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Unit 3b Division 3 PROJECT ASSESSMENT REPORT No:46/2006

HEALTH AND SAFETY EXECUTIVE

HM NUCLEAR INSTALLATIONS INSPECTORATE

PROJECT: Report to justify the Agreement to the implementation of the Trident modified disassembly process and assembly activities at Burghfield.

SITE: AWE Burghfield

CONSENT/APPROVAL NO: N/A

LICENCE INSTRUMENT No: [REDACTED]

LICENCE and CONDITION NOs: 78, LC 22(1)

AUTHOR: [REDACTED] **SIGNED:**Date.....

APPROVED: [REDACTED] **SIGNED:**Date.....

Distribution:

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SUMMARY

In 2002 AWE submitted the Trident Modified Disassembly¹ Safety Case (TMDSC). NII had concerns over the methodology and asked for a revised risk assessment (RA) to be carried out. Licence Instrument [REDACTED] was issued to allow limited [REDACTED] in the meantime and with the restriction of [REDACTED] in Gravel Gerties. In mid 2003 a further LI [REDACTED] was granted allowing further limited disassembly with the same constraint. At this time NII understood that the RA was continuing to be developed. In March 2004 NII reiterated in writing that a new RA was necessary and that further LIs would only be granted when adequate progress had been demonstrated. AWE programmed the RA for completion in April 2006, however, it was not completed and forecasts at the time indicated that it would not be completed until April 2007. On the basis that sufficient progress had not been made toward completion of the RA, and the ongoing PRS had indicated a number of shortfalls to the facility and plant, LI [REDACTED] was issued in August 2006 to allow AWE to [REDACTED] already held at AWE(B), but only following written confirmation from DNSR that the [REDACTED] were necessary in support of the UK Strategic Deterrent. The AWE(B) letter requesting LI [REDACTED] was annexed by a Schedule of Deliverables (SD)(reference 1), which was agreed by NII prior to the granting of the LI. This schedule required AWE(B) to introduce some risk-reducing measures in the short term, including the development of that part of the TMDSC which included the significant contributors to the overall risk of [REDACTED] operations, before any further LIs would be granted.

In November AWE(B) sought agreement to [REDACTED] but not [REDACTED] a number of units. DNSR confirmed by letter that an inload of a minimum of [REDACTED] was necessary in support of the UK Strategic Nuclear Deterrent. Following site visits and examination of an "evidence" file supplied by AWE, NII granted LI [REDACTED] to permit the [REDACTED] of [REDACTED]

In December AWE asked for permission to [REDACTED], a request which was supported by NWR as being necessary in support of the UK strategic deterrent. On the basis of a number of assurances provided in the letter of request, NII granted LI number [REDACTED] to permit this work. LI [REDACTED] informed AWE that further LIs would be necessary to permission all [REDACTED], [REDACTED], and [REDACTED] or [REDACTED] of [REDACTED] units.

AWE has now applied for permission to [REDACTED] a [REDACTED] and [REDACTED] further units based upon a need to support the UK Strategic Deterrent and on progress so far in achieving completion of the deliverables offered in reference 1 at enclosure 52 and against the assurances provided in the December request letter reference 2 at enclosure 53.

¹ Whilst AWE(B) carries out both assembly and disassembly of Trident Warheads it is generally accepted that [REDACTED]

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AWE has confirmed that it has made good progress against the deliverables promised in reference 2 at enclosure 53 and that where these have not been completed, because for example access is not currently available to a particular facility, the deliverable will be achieved before next use of that facility. AWE's assertions have been "tested" by means of inspections and discussions and found to be accurate. On this basis it is considered appropriate to grant LI [REDACTED]

INTRODUCTION

The continuing use of Trident as the deterrent beyond the initial design lifetime is underwritten by the ability to maintain the serviceability of the existing stockpile. To achieve this, AWE needs to carry out disassembly and examination of units to maintain stockpile confidence and capability. Units need to be broken down for stockpile surveillance and other related reasons and to maintain Government commitments on warhead numbers.

A modified process for Trident disassembly at AWE(B) has been developed, which has incorporated a number of improvements compared to the original Trident disassembly process.

AWE has been using the Trident Modified Disassembly Process (TMDP) under the previous [REDACTED] limited agreements LI Nos. [REDACTED] and [REDACTED]

Because of the significant number of modifications being undertaken to address shortfalls identified during the PRS process, AWE has been informed that until these are completed and the safety case revised, it will be required to apply for permission to [REDACTED]

These permissions for assembly and disassembly will be granted on the basis of satisfactory progress against a schedule of agreed deliverables aimed at ensuring adequate progress with remediation works.

AWE has now requested that NII agrees to the [REDACTED] of a further [REDACTED] and the [REDACTED] of a further [REDACTED]. This PAR provides a record of the basis upon which the regulatory decision has been reached. The basis of the arguments presented in the 5 previous Project Assessment Reports PAR 02/05 (dated [REDACTED]), PAR 74/2003 (dated [REDACTED]), PAR 25/2006 (dated [REDACTED]), PAR 33/2006 (dated [REDACTED]) and PAR 40/2006 (dated [REDACTED]) provides an auditable link to the current position.

The Nuclear Weapon Regulator (NWR) has informed NII that the units which AWE has requested permission to [REDACTED] and [REDACTED] are necessary in support of the UK Strategic Defence. This note is enclosure 66.

Since the granting of LI [REDACTED] NII inspectors have monitored progress toward completion of the requirements of the deliverables in reference 1 at enclosure 52, with particular attention being paid to the development of the RA and the

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application of civil and mechanical engineering inspection and testing regimes and Human Factors issues. There has been only limited opportunity to carry out further inspections since the issue of LI [REDACTED] and this has been targeted at the deliverables promised in the December request letter at enclosure 53.

PERMISSIONING STRATEGY FOR AWE BURGHEFIELD

In order to secure ongoing improvements to the safety case, the processes and plant at AWE Burghfield, a strategy of permissioning has been adopted by NII, under which AWE is permitted only to undertake limited defined operational activities. Following such activities and prior to Agreement of the next phase of operations, reviews take place to determine that progress has been made against identified issues. It is planned that a number of licence instruments will be used to monitor progress with the PRS remedial works and continuing development of the safety case through until at least the end of September 2007. Briefly the licence instruments will cover:

LI number	Proposed activity	Main deliverable
LI [REDACTED]	Permissioning of [REDACTED]	Progress against identified deliverables including civil inspections, mechanical inspections and the risk assessment
LI [REDACTED]	Permissioning of further [REDACTED]	Progress against identified deliverables including civil inspections and mechanical inspections
LI y	Permissioning of the use of [REDACTED]	Agreement of a programme for the replacement of the [REDACTED] and progress against PRS remedial works
LI z	Permissioning of further [REDACTED]	Progress against PRS remedial works

BASIS FOR DECISION

Regulatory Background

AWE acknowledged that the operator risk associated with the original disassembly process was only acceptable for a limited throughput associated with surveillance and assembly rectification. A review of the original disassembly process was undertaken in 2002 to take account of experience with the disassembly of units of a different design, in tooling and handling and to make improvements to procedures. These changes were used by AWE to justify claims of reduced operator and public risk from disassembly operations. The resulting Pre-Operational Safety Report, categorised as Cat

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A under the licensee's arrangements went through due process including endorsement by the NSC within AWE for that category of change.

NII's initial assessment of the POSR raised a number of issues which encompassed concerns about human error probabilities, fault study issues like the Lines of Defence screening methodology and uncertainty in [REDACTED] probabilities. The initial NII assessment of the revised POSR resulted in the granting of LI [REDACTED] which gave agreement to process [REDACTED] and restricted operations to allow for [REDACTED] in the Gravel Gerties. These assessment concerns were revisited prior to the granting of LI [REDACTED] and, although there were some remaining reservations, none were considered sufficient to prevent NII agreeing to continued adoption of the TMDP whilst awaiting the new RA. In addition this would allow AWE time to develop a comprehensive risk assessment for the TMDP and over the same time period become more informed regarding the condition of the plant and facilities through the PRS process.

In March 2004 NII confirmed that a new risk assessment was required and that 'further agreements would be dependent on demonstrating adequate progress'. (AWE letter ref NII 2246R dated 13 April 2005 and NII letter BUR 77156N dated 15 July 2005 both linked the completion of the RA with the issue of the next LI). A new RA was started but progress has been unacceptably slow. AWE had initially programmed completion of the RA for April 2006 which would have provided sufficient time for NII to fully assess the information and be in a position to make a judgement on its adequacy and its level of development for the granting of LI [REDACTED]. When this date was not met the completion date was revised to November 2006. However, in August 2006 AWE declared (telecon [REDACTED] 09/08/07) that the fully completed RA would not now be available until April 2007. LI [REDACTED] was granted in August 2006 which permissioned the [REDACTED] of [REDACTED] [REDACTED] which were already held on at AWE(B). This LI was issued on the basis that DNSR confirmed that the work was necessary in support of the UK Strategic Nuclear Deterrent. LI [REDACTED] also committed AWE to complete a Schedule of Deliverables which included the production of that part of the new RA, which AWE currently believes to be the main risk contributors, in such a form and with suitable evidence to demonstrate that the risk is below the BSL. NII was satisfied that the significant contributors to the risk relating to [REDACTED] have been identified in support of the application for LI [REDACTED]. Following pressure from NII, AWE also issued a detailed RA programme, which has recently been amended to include the provision of a deterministic element to the RA. As a result of this NII granted LI [REDACTED] to permission the [REDACTED] of [REDACTED] on [REDACTED].

The ongoing PRS process has identified a significant number of shortfalls that have been categorised. Work has recently started to remediate these shortfalls. NII specialist inspectors have closely monitored the PRS process and have identified and informed the licensee of practical risk reduction methods that could quickly be applied in advance of any proposed engineering modifications. The deliverables in reference 1 linked to LI [REDACTED] required AWE(B) to consider and adopt such measures and, although the

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work is not yet fully completed with respect to written schedules of inspection and testing, good progress has been made in this area.

AWE has developed programmes of work, based around the AWE(B) operations programme, to rectify the shortfalls. NII and AWE continue to discuss the details of the remedial work programmes and more detail of the engineering solutions is developing as work proceeds.

When AWE applied for LI [REDACTED] in December, it agreed that it would not apply for further Agreement until it had completed 5 deliverables including installation of GG [REDACTED] civil inspections, an auditable links from PRS shortfalls to scope of works, completion of deliverables identified in EDMS1/800DEA78/B/LS/SC0101 and the cat 1 shortfall associated with lifting equipment. The letter of application for LI [REDACTED] states that these are completed.

NII Assessment

NII assessment has been directed at confirming adequate progress against the deliverables listed above.

Fault Studies/PSA

The fault studies assessor has produced a note for LI [REDACTED] (which is at enclosure 55) which concludes that AWE has not yet completed the RA and, in his opinion, has not completed the first bullet point deliverable in reference 1. I noted in the PAR for LI [REDACTED] that there was at that time still some 4 months available before April 2007 (agreed by [REDACTED] and [REDACTED] as the revised delivery date) by which time AWE has undertaken to produce a full risk assessment.

Additionally the fault studies assessor identified that [REDACTED] is not currently considered in the RA. In response AWE has provided the following explanation of this omission which is at enclosure 56.

"The interim risk assessment assessed the dominant fault sequences. The screening process revealed these to be associated with [REDACTED]

[REDACTED] could provide a range of consequences. The magnitude of this response is not fully understood at this point in time and could not be quantified for the interim risk assessment. Work is being undertaken in this area and a position paper will be complete by the end of January. Consideration of [REDACTED] will be made, as appropriate, for the full safety case."

I judged back in December that there was then no evidence that AWE would not be able to complete the full risk assessment by April 2007 but that this would clearly need to be monitored closely.

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Since then AWE has informed me that the "position paper on [REDACTED] has not been produced for the end of January 2007 as promised and "would not be ready for several months". This is to be confirmed in writing next week along with a programme but clearly means that the date of April 2007 for the new risk assessment will not be met.

Civil Engineering Assessment

A civil engineering assessor has produced an assessment report at enclosure 70.

The assessor concludes that:

As part of the issue of the last Licence Instrument at B SITE, the licensee undertook to do the following:

Implement an adequate maintenance and inspection regime for the specified Civil Engineering Structures - [REDACTED] and [REDACTED]

I have reviewed the arrangements that the licensee has put in place and these appear to be satisfactory. The relevant people have now been trained to carry out the weekly / monthly inspections. I have inspected records as follows: PM/5065091 for [REDACTED] and PM/5065442 for [REDACTED]. I noted that the records had not gone through the engineering assurance process and signing off the sheets had not been completed. I noted this as an observation and advised the licensee that I would follow this up at future inspections. I am content that the necessary inspection processes are in place and are being implemented. The longer term inspections required by the process are logged on the AMS system.

Implement an adequate [REDACTED] in the Gravel Gerties.

A system has been installed in the [REDACTED] Gerties. The system will be installed in the building currently undergoing refurbishment. The 804 documents have been signed off for the systems currently installed. Personnel have been trained to 'read' the [REDACTED] at the start of daily operations and this activity is included on the NOI for daily measurement checks. The measurement device is covered by a monthly and annual inspection regime which are included on the AMS system.

A modification is required to the spring tension. This cannot be completed in the operating buildings due to current processing requirements. The licensee has undertaken to replace the springs before next operational use. (See e-mail dated 30/1/07 [REDACTED] to [REDACTED].

I am content that an adequate system is in place, is adequately maintained and operated by SQEPs.

Scopes of Work documents for [REDACTED] and [REDACTED]

Scopes of Work documents for the above documents for the above buildings have been received and are included in the information pack which is on file. The documents appear to be comprehensive though they have not been checked in detail. We have now received Issue 03 of the ALARP Report and the findings from that document will be reviewed in due course. The output from the ALARP Report serves as input to the Scopes of Work.

The original Recommendation in my Assessment Report 36/06 was that 'The licensee should introduce an auditable link between the shortfalls in the Scope of Works Documents for all buildings and the project Programme activities under which the remedial works will be implemented.' The thinking behind having the auditable link was because, although it was possible to identify the remedial activities on the programme this was not particularly easy to do. Also, at that time the Scopes of Work were incomplete in terms of the planned remedial works.

The current issue of Scopes of Work for the 4 buildings above are signed off as complete and programme completion dates for the remedial works are included. The dates are drawn directly from the PRS Close-out document. However no identifier link has been included to simplify the identification process between the remedial action in the Scope of Work and the Project Programme although it is possible to identify the work on the programme. Following discussion with [REDACTED] the programming activity is ongoing with a view to bringing forward PRS remedial works in advance of the decision date and on completion of this work all the activities will be entered onto the DOORS database. It is currently expected that the reprogramming exercise will be complete in early March in time for submission to PRB on 14 March.

On this basis I am content that the licensee has issued Scopes of Work which can be tracked against the programme.

Other Issues identified during assessments for earlier Licence Instruments

Wind Loading on structures.

Earlier requirements to have an adequate means of [REDACTED] was satisfied at the time of the earlier LI in [REDACTED]. However, I have followed up this issue and asked the licensee to address issues relating to the maintenance and calibration of the on site anemometer. This is ongoing together with a review of the calculations for the building withstand. Both of these to be available to NII by the end of February. In the meantime the current arrangements are to remain in place.

Structural Issues in [REDACTED]

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Several issues were highlighted in a letter to the licensee. It has been agreed that these are being addressed as part of the PRS Process and the specific issues will be discussed during the February Site Inspection week.

Overall Recommendation.

I am content that the immediate requirements already committed to by the licensee have been adequately implemented for the civil engineering works. On this basis this Licence Instrument should not be withheld.

For your further information

There are longer term issues which need to be addressed through the PRS process and I am pursuing these with the licensee. Notably, I have a meeting arranged during the week of 19 February to discuss the following:

- 1 Wind Loading on Structures including calibration of anemometers.*
- 2. Analyses of structures in the facility currently showing a shortfall against code compliance.*
- 3. Deterministic justification for collapse modes in the store building*
- 4. Inspection/ integrity testing of [REDACTED] and other civil engineering structures.*

Mechanical Engineering Assessment

A mechanical assessor has provided an assessment note which is at enclosure 69.

He concludes that:

With reference to your request for my assessment of the improvements being made to the B site lifting equipment as recommended by NSD DIV 3 AR No. 24/06.

Following my site visit on the 7 February 2007 I am satisfied that AWE have made, and are continuing to make improvements to their maintenance and inspection requirements having taken advice from AMEC NNC, Sun Alliance and Cyclone Cranes.

The current state of the improvements are defined in AWE fax [REDACTED] 9/2/2007 (12:10 Pages 7) that provides the status of the new and existing procedures and any interim "gap" measures.

Whilst this work is not yet fully implemented and I have not reviewed the work in detail, I consider that sufficient improvements have been made such as to allow continued limited use of these important facilities (i.e. [REDACTED])

I would recommend that further inspections on the progress of this work are undertaken as each of the new maintenance activities are reported.

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Human Factors Assessment

No HF assessment has been undertaken in relation to this LI.

Assessment of this LI and the supporting paperwork.

[REDACTED] has undertaken a check of the file and the documents produced and has signed the checksheet at enclosure 73

Deliverable not addressed in the above Assessments

It was previously agreed that the deliverable for the [REDACTED] replacement would be agreement between NII and AWE of the programme associated with this work following a review by [REDACTED] to determine whether the current programme could be brought forward. This agreement was to have been made by 10 January 2007. The review has been undertaken but [REDACTED] has been unable to realise our ambitions to bring the replacement forward. He has found a number of problems with the management and definition of the project and is unable even to confirm the current programme delivery dates. He will not be in a position to do this until the 26th February 2007 – some 6 weeks after that date by which agreement with NII was supposed to have been achieved. This is disappointing but is not directly related to the issue of this LI. Nevertheless NII will need to develop its strategy for addressing the future permissioning of the [REDACTED]

CONCLUSIONS

AWE continues to develop the interim Risk Assessment for the Assembly Facility nuclear operations. There is clearly some way to go and NII will need to monitor progress although failure to meet the April 2007 delivery date against this timescale now looks almost certain.

Work has been progressing on the civil and mechanical aspects supporting the safety case.

The only area where no progress has been made or is likely to be made is in respect of the replacement for the [REDACTED]. Whilst this is undesirable, it is not considered appropriate to withhold a licence instrument for [REDACTED] [REDACTED] due to the unavailability of a satisfactory programme for this [REDACTED]. This matter will continue to be addressed through NII's permissioning strategy of holdpoints at AWE Burghfield.

RECOMMENDATIONS

It is recommended that:

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NII should issue Licence Instrument No. [REDACTED] (at enclosure 45 and checksheet at enclosure 73) agreeing to the [REDACTED] of [REDACTED] and [REDACTED] of [REDACTED]

NII should not issue further Licence Instruments in relation to [REDACTED] or [REDACTED] until AWE provides a resourced programme for the replacement of the [REDACTED] which is acceptable to NII.

NII should not issue further Licence Instruments in relation to [REDACTED] or [REDACTED] until a revised risk assessment has been supplied to NII.

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REFERENCES

Enclosure 52	EDMS1/800 DEA78/B/LS/SC0101 Issue 1 dated 18 August 2006
Enclosure 53 (Note original at E48)	Request letter UN NII 2554R EDMS1/800F35E8/B/LS/N0400 Dated [REDACTED]
Enclosure 66	Email dated 9 February 2007 from [REDACTED] [REDACTED] NWR
Enclosure 55	Assessment note from fault studies assessor dated 13 December 2006
Enclosure 70	Civil engineering assessor's e-mail supporting issue of LI
Enclosure 69	Mechanical assessor's e-mail supporting issue of LI
Enclosure 65	AWE request letter, UN NII 2581R EDMS1/800F85C5/B/LS/N0400 Dated 9 February 2007
Enclosure 72	Data from AWE showing links from PRS shortfalls to scope of work document
Enclosure 45	LI [REDACTED]
Enclosure 73	LI [REDACTED] checksheet
Enclosure 71	Advice from Admin on file references and LI number