

Compromising Nuclear Warhead Safety
In Britain

July 2007

Safety Concerns at the Atomic Weapons Establishment (AWE) Burghfield

The HSE Nuclear Installations Inspectorate (NII) is the Regulator for AWE on-site operations. NII Quarterly Reports for AWE over the past 18 months show that AWE's NII Inspectors generally support and encourage AWE to make investment in safety an on-going priority. However, it is clear that the NII does not always get the cooperation it requires and that safety is being compromised at the Burghfield Trident Warhead Assembly/ Disassembly plant near Reading, eight miles from AWE Aldermaston. There are two areas of concern to the NII: working practices and old standard facilities. Serious problems must have arisen for the NII to set up monthly meetings to keep on top of things and to provide documentary proof of NII requirements and AWE's compliance – or otherwise. The first 2007 NII Quarterly Report announced:

Corporate Issues Management

To facilitate progress of company-wide regulatory issues NII together with AWE and other stakeholders have set up a monthly Corporate Issues Regulatory Interface Meeting. This forum prioritises and allocates issues to AWE and Regulator representatives for their resolution and subsequent endorsement by the meeting. This provides an auditable process for managing corporate issues in an effective and efficient manner.

NII AWE Aldermaston and Burghfield Quarterly Report
for 1 January to 31 March 2007

<http://www.hse.gov.uk/nuclear/llc/2007/aldermaston1.hm>

2. Criticality Risk

Of all the nuclear processes at AWE, the delicate task of combining or disconnecting specialised high explosives and the warhead nuclear package is the most critical. The level of risk when working on a potential critical nuclear mass is perhaps the highest safety risk there is. AWE Nuclear technicians must, as all munitions workers, work carefully and calmly, but with an added psychological pressure. A mistake could not only cause personal death, but also a large-scale disaster with great loss of life, devastation, and environmental contamination. This high-risk process is a current concern of the NII Regulators.

One area of disagreement between the NII and the MOD is understood to be over whether to rely on probabilistic risk assessment that involves the development of models that delineate the response of systems and operators to accident initiating events over a range of values, or, alternatively to use deterministic risk assessments that provide a single point estimate of risk at a site of concern.

See United States Nuclear Regulatory Commission

<http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6823/>

3. Replacing the Warhead Assembly/Disassembly facility

The NII has required the Warhead Assembly/Disassembly facility to be replaced without delay since 2005/6. The ‘Gravel Gerties’ are where high explosives and nuclear warhead components are connected or disconnected. The colloquial name reflects the facility’s construction whereby a network of underground engineering workshops and component storage spaces are covered by mounds of gravel as a public safety measure to try to ameliorate the effects of a catastrophic event. The constant delay in replacing these aging workshops is documented below in extracts from chronological NII Quarterly Reports during 2006 and 2007. The phrase “*work packages which will be put in place to support continued operations*” is open to interpretation, but most obviously, it is the improvements in working practice that must be introduced if work is to continue safely in the old-standard buildings while new ones are awaited.

The First 2006 Quarterly Report Extract:

New Assembly/Disassembly Facility:

New facilities offer safety gains from reduction of risks compared to facilities designed to older standards. NII is pursuing the early construction and use of new assembly/ disassembly facilities at Burghfield, in order that work associated with the current AWE programme is predominantly carried out in the new facilities. Recently delays have occurred in the design phase, which may result in extended use of the current facilities.

Periodic Report on Safety:

AWE has identified the work programmes associated with the Burghfield PRS. However, the detailed work packages are still awaited. NII will use these to judge the adequacy of remedial measures, and is concerned about the timing of submissions. The main PRS improvement work is to be completed by September 2007.

Disassembly Process:

The NII has undertaken observations of the dis-assembly of certain weapons components although time constraints did not allow the whole process to be viewed. Video evidence is to be used to conclude these observations.

NII AWE Aldermaston and Burghfield Quarterly Report
for 1 January to 31 March 2006

<http://www.hse.gov.uk/nuclear/llc/2006/aldermaston1.hm>

4. Patching up the inadequate facility

The 2nd Quarterly Report for April-June 2006, repeats the statement that “NII is keen to see early completion of the new Assembly/Disassembly facility” but meanwhile, the existing plant is to be patched up and working practices improved. Further delay is indicated as AWE is asked to supply information that it should have presented to NII in the first place when seeking the safety Authorisation:

Burghfield Periodic Review of Safety (PRS)

NII continues to examine the PRS submissions for the existing Assembly /Disassembly Facility and is in discussion with AWE over the timing and scope of work packages which will be put in place to support continued operation.

New Assembly/Disassembly Facility

NII is keen to see early completion of the new Assembly/Disassembly Facility and is in discussion with AWE and MoD to finalise the programme.

Disassembly operations

AWE is seeking NII agreement to the ongoing use of the current process for weapons disassembly. NII has asked for clarification of a number of issues in relation to this but it is expected that agreement is imminent.

NII AWE Aldermaston and Burghfield Quarterly Report
for 1 April to 30 June 2006

<http://www.hse.gov.uk/nuclear/llc/2006/aldermaston2.htm>

5. AWE delay in providing information

The 3rd Quarterly Report in 2006 repeats for the third time, “NII is keen to see early completion of the new Assembly/Disassembly Facility”. But it is not clear if the further information on the patch-up plans supplied by AWE is with the MOD or if it has actually reached the NII. At any rate, it has not been received in time for assessment before this report was due:

Burghfield Periodic Review of Safety (PRS)

The second phase of documentation in support of the PRS for Burghfield cleared AWE's due process in September and will be examined by NII in the near future. This will inform the discussions underway over the timing and scope of work packages which will be put in place to support continued operation.

New Assembly/Disassembly Facility

NII is keen to see early completion of the new Assembly/Disassembly Facility and is in discussion with AWE and MoD to finalise the programme.

Disassembly operations

An agreement to the limited ongoing use of the current process for weapons disassembly has been given by NII.

NII AWE Aldermaston and Burghfield Quarterly Report
for 1 July to 30th September 2006

<http://www.hse.gov.uk/nuclear/llc/2006/aldermaston3.htm>

6. AWE delayed work packages and urgent need for a new building

The 4th Quarterly Report in 2006 reports lack of progress on ‘remediation work’. Only now, after nine months of waiting for AWE further information, is the NII able to assess the proposed work packages for remediation work. Matters are serious when the NII reports it is putting pressure on AWE to get the patch up job done as quickly as practicable. It appears that NII approves ‘limited ongoing use’ of the facility before completing its assessment:

Burghfield Periodic Review of Safety (PRS)

NII is now examining the Burghfield PRS submission and AWE's proposals for remediation work. NII is pressing AWE to complete these work packages as soon as reasonably practicable.

New Assembly/Disassembly Facility

NII is keen to see early completion of the proposed new Assembly/Disassembly Facility and is in discussion with AWE and MoD on the design and construction programme to determine whether it is reasonably practicable to bring first use of the facility sooner than is currently planned.

Disassembly Operations

A further agreement to the limited ongoing use of the current process for weapons assembly/disassembly has been given by NII.

NII AWE Aldermaston and Burghfield Quarterly Report
for 1 October to 31st December 2006

<http://www.hse.gov.uk/nuclear/llc/2006/aldermaston4.hm>

7. Compromises in Safety

By April this year, twelve months after its request for more information and three months since it began examining AWE's submission, the NII is still not satisfied. Competing pressures for warhead work to continue and for it to be done under safe conditions has to be resolved. But already in 2007, work is authorised that in the last Quarter of 2006 was unacceptable on safety grounds, with no evidence of improvements being in place.

Burghfield Periodic Review of Safety (PRS)

NII is continuing to examine the Burghfield PRS submission and AWE's proposals for remediation work.

Disassembly operations *A further agreement to the limited ongoing use of the current process for weapons assembly/disassembly has been given by NII.*

Burghfield Licence Instrument No 504:

Agreement to Implement the Trident modified disassembly process.

NII AWE Aldermaston and Burghfield Quarterly Report
for 1 January to 31 March 2007

<http://www.hse.gov.uk/nuclear/llc/2007/aldermaston1.hm>

8. Politics

Throughout the period covered by these NII Reports, the government has been planning the replacement of the Trident system with the assumption that AWE management and infrastructure is capable of producing a new warhead if required to do so. No public consultation has taken place whereby AWE safety issues could be raised in detail to inform the public and Members of Parliament before any government decision is taken. A new factor is that in order to comply with the White Paper commitment to reduce warhead numbers to 160, Burghfield must to be kept open. The balancing act is that, without a functioning Disassembly plant, neither warhead reductions nor servicing can

take place, risking dangers from storing deteriorating warheads. Would that be better or worse than their disassembly by less than adequate methods in less than adequate facilities?

9. Conclusion

The Regulator is at pains to maintain a constructive dialogue with AWE and NII public reports are written in a code of formal polite language. For unresolved problems to become apparent in NII text, the situation must be serious. Currently, AWE's new design does not satisfy the NII's modern safety standards and working practices are under scrutiny. While AWE is allowed to operate the Burghfield Assembly/ Disassembly plant after the NII recommendation that it should be replaced, the risk of an accident grows. Safety implications for workers, the local community and the south of England from AWE's failure to comply with NII requirements are truly terrifying.

In the past, The Environment Agency has imposed fines on AWE for unlawful radioactive discharges into the environment. But it is not clear how bad things have to get before the NII issues an improvement or enforcement notice to close down the Burghfield Gravel Gerties. Is it AWE or the MOD that insist on keeping it open? Should not a responsible operator close it itself, before being forced to do so by the regulator, or at least keep it in reserve only for an emergency? If all is well, why the need for a new monthly meeting and audit trail in addition to the normal Quarterly Reports?

While plans go back and forth between AWE and the NII, the MOD's dilemma is clear: either it over-rides the NII's modern safety requirements in the design of a new building or it waits for the safety regulator to authorise the impossible: a safe way to assemble Weapons of Mass Destruction. Is the NII wasting its time providing a fig leaf of safety respectability for AWE?

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Press Release

9th July 2007

New Report Published Today

COMPROMISING NUCLEAR WARHEAD SAFETY IN BRITAIN

A Report published today questions the safety of ageing nuclear warhead assembly and disassembly facilities at the Atomic Weapons Establishment (AWE) Burghfield, near Reading in Berkshire.

The Report, by the independent Nuclear Information Service (NIS), examines Health & Safety Executive Nuclear Installation Inspectorate (NII) Quarterly Reports for the AWE facility over the last 18 months. NIS questions how AWE can continue to operate the 50-year-old plant when the NII is continually concerned about warheads assembly/disassembly safety issues.

“The seriousness of the problems at Burghfield became clear when the first 2007 NII Quarterly Report said NII had set up a new monthly meeting in addition to the normal regulatory process in order to lay an audit trail of AWE’s compliance with NII requirements.”

“The dilemma for the MOD is, how can it reduce warhead numbers or service warheads if the Burghfield site is closed for safety reason?” said Di McDonald, NIS Executive Director.

AWE Burghfield is situated some five miles from AWE Aldermaston where nuclear warheads are produced. Warheads are transported by road from the Aldermaston site to AWE Burghfield where the final assembly of High Explosives into warheads takes place before they are transported to the operational store at the Royal Armaments Depot in Scotland.

The dilemma for the Ministry of Defence is that without the Burghfield facility, there would be nowhere for warheads due for regular servicing or emergency attention to be disassembled.

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Parliamentary questions
3rd September 2007

3 Sep 2007 : Column 1629W

<http://www.publications.parliament.uk/pa/cm200607/cmhansrd/cm070903/text/70903w0010.htm#07090420005434>

Trident Missiles

Mr. Hancock: To ask the Secretary of State for Defence what discussions his Department has had with (a) the Nuclear Installations Inspectorate, (b) the Atomic Weapons Establishment Burghfield and (c) others on the safety of the Trident warhead assembly/disassembly plant at Burghfield, with particular reference to (i) working practices and (ii) facilities. [152499]

Mr. Bob Ainsworth: The safety of the assembly/disassembly facilities at the Atomic Weapons Establishment (AWE) is not in question. The Nuclear Installations Inspectorate maintains a continuous dialogue with the nuclear site licensee (AWE plc) and with the MOD on all aspects of the safety of facilities and operations at AWE, where safety is paramount to all stakeholders.

Mr. Hancock: To ask the Secretary of State for Defence on what date his Department received the first communication from the Nuclear Installations Inspectorate on the safety of the warhead assembly/disassembly facility at Atomic Weapons Establishment Burghfield. [152503]

Mr. Bob Ainsworth: The Nuclear Installations Inspectorate maintains, and has since first licensing, a continuous dialogue with the nuclear site licensee at Atomic Weapons Establishment Burghfield, and with the MOD on all aspects of the safety of facilities and operations, including the warhead assembly/disassembly facility.

Mr. Hancock: To ask the Secretary of State for Defence what plans he has to replace the warhead assembly/disassembly facility at Atomic Weapons Establishment Burghfield. [152505]

Mr. Bob Ainsworth: A number of options remain under consideration. Final decisions have yet to be taken.

Mr. Hancock: To ask the Secretary of State for Defence what recent research he has (a) commissioned and (b) evaluated on the merits of using (i) probabilistic risk assessments and (ii) deterministic risk assessments for assessing risk at Atomic Weapons Establishment Burghfield; and if he will make a statement. [152506]

3 Sep 2007 : Column 1631W

Mr. Bob Ainsworth: No specific research has been commissioned into these techniques and none is needed. The Nuclear Installations Inspectorate licence conditions for the Atomic Weapons Establishment demand that appropriate safety cases are generated as a matter of routine in the evaluation of risk.

Deterministic and probabilistic risk assessments are tools employed in defining and ranking the postulated hazards. The use of such risk assessment techniques is considered best practice within the nuclear industry. Their use by AWE plc is regularly benchmarked against—and compares favourably with—other nuclear operators.