE to provide a demonstration that the risks from all activities remain ALARP. We are satisfied that adequate progress is being made at AWE Burghfield to address the findings of the PRS.

We have issued two Licence Instruments giving agreement to the limited continued use of the current process facilities for weapons assembly/disassembly in accordance with our permissioning approach to secure efficient delivery of identified improvements.

International work

International committees

The experience and expertise of our nuclear inspectors continues to be required by the international nuclear community and organisations: Kulvinder MacDonald has recently taken over as chair of the Working Group on Operating Experience under the OECD's Committee of Nuclear Regulatory Authorities (CRNA); Dr Weightman has recently taken over as Chair of the CNRA and been asked to sit on the International Nuclear Safety Advisory Group.

Western Nuclear Regulators Association (WENRA)

At the last NuSAC meeting it was reported that the WENRA Reactor Harmonisation Working Group (RHWG) had completed its work in developing a set of reference levels for harmonisation for existing reactors across Europe. A member of ND had chaired the group for the last three years and the chair had recently been handed over to the French regulator.

The levels themselves had been signed up to by the main WENRA group and placed on the WENRA website. Some work is continuing in reviewing harmonisation of integrated management systems in line with the work in this area within IAEA.

WENRA had asked RHWG to review its mandate and a revised mandate is being submitted to the main WENRA meeting in November. This includes proposals for looking at harmonisation in the area of new reactors. The main WENRA meeting in November 2007 will also review countries' progress with their action plans for harmonisation.

International Atomic Energy Agency (IAEA) International Regulatory Review Service (IRRS)

Background

As reported in previous reports to NuSAC, the International Atomic Energy Agency (IAEA) was invited to conduct a modular Integrated Regulatory Review Service (IRRS) review in March 2006, in part to assess how HSE intends to go about the appraisal of reactor designs. The final report of the IAEA mission, together with HSE/ND's initial response, is on the HSE website.

Update on ND actions

The actions identified from the IRRS report are being progressed by existing ND working groups. To reinvigorate the work a contract was placed for an external contractor to monitor the progress achieved post-IRRS. The preliminary results of this review have noted variable progress but that all of the issues associated with potential new build are either completed or being delivered.

Other IRRS missions

ND Management Board members have supported IAEA IRRS missions to other countries. Forthcoming missions to Spain and Pakistan in 2008 will also be supported. In addition, Dr Weightman has been invited to lead the mission to Germany in 2008.

Convention on Nuclear Safety

The UK report to the three-yearly Convention on Nuclear Safety (CNS) is produced by HSE/ND on behalf of the Department for Business, Enterprise and Regulatory Reform (DBERR), the lead government department. The next review meeting of the parties is in April 2008. Prior to that, the UK report was submitted ahead of the 28 September 2007 deadline. An ND project team, supported by an external contractor and inputs from government departments, agencies, regulators and licensees, will respond to questions arising from the report. Dr Weightman will lead the UK team at the review meeting next year.

Freedom of Information Act 2000 (FOI)

The Freedom of Information Act 2000 came into force on 1 January 2005, and placed a duty on public authorities to provide information on their activities to requesters. ND has received 165 requests for information under the provisions of FOI/EIR so far 162 of which have been satisfactorily closed. Eleven appeals have taken place, with the original decisions to withhold upheld. There are currently two appeals on active cases. There are currently no appeals for ND registered with the Information Commissioner. ND is having to deal with an increasing number of complex requests, this has meant that on occasion the deadlines have had to be extended to enable the public interest test to be undertaken. Details of the information that has been released under the Freedom of Information Act 2000/

Environmental Information Regulations 2004 can be found at:
www.hse.gov.uk/foi/latest.htm

Information on the work of ND can be found at:
www.hse.gov.uk/nuclear/index.htm

Freedom of Information requests relating to the work of HSE's Nuclear Directorate should be sent to:

Michael Jennions
Building 4N.1
Redgrave Court
Merton Road
L20 7HS

or via e-mail to:
NDenquiries@hse.gsi.gov.uk

Further information

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Single copies of HSE's Quarterly statement of nuclear incidents at nuclear installations can be obtained free from the NII Information Centre, HSE, Building 4S.G, Room 011, Redgrave Court, Merton Road, Bootle, Merseyside L20 7HS, Tel: 0151 951 4103.

This document is available web only at:
www.hse.gov.uk/nuclear/newsletters.htm

Your views

The Editor welcomes your views about the newsletter or the work of ND. 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. Please send any comments you may have to Paul Jones, Building 4N.G Redgrave Court, Bootle, Merseyside L20 7HS or e-mail: **NDenquiries@hse.gsi.gov.uk**