HSE

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General issues

Overview

As in the last period, the previous high level of activity has continued. There are ongoing challenges from ageing plant, both in the nuclear power plant and nuclear chemical plant sectors. Our resourcing pressures remain, so our intensive recruitment campaign is still running.

Our initial assessment of the four designs for new plant has been completed and we published around 50 reports at the end of Step 2 of the Generic Design Assessment.

Governance of strategic projects

The project support office, which provides the governance function for Nuclear Directorate's (ND's) strategic projects, has been established and is now providing the management board with regular overviews of progress. While providing information on all of the projects it highlights those worthy of more rigorous scrutiny by the board. Such issues have been improvements to leadership and management, the need to progress procurement of outsourced technical support and preparation for the return visit of the International Atomic Energy Agency's (IAEA's) Integrated Regulatory Review Service (IRRS) team.

ND's strategic approach to leadership and management for safety

A project team has been formed to develop a strategy for regulatory interventions with licensees on leadership, management for safety and safety culture. The team is considering a range of options, taking into account previous ND activities and regulatory experience elsewhere. Consultation sessions have taken place with small groups of inspectors in ND. Also, a pilot workshop has been held on raising awareness of the leadership and cultural lessons from major events worldwide (eg Davis Besse, Texas City, Columbia).

Benchmarking against Licence Condition 23 (LC23)

The benchmarking inspections were completed and licensees' comments on our findings have been received and taken into account. Findings from the inspections will inform new assessment and inspection guidance that is in preparation. Consultants are helping us with this work, and on proposals to successfully close out the project with licensees.

Dounreay

A new licence was granted to the standalone site licensee company, Dounreay Site Restoration Limited (DSRL), in respect of the Dounreay site. The licence came into force on 1 April 2008.

Site visits

HM Chief Inspector for Nuclear Installations (HMCI) has continued with his site visits programme. Over the period covered by this report Dr Weightman visited Trawsfynydd in June 2008.

Nuclear Decommissioning Authority (NDA)

We are reviewing our interactions with NDA and developing a more proactive approach. This takes account of NDA's level of responsibilities as a dutyholder on its sites. Following funding shortfalls, discussions with NDA and licensees have continued to ensure that priorities take due account of safety.

NDA has recognised the need to develop improved strategies for decommissioning and radioactive waste management.

Communication and stakeholder engagement

HSE organised 'Leading from the top, avoiding major incidents' on 29 April 2008. The conference brought together some 250 senior executives and leaders from across the major hazard sector (mainly dutyholders and regulators) to share experiences about process safety leadership. Key points that emerged from the conference were:

- process safety cannot be managed from the boardrooms: senior managers need to 'walk the talk' and listen to their front-line staff;
- we cannot assume that everyone understands what process safety is and why it is so important in managing the major hazards business;
- industry needs to create a CEOs' forum to share good practice and knowledge transfer;
- a robust, real, but practicable peer review process is highly desirable; and
- meaningful key performance indicators are really important in managing process safety.

Further information is available under the 'Leadership' pages of the HSE website.

The Regulatory Nuclear Interface Protocol (RNIP) was signed at the 'Leading from the top, avoiding major incidents' conference by 14 top managers from nuclear licensees/authorisees and their regulators. It is intended to facilitate more effective, efficient and strategic ways of working (see NuSAC paper NuSAC(2008)P11 *Update on the Regulatory Nuclear Interface Protocol* www.hse.gov.uk/aboutus/meetings/iacs/nusac/030708/p11rnipupdate.pdf) to ensure continuous improvement in nuclear safety performance. This followed seven months' development of the arrangements by a working group made up of HSE, the Defence Nuclear Safety Regulator (DNSR) and representatives of the Nuclear Safety Directors' Forum. A short DVD was recorded featuring the senior management as they took part in signing up to the protocol, allowing them to illustrate the benefits they see arising from it. The DVD is part of a package of materials now available to participating organisations for use in rolling out these new arrangements. Initial feedback will be taken at the Safety Directors' Forum/DNSR/HSE liaison meeting in October.

The Organisation for Economic Co-operation and Development's Committee on Nuclear Regulatory Activities (CNRA) has a Working Group on Public Communications. This group's annual meeting was held in Paris (31 March–2 April). Four topics were prioritised as a programme of work for 2008–2011, with topic leads and small teams identified:

- information and the local public (ASN (France) lead);

- surveying public perceptions (HSE (UK) lead);
- transparency in Nuclear Regulatory Organisations activity (HSE (UK) lead); and
- crisis communication (CSN (Spain) lead).

This programme is being proposed to CNRA in June 2008. In addition, maintaining a network on events of media interest was recognised as a continuous activity and other topics of work were identified as requiring further discussion.

The sixth edition of the nuclear e-Bulletin was issued in May 2008. Just over 2500 people have registered for this service in its first year of operation.

There were 13 freedom of information (FOI) requests, three items of correspondence from MPs and 45 general correspondence requests during the period covered by this report.

National Nuclear Laboratory (NNL)

Nexia Solutions Ltd was formed in April 2005 from the former BNFL Nuclear Sciences and Technology Services Division. Nexia occupies facilities on the nuclear licensed sites at Sellafield, Windscale and Springfields as a tenant of the Nuclear Decommissioning Authority. It operates in these installations under the oversight of the nuclear site licence holders and provides technical support and research services to the nuclear industry.

In the autumn of 2006 the Department for Business, Enterprise and Regulatory Reform (BERR) announced its intention to create a National Nuclear Laboratory (NNL) based on Nexia's personnel and the British Technology Centre at Sellafield. We understand that key proposals include opening up access to NNL facilities for other bodies, such as the Dalton Institute, and procuring a management contractor for NNL via competition.

HSE and the Environment Agency have requested an early meeting with BERR to seek clarification on a number of points which could have regulatory implications, including the detailed arrangements for:

- transferring personnel from Nexia to the site licensees to manage NNL's facilities. These organisational and resource changes may need to be considered against LC36 requirements;
- leasing facilities to NNL and providing access for other bodies. These arrangements are likely to be subject to permissioning via LC3; and
- ensuring continuing compliance with the requirements of the nuclear site licence conditions and Radioactive Substances Act (RSA) authorisations. For example, we will need to be assured that arrangements for opening the facilities up to other bodies do not compromise compliance with LC12 (duly authorised and other suitably qualified and experienced persons).

Nuclear research

The 2008/09 nuclear research programme was approved by the HSE Board at its 28 May 2008 meeting.

The programme for 2008/09 covers two main parts: operating civil power reactors; and nuclear plant decommissioning and radioactive waste management.

The civil power reactors include the two remaining magnox plants, the advanced gas-cooled reactors (AGRs) and the pressurised water reactor (PWR), Sizewell B. With one magnox plant ceasing operation this year and the remaining one planned for closure in 2010, we have agreed that no new magnox-related safety issues will be identified and no new research is expected. The technology of the AGRs has reached a high level of maturity and in certain technical areas the main purpose of the research is to maintain essential capability. However, with maturity some parts of the reactor structure and many metallic components have aged and have given rise to significant plant safety issues. This is reflected in the high level of research expenditure British Energy is proposing in areas such as plant chemistry, graphite core and the aging of steel components. Our research focuses on the development of new water chemists that are in short supply and funding participation in international collaborative projects on plant modelling.

The second part of the 2008/09 programme covers all nuclear sites where plant is being decommissioned and radioactive waste

is treated, managed and stored, although the main focus of the programme is on the Magnox, Sellafield and Dounreay sites. These sites are owned by NDA on behalf of the Government and it provides the funding to the site licensee companies (SLCs). ND identifies key areas and topics for research through licensee-focused strategies. The SLCs then identify the safety research required and submit it along with their own operational research needs in their technology plans for the NDA to fund. Through our representation on the NDA Research Board, we are able to gain early indications of research to be funded by NDA. For 2008/09 the programmes of safety research covering a wide range of topics proposed by the SLCs have been assessed as adequate by us but await confirmation by NDA that they will be funded.

In its report to the HSE Board meeting of 28 May 2008, Review Group 6 (Research) (RG 6) recognised the substantial effort put in by ND and its success in improving the operation of the programme and reported that the shortcomings in implementing human factors research are receiving more attention, including focused visits of licensees by human factors experts within HSE. The RG 6 report also commends the efforts of the programme to rebuild nuclear capability. (Paper HSE/08/09 *HSE Co-ordinated Programme of Nuclear Safety Research – Evaluation Report for 2006/07* www.hse.gov.uk/aboutus/meetings/hseboard/2008/280508/b09.pdf.)

Staffing

HSE currently has a large recruitment campaign underway aimed initially at increasing the number of nuclear inspectors by around 20% (the maximum we can assimilate over a relatively short period) this calendar year. From the first recruitment campaign in December 2007 nine successful candidates have been recruited. One has started work and we awaiting security clearance and start dates for the remainder. A further campaign was launched in 2008 which has resulted in around 34 candidates being invited for interview. Such levels of recruitment will have to continue in future years, given the age profile of the Nuclear Installations Inspectorate and the forward work programme.

Operational issues

Operating power reactors

Dungeness B

Dungeness B continues to experience problems with the fuel route. Further defects have been discovered in welds, which potentially affect all fuel plug units (FPUs). This has resulted in Dungeness B imposing an embargo on all movements of irradiated fuel. Reactor 21 shutdown at the end of March 2008 for refuelling and has remained shut down since due to the embargo on moving FPUs. Currently there is no forecast for this problem to be resolved. Reactor 22 operated throughout the period and is due to shut down for its statutory outage in June 2008.

No licence instruments were 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 were postponed due to the continuing technical and contractual problems being encountered on the projects.

There were no enforcement notices issued during the period, neither were there any significant events at the site.

Dungeness B provided an adequate demonstration of its emergency arrangements made under LC11 during the annual Level 1 demonstration emergency exercise on 14 May 2008.

Hartlepool

Both reactors continue to be shut down following the discovery of degraded pre-stressing wire windings on a number of boiler closure units (BCUs) as described in the previous report.

An International Nuclear Event Scale (INES) 1 event was reported on 16 April 2008 for both Hartlepool and Heysham 1 when a potential shortfall in the Turbine Disintegration Safety Case was revealed. The shortfall is associated with the magnitude of the potential lubricating oil fire which could be initiated by a turbine failure, which previously only considered the oil inventory of a single turbine. With all four reactors currently shut down following

the BCU issue, the safety case shortfall is not significant at present, but the return to service of reactors at both sites may be affected.

A BCU recovery project has been initiated and the subject is receiving close scrutiny by us with Category 1 safety cases required before the return to service of either reactor. Specific regulatory holds are in place for the restart of both reactors and for relevant stage submissions.

Licence Instrument 524 was issued during the period, giving agreement to a paper of principle for the overall strategy for implementation of plant modifications in support of the BCU safety case. Licence Instrument 525 was issued granting approval to a change to the operating rules for Hartlepool.

Licence Instrument 521 was issued during the period giving agreement to a modification to install new temperature monitoring units in the reactor safety circuits. Licence Instrument 523 was issued giving agreement to a modification to install an automatic quadrant feed trip for use in major boiler tube leakage faults.

An emergency exercise deferred from 5 December 2007 was held on 27 March 2008. Exercise 'Bacchus' was considered an adequate demonstration of the station's emergency arrangements. Some improvements to command and control within the control room were judged necessary, and the station will demonstrate these via a shift exercise to the site inspector.

Heysham 1

As with Hartlepool, both reactors at Heysham 1 continue to be shut down following the discovery of degraded pre-stressing wire windings on a number of BCUs. The BCU recovery project continues to receive close scrutiny, with Category 1 safety cases required before the return to service of either reactor. Specific regulatory holds are in place for the restart of both reactors and for relevant stage submissions.

As already mentioned above, an INES 1 event was reported on 16 April 2008 for both Hartlepool and Heysham 1 when a potential shortfall in the Turbine Disintegration Safety Case was revealed. Licence Instrument 542 was issued during the period giving agreement to a paper of principle for the overall strategy for implementation of plant modifications in support of the BCU safety case. Licence Instrument 543 was also issued during the period giving agreement to a modification to install an automatic quadrant feed trip for use in major boiler tube leakage faults. No notable enforcement activity was deemed necessary in the reporting period.

The essential cooling water (ECW) project reported previously continues. This project should be completed before the reactors return to service.

The Heysham 1 Reactor 2 scheduled three-yearly statutory outage began on 1 May 2008. The planned maintenance activities are expected to last for 65 days.

Heysham 2

The Station conducted an outage of the Reactor 8 make up shield (MUS) to replace all the nitrile seal pairs following discovery of a failed seal in late 2007. These seals form part of the primary containment when refuelling the reactor at low power. The Station responded positively to our request to expedite this work in advance of the original plans.

A team of our inspectors observed the Heysham 2 annual Level 1 demonstration emergency exercise 'Jaguar' on 7 May 2007. We concluded that the station had given an adequate demonstration of its emergency preparedness arrangements. Some learning opportunities were also identified and these points were communicated in a letter to site. The station has elected to further rehearse the arrangements for mustering and accounting for staff and for casualty rescue as it identified these were areas for particular improvement. We will observe this further demonstration.

Hinkley Point B

Both reactors at Hinkley Point B continue to operate at reduced power to comply with safety case limits on boiler temperatures. During this reporting period, Reactor 3 has been shut down on two occasions following the detection of high gas side moisture levels. Reactor 4 has had one automatic trip, following the loss of the power supply to a turbine governor valve.

The nominated 2008 Level 1 emergency exercise was held at Hinkley Point B on 27 February 2008, codenamed 'Burma'. Two significant deficiencies were identified: there was an inadequate strategy developed and implemented for the effective location and retrieval of missing persons; and there was an inadequate strategy developed and implemented for effective damage repair. A re-demonstration exercise is to be held on 4 June 2008.

We have continued to closely monitor the delivery of commitments arising from the Periodic Safety Review. Delivery of the programme has been acceptable.

There has been one significant incident on the site during the reporting period (rated at INES 1) concerning a fuel stringer which was inserted into Reactor 3 with the gag closed. The direct cause of the event was a human performance error.

Hunterston B

Throughout the period both reactors were limited to around 60% of design power, to remain within the safety case limits on bifurcation temperature and superheat margin at the upper transition joints. Reactor 3 returned to service on 30 April 2008 following a three-month planned outage; Reactor 4 began a planned outage on 9 May 2008. During both outages extensive boiler work has taken place as part of the ongoing consolidation of the boiler tube safety case. In addition a significant graphite core inspection programme has been ongoing to demonstrate continued compliance with the core edge and core restraints integrity safety case.

An INES 1 rated event occurred on 13 April 2008, when a technical specification requirement was not met. A fire wire was disconnected during maintenance and this effectively disabled the hot gas release protection system on a shut-down reactor (Reactor 3) but it did not impact upon compliance. The reactor state then changed, resulting in the technical specification surveillance requirements associated with this protection system also changing; however, the new requirements were not met for several shifts. Once the error was recognised by the operators the correct surveillance was established and the fire wire was reconnected, giving full compliance with technical specifications.

Oldbury

There have been no significant nuclear safety events or accidents/ incidents at Oldbury reported to us. Reactor 2 has continued to generate approximately 220 MWe, supplying steam to turbine-generator number 1.

Turbine number 2 has been repaired and was successfully tested at the end of March 2008.

We are currently assessing graphite safety case and have had a number of meetings with the licensee. We have been provided with further information in support of the case. The graphite safety case for both reactors refers to core irradiation limits rather than operation end dates. We are content with continued operation of Reactor 2.

Reactor 1 remains shut down and we need to resolve a few items before issuing a consent to Reactor 1 start up. In the meantime the licensee has continued with camera inspections of the graphite bricks with approximately 80% of the fuel channels within the flattened region of Reactor 1 now having been inspected; no findings have been noted affecting the Reactor 1 graphite safety case.

Five beams on each reactor pile cap crane are to be replaced; they are located in the central block area. The licensee proposes to replace those beams containing notched features with new fabrications, using reinforced tapered beam ends. The design and construction of the replacement beams will accord with modern standards. A major access scaffold has also been erected to enable beam replacement to take place. We are currently assessing the proposal and have inspected the scaffold and found it to be satisfactory.

As a result of our inspections, improvements in the segregation of nuclear safety-related plant and equipment has been realised due to the installation of an additional 94 fire dampers which have been confirmed to be fully functional.

Following consideration of the licensee's application and public consultation we issued a Consent, subject to conditions, to the carrying out of the decommissioning project at Oldbury under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations. To comply with the conditions attached, the licensee has recently submitted an Environmental Management Plan.

Sizewell B

Sizewell B shut down for Refuelling Outage 9 (RFO9) on 20 March 2008 following a 516-day continuous run from the last refuelling outage. British Energy completed the outage as planned in 25 days and returned to service and has operated at full power until a recent reactor trip.

During the period there have been no significant events at Sizewell B that register on the International Nuclear Event Scale.

Before RFO9, the Japanese authorities issued operational experience feedback (OEF) regarding four reactors showing evidence of primary water stress corrosion cracking (PWSCC) on the steam generator (SG) hot leg safe end welds[1] (reference IRS 7911, 4 February 2008). This is the first indication of cracking in this location on PWRs across the world. This cast doubt on the current understanding of the susceptibility of the different Incaloy 600 (alloy 82/182) welds in the primary circuit (the susceptibility of these welds to cracking is thought to be dominated by temperature). The current 'at risk' areas have been firstly the reactor pressure vessel (RPV) head penetrations followed by the pressuriser safe end welds. The SG safe end welds have been considered less susceptible to PWSCC. Only a few reactors have Incaloy 600 welds at the safe end welds of SGs: Sizewell B, Tihange 1 (Belgium), North Anna 1 (USA) and all Japanese plants.

At Sizewell B the reactor pressure vessel (RPV) head was exchanged during the last outage just as the onset of PWSCC was seen. British Energy's inspection programme on the pressuriser safe end welds follows the inspection proposals set out in MRP-139, which is the US utilities response to the USNRC Bulletin 2004-01 on the subject of PWSCC and is considered to meet best international practice. All four SG hot leg welds were inspected during the first ASME XI (American Society of Mechanical Engineers) ten-year interval and no indications seen

In response to the Japanese OEF we sought an urgent review of this topic with British Energy and how this impacted on RFO9 and the justification for continued operation. The licensee agreed to extend the scope of inspections set out in the agreed outage intentions document. During RFO9 four welds were re-inspected and no indications were found. The Alloy 600 Working Group (a sub-group of British Energy's Structural Integrity Panel) will review the data from the Japanese inspections and feed this into the inspection requirements for RFO10 and beyond, and consider any possible mitigation options. We will keep this issue under review.

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 a rating of INES 1, which corresponds to a plant anomaly.

We attended the station safety review meeting, which provided an opportunity for the station to present a review of safety-related activity on the site during the past year, and then to look forward to the coming year by making proposals to help achieve sustainable methods for safe working. Overall, the station provided a comprehensive report on progress with safety-related activities, and made commitments to improve safety where reasonably practicable during the next operating year. We will monitor the station's progress to address the commitments made, and will consider further at the next Torness safety review meeting in 2009.

We observed the annual demonstration emergency exercise 'Car Rock' at Torness power station on 19 March 2008.

[1] *Safe end welds are factory-made dissimilar metal welds between ferritic steel components such as SG and pressuriser and a short stainless steel spool using Incaloy weld materials. This then allows the on-site welds to be made between the stainless steel spool and stainless steel pipe – similar metal welds – which are easier to make under site conditions.*

Our team found that overall the rehearsal constituted an adequate demonstration of the Torness emergency arrangements. However, it was considered that the station should further develop the arrangements for responding to fire threatening plant and personnel, and taking appropriate action on receipt of CO_2-in-air alarms from within the radiological controlled area (RCA). In addition, a number of other areas for improvement were identified and these were confirmed in a letter to the station for corrective action. The exercise satisfied our requirements for demonstration of the station emergency arrangements in 2008.

We were informed by the station that CO_2 gas-in-air alarms had activated in the gas by-pass plant of Reactor 2 and subsequently in the RCA indicating a release of CO_2. On discovering the event, the station evacuated the RCA, took action to account for people in the affected area, identified the source of the release and implemented remedial measures to halt further release. The station reported that no people were injured, no significant release of radioactivity resulted and the affected plant was rendered safe as soon as reasonably practicable. During the event response, they chose not to declare a site incident under the site emergency arrangements, and we have written to the station seeking justification for them taking this action. We are awaiting their reply, and will decide if further regulatory intervention is necessary after consideration of the response.

Wylfa

There have been no significant nuclear safety events at Wylfa. Reactor R1 has been operating at full power other than for short periods of repairs to steam generating plant and boiler tube repairs. Reactor R2 was manually tripped on 8 April 2008 at the start of the statutory outage.

A two-day joint team inspection of Wylfa's shadow working arrangements was undertaken with the Environment Agency. Inspection topics included quality management, core competence standard compliance, training, design authority standard compliance, Environment, Health, Safety, Security & Quality (EHSSQ) performance, lead team performance, site performance metrics and site use of Magnox North support office. Shadow working arrangements appeared to be well embedded in local working arrangements – key initiatives for Wylfa have been centralising document control for Magnox North at Wylfa and separation of IT systems from Magnox South and British Nuclear Group.

The March 2008 meetings of the combined Wylfa and Trawsfynydd Emergency Planning Consultative Committee (EPCC) and the Wylfa Site Stakeholder Group (SSG) were attended by our inspectors. The EPCC meeting received a number of reports from sites covering recent Level 1 and 2 exercises together with an update on learning from the Buncefield incident. At the SSG meeting the licensee presented plans for the future of the site post-generation.

The licensee reported in March 2008 that part of the reactor building structure had suffered storm damage. We monitored the site's response to this during a site visit. The licensee has manufactured a number of reinforcing brackets which have been structurally assessed. These have been fitted as a temporary measure pending a more permanent solution later in 2008.

The Wylfa off-site Strategic Coordination Centre located at the Police Headquarters in Colwyn Bay, North Wales became temporarily unavailable in April 2008 following a fire at the premises. Alternative arrangements were made with Cheshire Police at Winsford. We monitored the response to the event and were satisfied with the local arrangements put in place.

We have held a number of inspections and technical meetings with Magnox staff to support the 2008 Reactor 2 outage. In particular, we have sought assurance from the licensee that the inspection and repair programmes for the guide tube assemblies (part of the internal reactor structure) are adequate in the light of the reactor characteristics. Other regulatory aspects which have been examined include radiological control, quality assurance, control and supervision of contractors and training.

Decommissioning/ defuelling power reactors

Berkeley

Safety performance at Berkeley in the reporting period has been acceptable and no events have been rated above zero on the INES scale.

Financial constraints continue to limit most of the planned decommissioning projects. Following the team inspection last quarter, Berkeley has submitted a justification for the deferral of the planned intermediate-level active waste retrieval, treatment and storage projects. We are currently considering this.

Bradwell

Removal of asbestos-based lagging from the boilers is mostly completed. Cooling pond clean up is progressing well and pond underwater furniture (eg fuel skips) has been recovered for decontamination and temporary on-site storage before disposal as low-level waste.

An event occurred in April 2008 where five pond workers received radiological doses that were in excess of the doses that were planned for the task. This event was categorised as INES 1. The site commissioned an independent investigation and this revealed causal factors that included inadequate operating instructions and work control documentation and a lack of radiological dose awareness and questioning attitude. We followed with a similar investigation and found that the site's investigation was adequate and we were able to support the findings and agree to the proposed recovery actions. Our site inspector has placed a hold on any further ponds decommissioning project work being progressed, pending evidence that the recovery actions have been adequately addressed.

Calder Hall

To implement safety-related changes in the Magnox Operating Plan (MOP), which is the licensees' (Sellafield Ltd and Magnox Electric) plan for the management of the end of life of the magnox reactor programme, there will be delays to the defuelling programmes for some of the magnox reactors. The biggest impact will be at Calder Hall where the delay will be about five years, and Sellafield Limited has justified the delay with a submission made under LC36 that proposed that Calder Hall entered a period of 'care and maintenance' until the MOP requires it to begin defuelling. The main changes Sellafield Limited proposed were redeployment of staff to other plants on Sellafield, transfer of Calder Hall into the Magnox Operations Unit, and a closer integration of Calder Hall into the Sellafield site. Calder Hall, although on the Sellafield site, has always had some autonomy because as an operating reactor plant, there were necessary differences in the way it operated to chemical plant. This is no longer the case. We have examined the submission and raised no objections to its implementation.

Previously, we have reported progress in our assessment of the substantial modifications to improve safety of the Calder Hall fuel routes. Normally, we would issue a licence instrument firstly to allow active commissioning of such a major modification, and then if that is successful, permit routine operations. In this case, the MOP does not require Calder Hall fuel for several years. Therefore, although we expected to be able to permission active commissioning, we decided not to continue the permissioning process because some aspects, ready now, may not be ready in a few years time; eg sufficient numbers of trained staff. We considered that it would be more appropriate to resume the permissioning of the modified Calder Hall fuel route when the plant is ready to begin defuelling. We sent Sellafield Limited a letter explaining this decision.

Chapelcross

Chapelcross Level 1 emergency exercise 'India' was held on 30 April 2008. The site was unable to account for all of the staff on site within a suitable timescale due to problems with both the electronic and manual mustering systems and this had consequent effects on other actions on the site. We therefore found the demonstration to be inadequate and hence placed further requirements on the licensee. The first two of these have been fulfilled – a successful electronic muster was demonstrated to the site inspector on 2 May 2008 and a successful manual muster was demonstrated to the site inspector on 29 May 2008. The final requirement was for a repeat demonstration exercise.

Chapelcross is continuing to prepare for the start of defuelling in the near future. A team of our inspectors assessed preparations for defuelling on 1 May 2008. It concluded that the site was generally well-prepared, but that there were some areas that still needed to be fully completed. The site is finalising its work in preparation for being ready to start defuelling in the near future.

Chapelcross is currently producing its periodic safety review (PSR), a major review of safety that is undertaken every ten years. The licensee is due to complete its PSR submission by end August 2008 and has started to send documents to us. The licensee has reported that achieving some of the dates for submission will be challenging, but that it will meet the date of August 2008.

Dungeness A

Safety performance at Dungeness A in the reporting period has been acceptable and no events have been rated above zero on the INES scale. The reactors are now permanently shut down and on forced cooling.

Following a 28-day trial, Dungeness A has demonstrated that both reactors are passively cooled by natural circulation. This has enabled some safety-critical plant to be 'retired'.

Bulk defuelling of the first of the reactors commenced in April 2008. However, this relies upon the continued performance of Sellafield's reprocessing plant.

Financial constraints continue to limit most of the planned decommissioning projects at Dungeness A. At the annual 'Decommissioning Intent Meeting' the Dungeness A decommissioning programme was rejected as it was offered without any justification. We are discussing decommissioning arrangements corporately with the licensee.

Hinkley Point A

There have been no significant accident events over this reporting period, and none above INES Level 0. However, a number of discrepancies with maintenance records were recently uncovered in March 2008, which led to the raising of an incident report. The discrepancies included failure to maintain certain items of equipment; however, none of this was on the nuclear (LC28) maintenance schedule. The site has subsequently initiated a major investigation into the reasons for these discrepancies, and a review of all maintenance records to identify whether others exist, and this will report in about six months.

There have been no emergency exercises over the reporting period.

Hinkley Point A is still in shadow working as a prelude to setting up Magnox South as a standalone licensee. The process of finalising mostly corporate issues, before re-licensing, continues. We continue with inspection work of site boundaries and other procedural aspects.

The funding allocated in the new Lifetime Plan (LTP08), as expected, falls short of what had been anticipated before the major funding changes identified by NDA in late 2006. Morale on site is still good at present, but there remain significant uncertainties in future funding that are a concern to workers in terms of future job prospects and to us in terms of safety issues and timely decommissioning. We have taken these issues up corporately with Magnox Electric.

Hunterston A

The project to retrieve fuel element debris from the vaults is well developed and on-site work is set to start during 2008. This represents the largest remaining nuclear inventory on site. We have had several meetings with the licensee to confirm progress and define an appropriate regulatory interface and permissioning hold points.

In February 2008 the licensee realised that it has not completed some maintenance required under the maintenance schedule. It immediately performed the maintenance and found that the plant was in working order. The maintenance system has several checks in place, which had failed to reveal that the maintenance had been missed. The licensee declared the incident as an INES 1 event – we have started an initial investigation.

Sizewell A

Safety performance over the period has been adequate. Both reactors are in the post-operation and defuelling safety case (PODSC) phase 3 cooling mode and are holding a steady temperature due to passive cooling. Following our query that was prompted by the delay of the planned defuelling, the site is reviewing its safety case to re-examine issues surrounding the extended storage of irradiated fuel in the reactors.

An event occurred in April 2008 where a steel tank that is part of an active effluent treatment plant leaked, with the effluent being adequately contained in a purpose-designed catchment area. A subsequent site investigation revealed that this tank had been refurbished and modified in 2004. Initial findings were that the work had been undertaken in a controlled manner to appropriate quality standards. Site does not yet have a full understanding of the cause of the failure and the tank has been removed from service. Our site inspector will inspect the arrangements for the control of the tank refurbishment and modification work on a future site visit.

Trawsfynydd

There have been no significant safety events above INES Level 0. The site identified a number of plant items that should have been on the nuclear maintenance schedule but were not. The site has initiated an investigation into the root causes, and to check for other maintenance discrepancies. We are being kept informed of progress with this investigation and will consider whether action is needed once this has been reported. In addition, two instances of dislodged asbestos pipe cladding were discovered during the reporting period. The site is investigating the reasons for this, but it is likely to be related to the aged state of the reactor buildings where the incidents occurred.

A Level 1 emergency exercise took place during the reporting period and demonstrated that the site's arrangements under LC11 were adequate.

Decommissioning, waste retrieval and conditioning activities are progressing covering both solid and liquid intermediate-level waste. Civil enabling work continues on the North fuel element debris (FED) project. This plant was inspected and a licence instrument was issued in December 2007 to allow the work to continue. We have ensured that projects such as recovering wet intermediate-level wastes from the pond north void (PNV) are included in the site decommissioning programme for 2008/09.

The construction of the intermediate-level waste store is complete and is being actively commissioned; no significant problems have arisen. Civil engineering and preparation of buildings for 'safestore' continues.

Following our intervention, temporary weather proofing of the reactor buildings roofs is now complete.

The funding situation is generally much healthier in Magnox North (including this site) than Magnox South, although even at Trawsfynydd, care and maintenance entry dates have moved back significantly since late 2006.

Nuclear fuel cycle facilities – Sellafield Limited

General issues

The pace of change on the Sellafield site has continued, with the Windscale and International Nuclear Solutions transitions being successfully completed on 1 April 2008 and work towards the parent body organisation (PBO) transition progressing well. Funding constraints are restricting the licensee's ability to deliver major projects and safety improvements on the site, and our inspectors have worked hard to ensure that both the licensee and NDA continue to work together to reach an appropriate solution that satisfies the requirements of all the various stakeholders, and this work is continuing.

We are disappointed that personal contamination events continue to occur on the site, the most recent involving plutonium-contaminated material (PCM) in an engineered drum store, where we are currently considering the level of enforcement action to be taken in accordance with HSE's Enforcement Management Model. The licensee has started a review of recent contamination events that have occurred on the site to try and identify any trends and common contributing factors, with a view to informing and revising its arrangements to prevent future occurrences. Inspectors will be monitoring this closely. A notable event recently occurred in Thorp, which led to serious personal injuries to a crane operator when he was crushed between a fuel flask and handrail. Inspectors confirmed that this was primarily a conventional safety issue, which is now being formally investigated by HSE's Field Operations Directorate.

Our major intervention on asset care mentioned in the previous report is progressing through inspection activities on site and a workshop is planned in the next few weeks to establish a way forward.

Sellafield parent body organisation (PBO) transition

Work towards the PBO transition has progressed steadily over the past months and our inspectors have been in discussion with both Sellafield Limited and NDA to ensure that every effort is made to make for a smooth transition and continued safety on the licensed site. NDA is working hard completing its final assessments of the tender returns and the current programme is still for wining bidder contract award on 6 October 2008 followed by share transfer on the 24 November 2008.

One of the main areas of regulatory interest has been the 6–8 week induction training programme that the licensee has been preparing, which the PBO secondees will complete between contract award and share transfer to ensure that they are able to effectively take on the responsibility of senior executive roles with the site licensee company. We are pleased at the degree of effort being applied by Sellafield Ltd in this area and we will be undertaking a selective review of the content of the induction training over the next few weeks. It is also our intention to invite the prospective secondees to our Bootle HQ during this period to gain further assurance about the suitability of the winning bidder and provide them with an insight into current regulatory issues.

A set of PBO transition indicators have now been agreed with the licensee; they will be used on a bimonthly basis to monitor for adverse trends during the transition period. They cover environmental, health and security at Sellafield with the aim of being targeted, not excessive in number and using leading indicators wherever possible.

The transition to a PBO will not require any re-licensing activity, but because of the changes to the executive body of the site licensee company, a Licence Condition 36 submission will be required. Inspectors will also be looking to ensure that the requirements of LC12 and LC26 are complied with, both during and after the transition; the arrangements in these areas are already being reviewed.

The Senior Regulatory Forum continues to meet on a regular basis to ensure that the existing site licensee company has sufficient support during this period of significant change and that and effective and efficient transition process ensues.

Windscale transition

The first phase of the assimilation of the UKAEA Windscale Site into the Sellafield licensed site was successfully completed on 1 April 2008 when the Windscale nuclear site was relicensed to Sellafield Limited. The joint UKAEA/Sellafield Limited project team worked adeptly together, and interacted effectively with us, to facilitate the issue of the new licence on the planned programme date. The second phase in the transition process will bring together the two sites under one licence and one set of licence condition compliance arrangements during 2009.

Funding

Sellafield Limited has now shared the content of Lifetime Plan 2008 (LTP08) with us and it does indicate a significant shortfall in funding between the costs of the in-year programme of work identified by the licensee for the Sellafield site and the level of funding available from NDA. LTP08 also states that it does not fully meet the regulator's specifications for legacy ponds and silos and the need to recover and pacify the waste before storage by specific dates. Inspectors are working with the licensee to fully understand the implications of this statement. Consequently, we will be considering our regulatory position regarding the availability of funding at Sellafield, and across the nuclear industry, for decommissioning and clean up and its impact on what are considered to be key milestones in terms of hazard and risk reduction on the licensed sites.

Research and Development Department Strategy (analytical services)

The short-term strategy is based on the recommendations from the periodic review of the safety case and their impact on the use of the Analytical Services Building. A facilities plan incorporating medium and long-term strategies has been completed

by Sellafield Limited and there has been progress in the following areas:

- resourced and funded plans have been produced for the decommissioning of several redundant laboratories;
- plans are being produced for refurbishment and possible replacement of the current Analytical Services Building roof;
- plans are being produced for the refurbishment of several vacant laboratories and offices;
- an inventory removal project has commenced to scope the removal of solid residues from the Analytical Services Building plutonium stores; and
- analysis of low active samples is to be transferred to Geoffrey Schofield Laboratories at Westlakes.

An assessment has been made of the numbers of future samples requiring analysis by Analytical Services. There are a series of peaks in estimated sample numbers between 2020 and 2040 which indicate that extensive analytical facilities will be required in the medium to long term.

Decontamination strategy

Our inspectors have continued to push for improvement in the site-wide decontamination strategy. Sellafield Ltd has developed short, medium, and long-term strategies for decontamination on site. A paper has been prepared by the Plant Services Technical Support Team that defines the current and future site decontamination requirements. Workshops have been carried out with the operating units to establish an overview of the profile for the site, and ultimately produce a timeline for implementation. Decontamination is included in the decommissioning baseline in the Sellafield Lifetime Plan, which includes the decontamination of intermediate-level waste to low-level waste, but excludes in-situ decontamination.

Site-wide events

Irradiated fuel transport flasks: Early in 2008, quality issues were identified with a number of components fitted by Sellafield Limited to AGR and magnox irradiated fuel transport flasks. Discrepancies were identified between the quality standard of as-fitted components and the quality specified by British Energy and Magnox Electric, which led to restrictions on the use of both types of flask during the period. We have worked closely with Department of Transport (DfT) inspectors to ensure that appropriate precautionary measures were implemented by the dutyholders in each instance to avert the potential increases in risk. Movements of irradiated fuel flasks were suspended until DfT was satisfied that all safety-related components within the flasks comply fully with design requirements. We have maintained an oversight of the issue, being kept informed of the developments by both Sellafield Limited and DfT. Sellafield Limited, British Energy and Magnox Electric have taken steps to ensure flasks are fully compliant with design requirements to allow them to be returned to service. We are seeking assurance that similar quality assurance issues do not exist at Sellafield regarding the procurement of site-wide spares. To this end, it is intended that we will undertake a joint themed inspection with DfT on quality assurance and the procurement of spares during July 2008.

Fellside combined heat and power (CHP) stacks: The primary purpose of Fellside CHP is to provide reliable high pressure and low pressure (HP & LP) steam supplies to the Sellafield site. There are three gas turbines adjacent to one another, each having its own dedicated stack, and a separate auxiliary boiler is also provided as a diverse means of generating steam. In February 2008, scaffolders working on Fellside CHP plant observed that the stack associated with gas turbine 3 was leaning away form the vertical. Subsequent inspections revealed advanced corrosion at the base of all three stacks, and the potential for stack collapse was addressed as the corroded stacks were reduced in height from 20 m to 2 m, pending installation of replacement stacks. The reliability and availability of steam supplies was secured with capacity available via the gas turbines which are currently operating with reduced height stacks.

Subsequent inspections of the CHP plant auxiliary boiler stack revealed that a number of bolts on the bottom flange joint had deteriorated and weakened due to corrosion. The stack is ~55 m high and constructed of four sections with three intermediate flanges. The auxiliary boiler was taken off line, and an exclusion zone was established around the stack. All three gas turbines were operating and supplying steam to site. The auxiliary boiler was not operational, but available in case of loss of the CHP plant gas turbines. All the bolts were replaced in the

bottom, middle, and top flanges of the auxiliary boiler stack, and the auxiliary boiler was returned to service. We continue to discuss the long-term provision of diverse steam supplies with the licensee, to ensure safety is adequately maintained.

Highly active liquor evaporation and storage (HALES) overdue plant maintenance schedule items (event): On 28 November 2007 we were informed that a significant number of activities on the plant maintenance schedule (PMS) for HALES were overdue. Some had been overdue over an extended time period.

The licensee quickly brought the PMS for HALES under tight management control and the overdue items were cleared without delay. Improved oversight of the PMS was also established with continuing daily checks on its status.

We have written to Sellafield Limited to express serious concerns about the management of examination, inspection, maintenance and testing (EIM&T) in HALES. It would appear from our investigations that one of the underlying causes of these problems is the lack of experienced engineering staff primarily at craft level. We have undertaken formal consultations with Sellafield Limited in accordance with the Nuclear Site Licence to ensure that HALES has adequate arrangements for the regular and systematic EIM&T of all plant which may affect safety. Our formal investigation of the incident continues and is now focusing on the licensee's safety management systems.

At our request Sellafield Limited has provided additional justification to support the continued safe operation of HALES and especially the continued safe operation of Evaporator C.

Sellafield Limited has implemented an improvement programme which led to a resumption of permissioning on HALES: a licence instrument agreeing to the restart of Evaporator A was issued on 31 March 2008.

Waste treatment and decommissioning accident: Late last year, an operator was carrying out work associated with the decommissioning of a plant that handled plutonium materials. The specific operation was posting out where plutonium-contaminated materials are removed from a highly contaminated and ventilated containment and put into drums and sealed. It is a routine operation. During the sealing, the operator received a puncture wound from a fine wire in a filter that was now waste. The wound was excised by doctors at the local hospital to remove plutonium. Although a small puncture, it was sufficient for plutonium to be injected into his finger. Injection events are unusual, but clearly, serious. We understand that the operator received a committed effective dose of about 2 mSv. Residual insoluble plutonium material remains in the individual's finger and could lead to a further committed effective dose should the material 'dissolve' and result in a further systemic uptake. We continue to investigate this accident.

Sellafield MOX plant (SMP)

This period of operation has seen production halted due to problems with the plant equipment. SMP has responded by re-allocating experienced personnel from other parts of the plant into the problem areas with the intention of re-establishing production.

An issue regarding product quality, due to contamination, is being investigated. The work to identify the source of the contamination is continuing. The current focus is on the mixing and blending part of the plant where internal examinations of the equipment and components are being used to identify if internal wear is the cause.

Work continues on the arrangements for permissioning the next phase of operations for SMP.

Thermal oxide reprocessing plant (Thorp)

During March, April 2008 and up to mid-May 2008 Sellafield Limited sheared and dissolved around 57 te AGR fuel. The resulting liquor was stored in the three head end plant/solvent extraction plant (HEP/SEP) buffer tanks as Sellafield Limited was awaiting a licence instrument that would allow the reprocessing of the liquor. This latter licence instrument, which permits the processing of raffinate liquors using evaporator C in HALES, was issued in mid-May 2008.

Sellafield Limited plans to resume reprocessing in late May 2008 and to continue until mid-June 2008 when plant

washouts will begin in preparation for the planned Thorp outage to replace the medium-active salt-free evaporator (MASFE) – see below. Before this outage Sellafield Limited aims to reprocess most of the liquor stored in the three HEP/SEP buffer tanks and, depending upon the time taken to run up and resume operation of the reprocessing plant, further AGR and/or PWR fuel may be sheared and dissolved.

The installation of equipment associated with a new evaporator (MASFE) has been ongoing. Sellafield Limited plans to commence active connections towards the end of July 2008 during the THORP outage, and hopes to start the active commissioning of the plant (which will allow the resumption of reprocessing) around the end of October 2008.

Assessment of the report, provided by Sellafield Limited following the reprocessing of 33 te fuel, was completed (to support continued operation). We confirmed that the report generally provided an accurate reflection of the position, and progress on the remaining outstanding issues will be monitored at the Annual Review of Safety Meetings.

Sellafield Limited continued to export multi-element bottles (MEBs) and the target of storing 10 MEBs within the MEB interim store before the end of March 2008 was met. Sellafield Limited plans to continue with the export of MEBs.

Recent inspections by us have raised issues regarding claims about the integrity of ponds, and further information has been requested. Sellafield Limited is responding to these matters.

We completed our investigation into the failure of the elevator system that occurred on 29 January 2008. We confirmed that we are satisfied that Sellafield Limited had identified the cause of the event and had put in place remedial measures to prevent a recurrence. Sellafield Limited returned the elevator to service on 17 March 2008.

On 10 April 2008 a crane operator was manoeuvring a 60 te cuboid flask containing fuel to be reprocessed. During this operation the operator was crushed between the flask and a handrail and suffered serious injuries. Following discussions with Sellafield Limited the crane was put back into service on 2 May 2008. An investigation by HSE's Field Operations Directorate is ongoing.

The third meeting of the Oxide Operating Strategy Regulatory Forum (OOSRF) is planned for June 2008.

In February and March 2008 our Thorp inspectors visited France to share information on the regulation of reprocessing plants with the French regulators (ASN). The visits were very useful and an internal report is being prepared to identify good practices.

Magnox reprocessing operations

The latest version of the Magnox Operating Plan (MOP8) for managing the remaining life of the UK's magnox reactors gives 2016 as the end date for the reprocessing of magnox fuel. (This date still requires sanction by the UK Government.) As reprocessing in our view continues to be the only proven safe means of dealing with spent magnox fuel, the challenge for Sellafield is to keep the various reprocessing plants operating safely. The assumptions made in deriving MOP8 about the life of critical plant items imply the need for a programme of asset care for those items. Much of our effort in this area will be aimed at ensuring that the programme is prepared and implemented. We will also seek to ensure that an adequate contingency plan is developed against any failure of the MOP that would leave spent fuel unable to be reprocessed by the current route.

In 2007/08 457 tonnes was reprocessed, some 74% of the target. The target for 2008/09 is 540 tonnes, this takes into account a 14-week outage planned to start on 1 September 2008. We have begun inspecting work planned for this outage, not only to see that is done safely but also to ensure that the plants will be returned to service in a condition that will allow the MOP to be completed.

Higher active liquor (HAL) stocks specification

Specification 343 provides a limit on the amount of HAL that can be stored at any time and promotes HAL stocks reduction. Following the 2006 biennial review of HAL stocks, we made a public commitment to revise Specification 343. This was to lock-in the gains arising from the unplanned Thorp shutdown, which had led to a faster reduction of HAL stocks than was originally predicted

when Specification 343 was issued. A revised specification (No 679), replacing Specification 343, was issued on 29 October 2007 and is available on HSE's HAL storage web page.

The next (2008) biennial review of HAL stocks will commence later this year. In this review, we intend to consider, among other things, whether the long-term steady state (post-2015) limits used in the specification are appropriate. The review will consider evidence from Sellafield Limited that this aspect of the specification is set too tight to allow HALES to operate efficiently.

The review will also consider, in the light of Sellafield Limited's operational experience working with the new specification, whether the forms of limit used can be improved upon in the interests of safety. Specifically, the review will consider adopting limits based on the mass of uranium in the unprocessed fuel from which the HAL was derived (as per the Oxide limit in Specification 679) rather than limiting the volume of HAL.

Sellafield Limited continues to provide us with monthly reports summarising the quantities of HAL contained in the highly active storage tanks (HASTs). These figures, supported by our inspection activities, are used to judge whether Sellafield Limited continues to meet the HAL stocks specification.

Highly active storage tanks (HASTs) integrity

Our previous reports have indicated that HAST cooling components have suffered over the years from corrosion. 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. Recent HAST cooling coil failure rates and, specifically, the location of recent failed coils has led to uncertainties over the ability of the newer HASTs to continue to service the needs of the HAL stocks strategy. If the HASTs start to deteriorate more quickly, then the ability of HALES to receive raffinates will be prejudiced (with knock-on consequences). The rates of failure of cooling coils will determine the volumetric capacity of HASTs to store HAL and has the potential to constrain raffinate receipt.

Sellafield Limited's contingency plans included firstly a project to dose the cooling water circuits with nitrates as a way of stopping, or at least reducing the rate of, corrosion failures; and secondly the construction and operation of replacement HASTs. However, nitrate dosing has recently been abandoned as a technique to halt or retard the established corrosion, with the result that replacement HASTs are now the only viable strategy to assure future HAL storage integrity. We agree that the conservative decision in response to these problems would be to build smaller, inherently safer replacement HAST. Replacement HASTs should be progressed with the utmost urgency. We are currently awaiting the submission of Sellafield Limited's document on their strategy for the safe storage of HAL.

Highly active evaporator integrity

There are currently three evaporators within HALES (referred to as Evaporators A, B and C). They are used to evaporate highly active 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. The status of the evaporators (as of May 2008) is:

- Evaporator A – a licence instrument was issued to Sellafield Limited in April 2008 permissioning the restart of the evaporator using only the base jacket for routine heating/cooling duty;
- Evaporator B – this was shut down in December 2004 following failure of a heating/cooling coil. We are currently assessing an application to enable the restart of the evaporator. The outcome of that assessment is expected in June 2008; and
- Evaporator C – this continues to operate on magnox liquors and WVP effluents. A licence instrument was issued to Sellafield Limited in May 2008 enabling evaporator C to process liquors from about 300 te of oxide reprocessing.

We continue to engage with Sellafield Limited on the provision of new evaporative capacity. Groundworks for Evaporator D are completed but the expected start to work on the base slab at the beginning of 2008 has been delayed. The pre-construction safety case

for Evaporator D is now expected towards the end of 2008. We are working closely with Sellafield Limited, the Environment Agency and NDA on opportunities to accelerate Evaporator D while ensuring that the safety of design and construction is not compromised. Sellafield Limited is also considering the need for further evaporative capacity (Evaporator E).

Waste vitrification plant (WVP)

Currently (end of May 2008) all three vitrification lines are shut down. Line 1 suffered a plant malfunction in February 2008 which resulted in the need to undertake significant repair work: planned work will be undertaken coincidentally with the result that Line 1 is expected to return to HAL feed in late summer 2008. Lines 2 and 3 have operated fairly consistently in recent weeks though both are currently undergoing outages. WVP also suffered a shut down of operations caused by the loss of site steam supplies. Overall WVP did not meet the target number of containers forecast for the year 2007/08 although the plant coped reasonably well given the challenges placed upon it, and there were no significant effects on HAL stocks reduction.

Reliable operation of the vitrification lines is an essential component of the drive to reduce HAL stocks, and we continue to engage Sellafield Limited on issues associated with plant reliability. We note that Sellafield Limited is investing in improvements to the throughput and reliability of the vitrification process via its links with Cogema. During 2008/09 we intend to engage with Sellafield Limited to better understand the issues associated with the reliability of plant operations.

Residue export facility (REF)

Along with the Environment Agency we conducted a readiness inspection in March 2008 as part of the process to assess Sellafield Limited's readiness to start the active commissioning of REF. Subsequently, in late April 2008, we completed our assessment of Sellafield Limited's proposal for the commencement of phase 1 active commissioning of REF and a licence instrument was issued to enable this to proceed.

Sellafield product and residue store (SPRS)

The construction of the shell of the facility is complete and work is progressing on the fitting out of the internal systems and equipment. This work has advanced considerably over this reporting period.

Preparations are being made for the permissioning of inactive commissioning and our specialist inspectors have visited the facility to inspect progress with installation work.

A problem has been identified with the fixing of internal seismic restraints for the modules due to warping occurring during welding operations. SPRS are investigating the issue and we are monitoring the situation. A number of possible solutions are available and optioneering is being undertaken to identify the best one.

Sellafield has now taken over the running of the completion of the facility (sooner than was anticipated in the original project plan). The transition has been completed smoothly without any disruption to the programme.

Waste treatment complex (WTC)

In early December 2008 WTC began a slow, controlled restart following a shutdown period of some 14 months brought about by the major injury accident. The restart is entitled Phase 4 Active Commissioning, Stages 1–3: Operability and Maintainability Trials, and is programmed to take place over a period of 15–21 months. If Sellafield Limited achieves all the objectives of the trials, it then plans to apply for a consent to commence routine operations of WTC.

During Stages 1–3 of the trials Sellafield Limited is intending to develop further plant improvements to reduce the plant's dependency on operational controls, and has provided written details of its improvement programme. Also we have written to Sellafield Limited noting some actions under review which are key to the long-term viability of WTC1A, and its role in the strategy to satisfy the our specification (LI 326) for Sellafield Limited to convert 90% of PCM stocks as at 2000, to a safe passive form by 2020. We have stated that as well as monitoring progress with the trials and formally examining Sellafield Limited's safety case in support of Stages 2 and 3, the Inspectorate's considerations will include progress with these actions.

Sellafield Limited completed Stage 1 of the trials end January 2008, having undertaken two drum supercompactions per shift for some two months. We granted permission for Sellafield Limited to commence Stage 2 of the trials early April 2008. The licensee has since increased the number of drum supercompactions per shift to three; however, a blockage in the grout fill glovebox has interrupted progress. This problem has now been resolved.

Sellafield Limited is intending to open up the feed envelope for WTC by upgrading the assay suite to receive oxide-derived PCM (as well as magnox), and by seeking from NDA's Radioactive Waste Management Directorate (RWMD) (formerly NIREX) a letter of compliance for decommissioning feedstock.

An event occurred on 24 October 2006 involving a major injury to a worker in 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 included developing a programme of work to improve compliance with the Provision and Use of Work Equipment Regulations 1998 (PUWER), regulations 11, 15, 16 and 19, starting with an in-depth machinery-based risk assessment. The licensee completed a number of improvements in the supercompactor glovebox, and presented its proposals for a three-stage restart of WTC. We, in assessing Sellafield Limited's safety case to restart WTC, judged that the licensee is now compliant with PUWER. A recent inspection by the Health and Safety Laboratory (HSL) has confirmed this view.

We met with Sellafield Limited and the Environment Agency in March 2008 to discuss plans to form a PCM Overarching Strategy Group, along the same lines as the Magnox Operating Plan and Oxide Operating Plan. All parties agreed to have a PCM Regulatory Forum in place by end July 2008, principally to keep the regulators informed of the performance of the PCM Operational Plan, and to provide a framework for monitoring the identification and resolution of regulatory issues.

Plutonium finishing and storage (PF&S)

Operation of the finishing lines has been intermittent due to a variety of issues arising in relation to spurious alarms associated with safety mechanisms. These were resolved during April 2008 and plant operation has been progressing without any significant interruption.

Progress on the Stores Inventory Retrieval Project (SIRP) has been delayed due to some weaknesses identified in the safety case and operational practices. Sellafield Limited is currently addressing these issues and appropriate revisions will be made before resuming retrievals.

A meeting was held with Sellafield Limited to discuss progress with the Permanent Neutron Monitoring System. The current programme indicates withdrawal of the hand-held interim monitoring system towards the end of 2008, hence the commencement of independent operation of the new permanent system (following a six-month period of parallel operation with the hand-held interim system). This will be some 2½ years after the original programme date. Sellafield Limited now has increased confidence in its current programme following the confirmation that key parts of the system are in working order. Given the considerable delays the project has suffered Sellafield Limited has agreed to provide us with a report detailing the lessons learned from this project.

A meeting was held with PF&S management to discuss progress with delivery of a plant operational safety case or continuing operation safety report (COSR) which had fallen significantly behind programme. The COSR had a revised decision date of December 2003. Sellafield Limited believes that the delays have been due predominantly to shortage of resource resulting from the need to direct staff towards higher priority issues. Sellafield Limited has been advised that continued delays without adequate substantiation are not acceptable. We propose to undertake an inspection and further meeting in July 2008 by which time a number of requirements are expected to have been delivered.

Effluent and floc retrieval plant

During a plant shutdown to allow replacement of corroded compressed air piping, low active liquid continued to arrive at the Segregated Effluent Treatment

Plant. The repair work took longer than expected due to a weld failing inspection. This resulted in tanks overflowing into a shielded concrete cell intended to contain and deal with overflow incidents. Unfortunately, a piping penetration close to the floor of the cell had not been sealed to an appropriate standard. Leakage through this penetration escaped into an adjacent concrete corridor, out of a doorway onto a paved area and then down a drain. The water was of very low radioactivity, intended for sea discharge. Inspection confirmed that no contamination remained after recovering residual spillage. Along with the Environment Agency we investigated the incident and each followed their due processes to decide on further action. In our case this involved application of the Enforcement Management Model. This indicated that the low risks involved on this occasion did not justify serving an improvement notice.

Analytical investigation methods applied by our inspectors indicated that the root cause was failure to assess process plant aspects of the pipework replacement job. No contingency arrangements were made in case the replacement of the compressed air pipework took longer than expected. Sellafield Limited's own investigation subsequently recommended a review of bund integrity, examination, inspection, maintenance and testing across the Sellafield and Windscale sites.

Encapsulation plants

The wastes encapsulation plant, magnox encapsulation plant and waste packaging and encapsulation plant (WPEP) have operated successfully during the quarter. Encapsulation of retrieved historic radioactive floc has restarted following clearance of a blockage in the transfer line from the enhanced actinide removal plant to the WPEP. The plan is to continue emptying the buffer tank this year and to then re-suspend the next floc tank.

We are considering whether the waste inspection arrangements proposed for existing and future encapsulated product stores will be adequate in view of the previously reported discovery of a number of swollen drums in Encapsulated Product Store 1 (EPS1).

Emergency exercises

We have recently approved the revised emergency plan for the Sellafield site in accordance with the requirements of LC11. The changes to the plan, which came into force on the 1 May 2008, relate to the sounding of the Sellafield site siren for a site incident as well as a nuclear emergency. The arrangements now also include the provision of an emergency freephone information line that members of the public can ring to obtain real-time information concerning the situation at the site.

Level 1 Emergency Exercise 'Greenfinch' was carried out on the 8 May 2008 to demonstrate Sellafield Limited's response under its Emergency Plan. A team of our inspectors observed the exercise, which was focused on an incident associated with a solvent fire, and they judged it to be an acceptable demonstration of the licensee's emergency preparedness on the day. However, there was an issue regarding prior knowledge of a participant fulfilling a role within the Incident Control Centre (ICC), as the individual also had involvement in developing the exercise scenario. Consequently, we have informed Sellafield Ltd that it will need to undertake a satisfactory re-demonstration of the ICC response in a local exercise over the next few months.

Strategic interventions

Management of ageing plant – asset care: Recent events and inspections at Sellafield have called into question the licensee's management of ageing plant. In response we have developed an intervention for 2007/08 to gather data on the current status of facilities and the adequacy of improvement strategies. This work was carried out by our inspectors as part of their planned inspections for compliance with LC28 (*Examination, inspection, maintenance and testing)*. Responses received indicate that the need for good standards of management of ageing plant is recognised but that the rate of implementation is too slow. We believe that the poor rate of progress is caused by a lack of capability within operating units probably coupled with a shortfall of funding. However, the main success of the intervention has been the raising of awareness among our own and Sellafield Limited's staff.

Our inspectors will continue to work closely with Sellafield Limited to better understand the issues and to promote improved implementation during 2008/09. This is expected to involve some 'deep slice'

inspections alongside the continuation of routine planned work by site inspectors. A site-wide workshop is planned during the summer of 2008.

Safety performance indicators (SPIs): In line with the Directorate's initiative to ensure that a range of key performance indicators are established across the nuclear industry we have agreed a group of pilot SPI's with Sellafield Limited, which will be trialled over the coming months, although the licensee is still currently working towards provision of the relevant data. Our interventions will continue in this area to ensure a suitable and sufficient range of nuclear SPI's are developed for the Sellafield site, which become embedded in the licensee's organisation such that they are used effectively by Sellafield Limited management to measure and monitor nuclear safety performance and which become integrated into their safety management approach.

Operational experience feedback (OEF): An intervention to establish the adequacy and effectiveness of Sellafield Limited's OEF and process and how lessons are learned from incidents that occur on the site was conducted in Autumn 2007. Recent contact indicates that work to further improve processes and systems is progressing and progress will be monitored in 2008/09.

Stakeholder engagement

During the reporting period we have continued to support the West Cumbria Site Stakeholders Group (WCSSG). With the recent completion of the Windscale transition and the re-deferral of Calder Hall, WCSSG is in the process of restructuring to better reflect the sites and licensees it scrutinises, and as a result it has set up three new sub-committees.

We also continue to work closely with the other regulatory bodies involved with the Sellafield site.

Legacy ponds and silos (LP&S)

In previous reports, we highlighted the need for further improvements in day-to-day operational nuclear safety across LP&S. This was fully accepted by Sellafield Limited and to help facilitate some early improvements they took the decision, supported by us, to suspend actions leading to permissioning requests until sufficient improvements have been made. Since then a significant improvement programme has started to be rolled out across these plants. Our inspections and discussions of progress to date have resulted in our supporting Sellafield Limited's requests to restart permissioning in two of the main buildings, and we await the imminent request to restart permissioning in another. Due to the larger number of work activities, plant control activities and complexity of interactions we recognise that it may take a little longer for such a position to be attained for the magnox swarf storage silo. Sellafield Ltd has also started to share with us the next phase of their LP&S operational nuclear safety improvement programme. To date we are pleased with Sellafield Limited's response to our challenge to raise operational nuclear safety standards and will continue to monitor progress.

In 2000, NII put in place Specification Numbers 324, 325 and 326 to help address hazard reduction and reduce risks across Sellafield, including LP&S plants. Work by Sellafield Ltd to develop an achievable plan for LP&S given current funding and resource constraints, and past project delays, indicates that they will not meet the August 2010 Specification date relating to the removal of intermediate-level waste sludge from the First Generation Magnox Storage Pond. In addition, meeting the other NII Specification dates of August 2009, August 2016 and August 2020 (the latter for the safe passive storage of historic intermediate-level waste sludges across site) are at increased risk. In response we are considering a number of regulatory options.

Windscale

The preparatory project work to enable the further decommissioning of the Pile 1 and 2 reactors continues. The evaluation trials on the Pile 1 fuel and isotope retrieval prototype equipment, designed to remove the remaining fuel and isotopes from the fire-affected zone, are also progressing satisfactorily. The decommissioning project team at the Windscale advanced gas-cooled reactor (WAGR) have completed the removal of the wall sections of the reactor vessel and are progressing with the work to remove the lower hemisphere section of the reactor vessel. Work on the extensive programme of engineering improvements to the leased post-irradiation examination (PIE) facility continues. The completion of this work should allow the recommencement of normal operations within the facility.

The recent funding constraints placed on Sellafield Limited Windscale has resulted in the decommissioning programmes for the piles, B14 and WAGR being extended. We have expressed our views to the licensee relating to the detriments of introducing further delay into the decommissioning programme and will seek for the licensee to provide an adequate safety justification for its revised decommissioning programmes.

Other fuel cycle plants

Springfields Fuels Ltd

Our assessment and site inspection activities have largely been directed towards inspecting the licensee's implementation of a modern Continued Operations Safety Report (COSR) safety case at the oxide fuels complex, the licensee implementing a number of safety improvements, before restarting the plant in April 2008, following a planned shutdown to install engineering improvements.

The licensee presented an updated Control of Major Accident Hazards Regulations (COMAH) Safety Report in April 2008, which will be assessed by the 'competent authority' (HSE and the Environment Agency).

A number of learning points have emerged from the licensee's thorough investigation of the boiler corrosion at the CHP plant, which has been prudently addressed by the licensee. Changes to British Standards relating to pressure vessel inspection regimes are likely to be proposed by the licensee, to share the learning from experience across industry.

Good progress continues to be achieved in processing legacy uranic residues at the site. We are encouraging NDA to take account of the potential Springfields capability to process uranic materials from other NDA-owned sites, during the limited six-year 'window of opportunity', before some of the Springfields chemical plants reaching the end of their operational life.

The overall safety performance of the site remains good.

URENCO – Capenhurst

The licensee successfully demonstrated the off-site emergency arrangements during the Level 2 emergency exercise 'Alder' conducted in April 2008.

Specialist assessment inspectors visited the site in April 2008, to advise the licensee on developments in safety case methodology and the recently revised Safety Assessment Principles, which will inform the licensee's preparation of the forthcoming 'tails management facility' safety cases.

Following regulatory encouragement to install additional personnel criticality shielding, which the licensee has implemented, inspected during an unannounced inspection, we have permissioned the active commissioning of the latest extension to a modern enrichment facility in May 2008.

The overall safety performance of the site remains good.

Sellafield Limited – Capenhurst works

Good progress continues to be made on the site-wide decommissioning projects, reducing the hazards on the site, while maintaining a creditable decommissioning project safety record.

Responding to regulatory encouragement, significant disposals of very low-level solid radioactive waste from the site have recently been maintained, including proving the authorised disposal route for some materials which were to have been stored on the site for a lengthy period. Low-level solid radioactive waste disposals are planned to be recommenced shortly.

The site incinerator has been 'mothballed', pending a decision from NDA on its further use. The potential exists for the incinerator to process lightly contaminated waste oils, from Capenhurst and elsewhere, which is an authorised very low-level liquid waste disposal route which we would prefer to see used.

We now have more confidence that the safety implications of the ongoing organisational changes are being adequately addressed by the licensee, as the scale of site operations is reducing.

We are encouraged that the licensee is proactively working with NDA to develop viable medium-term plans for the disposition of the legacy 'hex tails'

and other uranic materials. The licensee is developing a safety case for the interim storage of some down blended enriched uranic materials, pending processing and recycling at another licensed site. We are keen to ensure that the length of the interim storage period is appropriately minimised.

The safety culture on the site is strong, reinforced by the exemplary contributions of the site safety representatives.

Nuclear research facilities

UKAEA general – Restructuring Project

The restructuring of UKAEA in preparation for the NDA competition programme continues. We have re-licensed both the Windscale and Dounreay sites with effect from 1 April 2008. In each case this followed a period of 'shadow working' during which the nuclear safety viability of the restructured organisation was demonstrated. The new licences came into effect as the Windscale site was transferred through an Energy Act nuclear transfer scheme to Sellafield Limited, whereas Dounreay became the 'stand-alone' site licensed company Dounreay Site Restoration Limited (DSRL). Harwell and Winfrith aim together to form a further site licensed company Research Sites Restoration Ltd (RSRL). However, this restructuring was somewhat delayed as plans were adjusted to take account of marked budget cuts. We have now issued licence instruments (formal agreements) for the sites to prepare for shadow working, and formal commencement of this six-month period is expected by the end of May 2008.

UKAEA – Harwell and Winfrith

The regulation of the restructuring of Harwell and Winfrith into Research Sites Restoration Ltd continues. A licence instrument was issued in March 2008 agreeing to the reorganisation of the sites and to shadow working itself but the commencement of the latter was subject to the subsequent successful completion by UKAEA of a number of safety-related tasks, which were found to be still incomplete during a readiness inspection. The tasks included the completion of all necessary training and competence reviews of staff being appointed to safety-related posts and the completion of succession plans which would be sustainable into the future. We received the company's final submissions and close-out evidence associated with the outstanding matters on 20 May 2008 and are assessing the adequacy of the documents with a view to hopefully completing a further readiness inspection in early June 2008.

We are continuing to press UKAEA for an appropriate response to the Lifetime Plan Approvals which were issued to the company at Harwell and Winfrith in early February 2008. Promptly following their issue, we set out the next steps which we expected the company to take but in late April 2008, UKAEA submitted a draft proposal for a procedure that it wished to apply, we rejected this deeming it as being both inappropriate for the circumstances and non-compliant with our expectations. We informed the company in early May 2008 of our detailed reasons and reiterated our expectations for compliance with the approvals into the future, for which we are still awaiting an appropriate response.

GE Healthcare Ltd (GEHL)

As part of the changeover of our site inspector, a number of meetings have been held to discuss the upgrade of the Drytec manufacturing plant at the Grove Centre Site. This upgrade will allow higher number of technetium$_{99}$ generators to be processed each week.

Decommissioning of GEHL legacy plant and buildings at the Grove Centre, Amersham continues. A new discharge pipe is being installed to separate radioactive discharges from other liquid wastes.

GEHL is about to commission a new plant at its Cardiff site (Paragon) which will recover and recycle tritium thereby reducing authorised discharges from the site.

One of GEHL's two small licensed sites at Harwell will become part of the main Harwell licensed site when it is re-licensed. We have had meetings with GEHL, UKAEA, and NDA to facilitate this.

Imperial College

The Consort reactor (the UK's last civil research reactor) ceased commercial operations 1 April 2008. There was some interest in restarting the reactor for a further 12 months operation. So far

there has been no funding released to allow this to happen. NDA's possible role in its defuelling and decommissioning has been slower to emerge than expected, but we have recently met NDA and the College to discuss their joint project to develop a business case for the site to be designated under the Energy Act.

We have had discussions with the site about the regulatory issues that need to be addressed if the reactor is restarted for either training purposes or commercial operations.

We have discussed with the College the LC36 requirements following recent resignation of the Director of Operations. The resulting vacancy will be filled by an experienced person from the Harwell site. Transitional arrangements and training requirements have been produced by Imperial College.

UKAEA – Dounreay

Restructuring

Following a period of shadow working of the DSRL organisation and the completion of a successful readiness inspection by a team of our inspectors, we decided to grant a new nuclear site licence to DSRL in respect of the Dounreay site. The new licence (number Sc17) was signed on 25 March and came into effect on 1 April 2008, at which time the previous licence (number Sc6A) granted to UKAEA was revoked.

HSE/Scottish Environment Protection Agency (SEPA) safety audit of Dounreay

All the recommendations arising from the 1998 audit have now been closed out by HSE and SEPA. A report on progress since the last HSE–SEPA report is in preparation. The remaining work associated with the recommendations will be monitored through routine regulatory interactions.

Emergency exercises

Level 1 emergency exercise 'Delta 43' was carried out on 21 May 2008 to demonstrate Dounreay Site Restoration Limited's response under its Emergency Plan. A team of our inspectors observed the exercise, which was focused on an incident inside the Fuel Cycle Area (FCA). The inspectors judged the exercise to be an acceptable demonstration of the licensee's emergency preparedness.

Dounreay cementation plant (DCP) recovery

The recovery work following the materials testing reactor raffinate spill in 2005 has now been completed. We inspected DCP at the end of March 2008 and considered it ready to start receiving liquor from the high active liquor (HAL) store for encapsulation. We gave our agreement for the resumption of liquor transfers to DCP on 11 April 2008. Outstanding actions in connection with training are required to be completed before routine operations on a 24-hour continuous shift working pattern can resume.

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

Several batches of NaK from the DFR reactor have been successfully processed in the NaK disposal plant as part of the active commissioning programme. The programme has been interrupted due to the occurrence of two leaks from the ion exchange clean-up plant. The first leak was of radioactive caustic liquor and the second was of non-radioactive acid. In both cases, the liquids were fully contained within the plant. We have investigated the events and have written to DSRL requiring plant improvements before the recommencement of the active commissioning programme. DSRL has undertaken its own investigation and is implementing its recommendations.

Following the development of highly novel intrusive equipment, the bulk sodium coolant has been removed from the PFR reactor vessel leaving residual surface quantities and heel pools. DSRL is developing the water vapour nitrogen process for removing this remaining sodium, a process which will require our permission.

Defence nuclear sites

Defence facility regulation

Across the defence nuclear sector we are continuing with our 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 HSE and MoD's Defence Nuclear Safety Regulator (DNSR). We continue our joint working, with DNSR now playing an active role within the programme-focused Intervention Progress Groups, which operate at the strategic level and prioritise intervention activity. The partnering approach on the whole is functioning well, ensuring efficient and effective use of resources between the two regulatory bodies.

During the period, we have engaged with all defence nuclear operators to establish appropriate safety performance indicators that will allow both the operators and ourselves visibility of trends in their nuclear safety performance.

MoD general – UK Staged Improvement Programme (SIP)

We have continued to engage with the MoD UK-SIP and the Through Life Management Plan initiative which aims to inform nuclear safety-related investment decisions across the 'MoD Submarine Enterprise' with initial application focusing on the Naval Nuclear Propulsion Programme. We provided our support to the initiative at the above-mentioned Senior Level Operational Policy meeting with the caveat that robust justifications and transparency of the process will be important to secure regulatory support for this nuclear safety improvement prioritisation process.

Devonport and Rosyth

The acquisition of Devonport Management Limited (DML) by Babcock International Group PLC is now complete. Babcock has sought our permission to make senior management changes at Devonport under LC36. While we have requested clarification of some information on Babcock's proposal, we do not envisage the need for DRDL to be re-licensed. We anticipate completion of the permissioning activity during June 2008 and will monitor its implementation as part of our intervention plan over the remainder of the year. We continue our engagement with relevant stakeholders and senior management to ensure potential organisational changes are properly conceived and implemented as required by the site licence. The licensee organisations, Devonport Royal Dockyard Ltd (DRDL) and Rosyth Royal Dockyard Ltd (RRDL), are to remain in place within the larger Babcock International Group structures. We have held discussions regarding future licensee board structures including the role expected of non-executive board members and the operation and transparency of the boards within the Babcock organisation. We are confident that nuclear safety-related activities taking place at the sites 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. Since our last briefing a contract has been put in place to dismantle the submarine refit complex (SRC) refuelling crane with the activity programmed for completion in summer 2008. This will mark a significant reduction to the hazard potential of the facility and is an enabler towards fleet time docking submarine maintenance work transferring from 10 dock to the SRC.

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 regularly monitor the licensee's progress against this programme and can report that the improvements to safety behaviours on the Devonport site are commensurate with our expectations.

The work at Rosyth to decommission the majority of the facilities used for nuclear activities (RD83 Project) continues to progress safely and ahead of programme. It is anticipated that two of the three parts of the site will be offered for de-licencing during 2009. To this end, we have initiated a programme to analyse confirmatory ground samples on the two decommissioning areas. A Best Practicable Environmental Option process undertaken to confirm the disposal route for resin wastes stored on the third part of the site has identified viable options and these have been presented to the regulators and Scottish Executive Representatives as part of consultation. MoD is currently refining its proposals and gaining internal sanction for those proposals before agreeing the way forward. A clear regulatory expectation is that the site will be decommissioned and delicenced in a timely manner.

Barrow

We issued an Improvement Notice in the third quarter of 2007 which required BAE Systems to introduce safe systems of work that ensure all reasonably practicable measures are taken to prevent unconnected persons remaining within designated controlled areas during radiography. We checked the adequacy of the improved systems of work during the reporting period and considered that they satisfied the requirements of the Improvement Notice. Additional improvements have been implemented to address other recommendations identified during the incident investigation.

Our joint regulatory intervention strategy with DNSR continues to focus on key nuclear safety-related activities within the Astute programme. There have been a number of emergent quality issues during the reporting period. We have monitored BAE Systems' response to these and we are satisfied that appropriate controls have been put in place to ensure that nuclear safety is maintained. We intend to perform a range of inspections to inform permissioning decisions later in the year around active commissioning and power range testing.

Derby

We were notified that the earthquake which occurred in the early hours of the 27 February 2008 was measured on the RRMPOL site equipment at a value slightly above the safety case limit for carrying out safety checks. Non-essential staff were instructed to remain off-site until the appropriate safety checks had been undertaken. These were completed by early afternoon and no adverse effects recorded.

In accordance with our Integrated Intervention Strategy (IIS), we continue to have early engagement with the licensee on the Regeneration Project for the nuclear fuel production plant (NFPP). The next stage of the project is the issue of the Pre-Construction Safety and Environmental Report which is expected towards the end of 2008.

Nuclear submarine operational berths

We witnessed the testing of the off-site emergency arrangements put in place by Highland Council for the operational berths at Loch Ewe and Broadford Bay, Isle of Skye in accordance with the Radiation (Emergency Preparedness and Public Information) Regulations (REPPIR) through a number of targeted exercises. The exercises were successful in demonstrating the Highland Council Plan.

Submarine plant hazard identification and risk evaluation (HIRE)

In accordance with REPPIR, MoD has undertaken a triennial review of HIRE for the submarine plant and associated berthing facilities. The Reports of Assessment (RoA) of this review have been issued as required to DNSR and ourselves and are currently under assessment. The revised HIRE and associated RoA conclude changes to the current emergency planning arrangements may be appropriate. However, to ensure a clear position and confidence is maintained in respect of the existing

arrangements, local authorities have been instructed not to revise the existing plans until we have assessed the submissions and provided further advice.

AWE (Atomic Weapons Establishment)

In accordance with our Integrated Intervention Strategy (IIS), we continue to have early engagement with the licensee 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 is well-established that involves other regulators that include DNSR, HSE's Hazardous Installations Directorate and the Environment Agency. This framework incorporates a Corporate/Generic Technical Issues forum dealing with matters affecting several facilities or which have applicability across both of the AWE sites.

We are continuing to assess a number of periodic reviews of safety (PRS) submissions relating to facilities across both the Aldermaston and Burghfield sites. Since our last report, we have issued a decision letter in relation to one of the older production facilities at Aldermaston. This accepted, subject to a programme of plant upgrades, the safety case for routine operations through until 2016. In addition, we are providing advice and guidance to the licensee as it implements improvements to its PRS processes arising from a review it undertook following our findings relating to early PRS submissions.

Parts of the AWE sites suffered from flooding in July 2007, particularly the Burghfield site, which delayed remediation work identified by the PRS and affected the emergency arrangements infrastructure. We have carefully monitored AWE's recovery process following the event and permission to undertake a limited number of production operations at Burghfield has now been sanctioned.

As part of our regulatory intervention strategy, we have in place a number of permissioning holdpoints and have recently issued two licence instruments providing agreement to certain activities. These gave agreement to the limited continued use of the current process facilities for weapons assembly/disassembly in accordance with our permissioning approach to secure delivery of identified improvements.

Following an investigation into breaches of operating rules at Aldermaston, we served an Improvement Notice on 3 April 2008. It was our opinion that in a number of areas, the existing operating rules for criticality do not contain limits and conditions necessary for safety, contrary to the requirements of LC23. Furthermore, it was also our view that in a number of areas, AWE does not have necessary written instructions in place to ensure that the criticality operating rules are implemented, which is contrary to the requirements of LC24.

To achieve improvement within a reasonable timescale, targets have been set for some key processes with a completion date of 19 January 2009. This package of work will also form a framework to be rolled-out to facilitate improvements in LC23 and LC24 at all criticality stations at AWE. We are satisfied that there is no immediate risk from criticality at AWE and continue to ensure that the risks from all activities at AWE are maintained 'as low as reasonably practicable'.

We continue to progress issues that have been identified as a result of assessments of AWE safety cases and also from inspections of the arrangements in support of LC14 (production of safety cases). The issues are being addressed in a co-ordinated way through the 'Right First Time Safety Case' (RFTSC) Project which was set up in 2006 to identify and implement appropriate interventions and to proactively engage with AWE to improve the LC14 arrangements and safety case quality. The programme of interventions is due to be completed towards the end of this year.

Nuclear new build

We announced in March 2008 that the first step of Generic Design Assessment (GDA) carried out on four designs submitted for new nuclear power stations (the EDF/Areva UK EPR, AECL ACR-1000, GE ESBWR, and Westinghouse AP1000) had found no safety shortfalls at this stage – in terms of safety, security or the environment – that would prevent any of them from ultimately being constructed on licensed sites in the UK. Public reports on each of the designs, together with a number of technical reports (51 in total) were published on the joint HSE/Environment Agency website. We also published a report by the Independent Process Review Board, and a report on the Public Involvement Process. The Independent Process Review Board concluded that we had adapted its management and decision-making processes for GDA appropriately, but they made a number of recommendations which should increase the robustness of our arrangements in the later, more detailed stages of GDA.

Our original estimate of the time and cost required to complete the Generic Design Assessment (GDA) process was subject to:

- the reactor designs being complete;
- Requesting Parties providing adequate documentation in a timely manner;
- good interactions with Requesting Parties;
- taking benefit from overseas regulator assessments; and
- sufficient resources being available in NII.

Since the completion of Step 2, we have been working to prepare for the next, more detailed stage of the GDA process for the remaining three designs.

On 6 June 2008 we wrote to BERR officials informing them that a formal decision had been made to start Step 3, but that the rate of progress through the GDA process would depend on the factors identified above, particularly the build up of adequate resources.

The public involvement process, launched in September 2007, continues. The process produced mixed results during Step 2, with large numbers of web hits and registrations on the new build e-bulletin indicating some success in arousing public interest, but a disappointingly low number of comments made by the public. We are currently looking at measures to raise public awareness of GDA and the public involvement process, and at removing any barriers preventing people from easily viewing and commenting on design information.

Other stakeholder engagement activities that have taken place or are planned include a conference for potential operators on 26 February 2008, a presentation to site stakeholder group chairmen at the NDA stakeholder event on 21 May 2008, a seminar for non-government organisations on 12 June 2008, and possibly seminars for local authorities in October 2008.

International work

International committees

The experience and expertise of our nuclear inspectors continues to be required by the international nuclear community and organisations.

International Committee on Radiological Protection (ICRP)

We have continued to maintain an interest in the review and revision of both the Euratom Basic Safety Standards (BSS) Directive and the International BSS requirements level safety standard to influence their development in a way which guards against the introduction of changes that are detrimental for the UK.

European Union – High Level Group

The European High Level Group on Nuclear Safety and Waste Management was created with the aim of maintaining and further improving the safety of nuclear installations, the safety of the management of spent fuel and radioactive waste, and the financing of the decommissioning of nuclear installations and safety of the management of spent fuel and radioactive waste. The Group met in October 2007, January 2008 and April 2008 to develop its terms of reference and work programme. Dr Weightman was elected vice-chairman of the Group and

chairman of the sub-group on Improving Nuclear Safety Arrangements. The Group will meet on 30 May 2008 to agree the work programmes for the three sub-groups.

Western European Nuclear Regulators Association (WENRA)

The Reactor Harmonisation Working Group (RHWG) continues its work monitoring national action plans (to incorporate the reference levels into regulatory requirements and ensure implementation at existing nuclear power stations). The incorporation of the reference levels into UK regulatory requirements is progressing on two main fronts; firstly they have been recognised as 'relevant good practice' in issue 4 of ND's guide on ALARP (T/AST/005), which is to appear on the website soon, and secondly by direct inclusion or mapping of the reference levels in the relevant technical assessment guides. Implementation at existing UK power stations is considered to be at a high level, and sample inspections are planned to confirm the position.

Safety study for new reactors: WENRA has asked RHWG to undertake a pilot study, concentrating in the first instance on identifying appropriate safety goals and a limited test of the methodology. RHWG expect's to have an interim report on progress for WENRA's consideration at its meeting in October 2008.

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

IAEA was invited to conduct a modular IRRS review in March 2006, in part to assess how we intend 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.

The actions identified from the IRRS report are being progressed by existing ND working groups. Monitoring, post-IRRS, has noted variable progress but that all of the issues associated with potential new build are either completed or being delivered. The ND Management Board has agreed to request IAEA to carry out the next modular IRRS mission at the end of 2009 and a project manager has been nominated.

Other IRRS missions: A deputy chief inspector supported an IAEA IRRS mission to Spain in January 2008. In addition, the Chief Inspector has been invited to lead the mission to Germany in September 2008.

Convention on Nuclear Safety (CNS)

The UK report to the three-yearly CNS is produced by HSE/ND on behalf of BERR, the lead government department. The latest review meeting was held in April 2008. Before that the UK report was submitted ahead of the 28 September 2007 deadline. A ND project team, supported by input from government departments, agencies, regulators and licensees, has responded to 164 questions arising from the report. Dr Weightman led the UK team at the review meeting. The next meeting will be in 2011.

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management

The UK report to the three-yearly Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (Joint Convention) is produced by HSE/ND on behalf of the Department for Environment Food and Rural Affairs (Defra), the lead government department. The next review meeting of the parties will be May 2009. Before that the UK report has to be submitted by the 11 October 2008 deadline. A ND project team, supported by external contractors and inputs from government departments, agencies, regulators and licensees, has been formed to develop the report. The Chief Inspector will lead the UK team at the review meeting next year.

Freedom of Information Act 2000 (FOI)

The Freedom of Information Act 2000 places a duty on public authorities to provide information on their activities to requesters. ND has received 194 requests for information under the provisions of FOI/EIR so far, 190 of which have been satisfactorily closed.

Twelve appeals have taken place, with the original decisions to withhold upheld. There is 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:

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HSE's quarterly statement of nuclear incidents at nuclear installations can be obtained from **www.hse.gov.uk/nuclear/quarterly-stat/index.htm** or from the HSE, Nuclear Directorate, Division 4a, Building 4N.G, Redgrave Court, Merton Road, Bootle, Merseyside L20 7HS, Tel: 0151 951 3484.

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 assess the impact of the newsletter and 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

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