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**Mensa**

**Agreement to Proceed with Inactive Commissioning of the Project Mensa New  
Assembly / Disassembly Facility**

Project Assessment Report ONR-OFD-PAR-20-018  
Revision 0  
26 January 2021

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## EXECUTIVE SUMMARY

### Title

Agreement to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility

### Permission Requested

AWE plc (AWE), as the licensee of the AWE Burghfield nuclear licensed site, has requested the Office for Nuclear Regulation's (ONR) agreement to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility, in accordance with its arrangements made under Licence Condition (LC) 21(1): *Commissioning*.

### Background

AWE's current Assembly Technology Centre facility located within the nuclear licensed site at AWE Burghfield supports the United Kingdom's nuclear weapons programme. AWE has committed to end nuclear operations in this facility beyond a specified date as they will be transferred to the new modern standards assembly facility. AWE is currently constructing this replacement facility ('Mensa'). The delivery of Mensa's operational capability is an essential element in AWE maintaining the risks associated with the licensed activities at Burghfield as low as reasonably practicable (ALARP).

As the construction/installation works are nearing completion, AWE is seeking ONR's agreement to commence inactive commissioning of the facility with the safety of these activities being justified in a supporting pre-commissioning safety report. This phase of commissioning will not introduce any nuclear material or operations into the facility and therefore will not pose any immediate nuclear or radiological safety risk. The purpose of the regulatory hold point is to gain assurance that AWE is effectively implementing its LC 21 arrangements such that the safety measures will operate as intended and claimed in the safety case.

### Assessment and inspection work carried out by ONR in consideration of this request

In accordance with the agreed regulatory permissioning strategy for AWE's request, I judged it appropriate to seek ONR specialist safety inspector advice from the following disciplines to inform my recommended permissioning decision: fault studies, internal hazards, control and instrumentation, human factors and mechanical engineering. The permissioning decision for AWE to commence its proposed activity has also been informed by an ONR readiness intervention to inspect and determine the adequacy of implementation of AWE's formal arrangements for compliance with LC 21 and LC 6 (*Documents, records, authorities and certificates*).

In accordance with ONR's agreements with other regulatory bodies I have also sought specialist advice from the Health & Safety Executive's specialist Chemicals, Explosives and Microbiological Hazards Division, Environment Agency and Defence Nuclear Safety Regulator on AWE's request to proceed with inactive commissioning.

### Matters arising from ONR's work

Following an assessment of AWE's proposal, all ONR inspectors advised that they have no objection to AWE's request. The other regulatory bodies consulted have also advised the same. With respect to the readiness intervention, ONR judged that AWE has adequately implemented its arrangements for compliance with LC 6 and LC 21. It was judged that relevant good practice was met when compared with appropriate benchmarks; legal duties were complied with; and no safety shortfalls were identified in the delivery of safety functions.

### Conclusions

Based on the work carried out by ONR, I judge that for the requested agreement, AWE has made an adequate safety justification to demonstrate that there will be suitable and sufficient safety measures in place to ensure that the risks from normal activities and reasonably foreseeable faults will be ALARP. ONR has not identified any safety shortfalls that would

prevent agreement to AWE's request and as such, I consider that AWE has adequately implemented its arrangements made under LC 21(1).

**Recommendations**

In accordance with the provisions made in AWE's arrangements under LC 21(1), ONR should issue Licence Instrument 542 agreeing to AWE's request to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility.

**LIST OF ABBREVIATIONS**

ALARP	As Low As Reasonably Practicable
ATC	Assembly Technology Centre
AWE	AWE plc
C&I	Control and Instrumentation
DNSR	Defence Nuclear Safety Regulator
EA	Environment Agency
HSE CEMHD	Health & Safety Executive Chemicals, Explosives and Microbiological Hazards Division
LC	Licence Condition
NSC	Nuclear Safety Committee
ONR	Office for Nuclear Regulation
PAR	Project Assessment Report
PCmSR	Pre-Commissioning Safety Report
SSC	Structures, Systems and Components
TIG	Technical Inspection Guide
UK	United Kingdom

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**1 PERMISSION REQUESTED**

1. AWE plc (AWE), as the licensee of the AWE Burghfield nuclear licensed site, has requested the Office for Nuclear Regulation's (ONR) agreement to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility [Ref. 1] in accordance with its arrangements made under Licence Condition (LC) 21(1): *Commissioning* [Ref. 2].

**2 BACKGROUND**

2. AWE's current Assembly Technology Centre (ATC) facility, located within the nuclear licensed site at AWE Burghfield supports the United Kingdom's (UK) nuclear weapons programme in support of the UK Governments 'Continuous At Sea Deterrent' policy. AWE has committed to end nuclear operations in this facility beyond a specified date [Ref. 3] as they will be transferred to the new modern standards assembly facility. AWE is currently constructing this replacement facility ('Mensa') on its Burghfield nuclear licensed site. The delivery of Mensa's operational capability is an essential element in AWE maintaining the risks associated with the licensed activities at Burghfield as low as reasonably practicable (ALARP).
3. ONR has previously granted permission for the construction and installation of Mensa [Ref. 4]. As these works are nearing completion, AWE is seeking ONR's agreement to commence inactive commissioning (here on referred to as commissioning) with the safety of these activities being justified in Part 1 of a supporting Pre-Commissioning Safety Report (PCmSR) submission [Ref. 5].
4. The purpose of the PCmSR Part 1 is to define the safety arrangements for controlling the commissioning activities and demonstrate how the Structures, Systems and Components (SSCs) and designated Safety Actions will be commissioned. Part 2 (which is not part of this request) will be an ongoing update of the Pre-Construction Safety Report to ensure the facility safety case is maintained live throughout construction and commissioning. The purpose of this is to ensure the facility safety case accurately reflects the as built/commissioned state and will ultimately form the Pre-Operational Safety Report to justify the commencement of active operations (i.e. with nuclear and explosive materials). This activity will be the subject of a separate future regulatory engagement as deemed appropriate at the time.
5. The commissioning of Mensa will not introduce any nuclear material or operations into the facility and therefore will not pose any immediate nuclear or radiological safety risk. The purpose of the regulatory hold point is to gain assurance that AWE is effectively implementing its LC 21 arrangements such that the SSCs will operate as intended and claimed in the safety case.
6. This Project Assessment Report (PAR) provides the ONR judgement on AWE's request. Despite ONR's assessment sampling all aspects of the PCmSR submission, it is deliberately circumspect in some of the facility and process details and event descriptions to be consistent with the document security classification. It has been produced in accordance with ONR guidance [Ref. 6], including the formalisation and agreement of the permissioning strategy for this regulatory hold point with the ONR Weapons sub-division Delivery Lead [Ref. 7].

**3 ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST**

7. In accordance with the agreed regulatory permissioning strategy for AWE's request [Ref. 7], and noting their significant involvement in the previous permission granted for construction/installation, I judged it appropriate to seek ONR specialist safety inspector

advice from the following disciplines to inform my recommended permissioning decision:

- Fault studies
  - Internal hazards
  - Control and instrumentation (C&I)
  - Human factors
  - Mechanical engineering
  - Conventional health and safety
8. The permissioning decision for AWE to commence its proposed activity has also been informed by an ONR readiness intervention to inspect and determine the adequacy of implementation of AWE's formal arrangements for compliance with LC 21 (*Commissioning*) and LC 6 (*Documents, records, authorities and certificates*).
9. Given that the facility will also store and handle high explosives I have also sought specialist advice from the Health & Safety Executive's (HSE) specialist Chemicals, Explosives and Microbiological Hazards Division (CEMHD) in accordance with the ONR/HSE Memorandum of Understanding [Ref. 8]. In accordance with the ONR/Environment Agency (EA) Memorandum of Understanding [Ref. 8], I have also consulted with the EA whether it had any objections on environmental grounds to ONR agreeing to AWE's request. Similarly, in accordance with the ONR/Defence Nuclear Safety Regulator (DNSR) Letter of Understanding [Ref. 8], I have consulted with the DNSR whether it had any objections to ONR agreeing to AWE's request from a nuclear explosives' safety perspective.
10. To initiate the regulatory engagement on AWE's proposed activity, an initial intervention was held between AWE and relevant regulatory bodies that focussed on clarifying understanding of the activity being requested and structure of the supporting PCmSR [Ref. 9].

#### **4 MATTERS ARISING FROM ONR'S WORK**

##### **4.1 ONR'S WORK**

11. The matters arising from the work carried out by ONR are summarised as follows.

##### **4.1.1 SPECIALIST INSPECTOR ADVICE**

12. The Fault Studies Inspector has reviewed AWE's submission and advised that a fault studies assessment is not needed [Ref. 10]. This is on the basis that there is no new fault analysis presented in the PCmSR Part 1 that would merit assessment (i.e. the fault analysis previously assessed by the Inspector for granting permission to commence installation remains extant). The Inspector also advises that closure of the extant fault studies regulatory issues attributed to Mensa is not a prerequisite to the commencement of commissioning.
13. The Internal Hazards Inspector has reviewed AWE's submission and advised that an internal hazards assessment is not needed [Ref. 11]. This is on the basis that the PCmSR Part 1 does not present new internal hazards analysis that would merit assessment. Having reviewed the submission the Inspector does advise that they are content with the proposed approach for commissioning of fire related systems. The Inspector also advises that closure of the extant internal hazards regulatory issues attributed to Mensa is not a prerequisite to the commencement of commissioning.
14. The C&I Inspector has reviewed AWE's submission and advised that a C&I assessment is not needed [Ref. 12]. This is on the basis that commissioning of the C&I SSCs is not novel or complex. This is supported by the Inspector's previous

assessment for granting permission to commence installation, which identified that the principal safety C&I SSCs are relatively few and of a relatively simple design.

15. The Human Factors Inspector has reviewed AWE's submission and undertaken a targeted assessment of the commissioning of human based safety claims; integration of human factors consideration in SSC commissioning; and implementation of AWE's LC 10 (Training) and LC 24 (Operating instructions) arrangements. In summary, the Inspector is content that the PCmSR adequately captures the safety measures identified by the pre-construction safety report and that human factors considerations are being integrated into the commissioning activities [Ref. 13].
16. The Inspector also advises that AWE's development of appropriate operating instructions and adequate worker competence to facilitate safe operations is commensurate with regulatory expectations for a safety case supporting inactive commissioning. The Inspector takes assurance from the detailed operational baseline and learning being taken from the current ATC facility. This view is supported by the similarity of the tasks between ATC and Mensa noting the process and subsequent product will essentially be the same in both facilities.
17. In conclusion, the Inspector judges that AWE has a coherent, structured and systematic approach to human factors-related commissioning with no safety shortfalls identified against regulatory expectations. The Inspector therefore advises that there are no issues that would prevent ONR agreeing to AWE's request and supports granting the permission [Ref. 13].
18. The Mechanical Engineering and Conventional Health & Safety Inspectors supported the readiness inspection with their advice contributing to the findings and conclusion of the intervention described in the following section.

#### 4.1.2 READINESS INSPECTION

19. The nuclear (from a latent perspective) and conventional safety of Mensa's commissioning activities will rely on compliance with its arrangements. Therefore, to inform ONR's permissioning decision, ONR carried out an intervention to inspect and determine the adequacy of implementation of AWE's formal arrangements for compliance with LC 21 and LC 6.
20. The intervention focussed on the readiness of Mensa's people, process and plant to comply with its LC 21 and 6 arrangements and was undertaken via desktop discussions and facility inspections. It comprised the questioning of relevant personnel; sampled review of relevant documents and records; and inspection of plant/equipment. Both nuclear and conventional health and safety aspects were sampled. The intervention was undertaken and rated against published guidance on ONR's expectations, as described in the technical inspection guides (TIGs) [Ref. 6]. Specifically, this included NS-INSP-GD-021, Revision 6, NS-INSP-GD-006, Revision 3 and ONR-INSP-GD-064, Revision 5.
21. Based on the evidence sampled at the time of the intervention against AWE's LC 6 and 21 arrangements and ONR's associated LC requirements and TIGs, ONR considers that AWE adequately demonstrated that:
  - Where appropriate, the commissioning is divided into stages.
  - There is adequate safety documentation to justify the safety of the commissioning.
  - Suitably qualified person or persons have been appointed for, controlling, witnessing, recording and assessing the results of any commissioning tests.
  - There are (or is the provision to make) adequate records to demonstrate compliance with LC 21.

- There are adequate arrangements to ensure that every commissioning document required, every record made and every certificate issued is preserved for 30 years.
22. Based on the findings of the intervention, ONR judged that AWE has adequately implemented its arrangements for compliance with LC 6 and LC 21. No remedial actions were identified as it was judged that relevant good practice was met when compared with appropriate benchmarks; legal duties were complied with; and no safety shortfalls were identified in the delivery of safety functions.

#### **4.2 EXTERNAL GOVERNANCE AND ASSURANCE**

23. As part of my initial consideration of AWE's request, I confirmed that in accordance with AWE's established governance and oversight arrangements, the PCmSR justifying AWE's request has been subject to independent peer review by its internal regulator. This concluded that it was a good quality submission with no objection to the document being taken forward [Ref. 15]. As per these arrangements, AWE has also provided assurance that its proposed activity has been subject to independent consideration and advice from its Nuclear Safety Committee (NSC) [Ref. 16] and endorsement at its final sanctioning board, the Site Governance Meeting [Ref. 17]. The NSC advised that the PCmSR makes the case for the inactive commissioning of Mensa.
24. The HSE CEMHD, EA and DNSR regulatory bodies have all advised that they have no objection to ONR agreeing to AWE's request [Ref.'s 18-20].

#### **5 CONCLUSIONS**

25. Based on the work carried out by ONR, I judge that for the requested agreement, AWE has made an adequate safety justification to demonstrate that there will be suitable and sufficient safety measures in place to ensure that the risks from normal activities and reasonably foreseeable faults will be ALARP. ONR has not identified any safety shortfalls that would prevent agreement to AWE's request and as such, I consider that AWE has adequately implemented its arrangements made under LC 21(1).

#### **6 RECOMMENDATIONS**

26. In accordance with the provisions made in AWE's arrangements under LC 21(1), ONR should issue Licence Instrument 542 [Ref. 21] agreeing to AWE's request to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility [Ref. 1].

**7 REFERENCES**

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11. *Internal Hazards Inspector's advice on Mensa PCmSR.* ONR. E-mail dated 14 December 2020. CM Ref. 2020/320809.
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18. *HSE CEMHD's advice on AWE's request to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility.* HSE CEMHD. E-mail dated 16 December 2020. CM Ref. 2020/321342.
19. *EA's advice on AWE's request to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility.* EA. E-mail dated 23 December 2020. CM Ref. 2020/323587.
20. *DNSR's decision on AWE's request to proceed with inactive commissioning of the Project Mensa new assembly/disassembly facility.* DNSR. E-mail dated 11 January 2021. CM Ref. 2021/002720.
21. *Licence Instrument No. 542.* BUR77325N. ONR. 26 January 2021. CM Ref. 2020/296627.