



ONR GUIDE			
LC35 DECOMMISSIONING			
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TABLE OF CONTENTS

1	INTRODUCTION	2
2	PURPOSE AND SCOPE	2
3	LICENCE CONDITION 35: DECOMMISSIONING	3
4	PURPOSE OF LICENCE CONDITION 35	3
5	GUIDANCE ON ARRANGEMENTS FOR LC35.....	4
6	GUIDANCE ON INSPECTION OF ARRANGEMENTS AND THEIR IMPLEMENTATION..	6
7	FURTHER READING	7

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1 INTRODUCTION

- 1.1 Many of the licence conditions attached to the standard nuclear site licence require, or imply, that licensees should make arrangements to comply with regulatory obligations under the conditions. ONR inspects compliance with licence conditions, and also with the arrangements made under them, to judge the suitability of the arrangements made and the adequacy of their implementation. Most of the standard licence conditions are goal-setting, and do not prescribe in detail what the licensees' arrangements should contain; this is the responsibility of the duty-holder who remains responsible for safety. To support inspectors undertaking compliance inspection, ONR produces a suite of guides to assist inspectors to make regulatory judgements and decisions in relation to the adequacy of compliance, and the safety of activities on the site. This inspection guide is one of the suite of documents provided by ONR for this purpose.

2 PURPOSE AND SCOPE

- 2.1 This guide facilitates a consistent approach to Licence Condition LC35 compliance inspections and to provide guidance to inspectors whilst inspecting licensees' arrangements in this area.
- 2.2 This guidance is complementary to NS-TAST-GD-026 and the SAPs, which give guidance when assessing the adequacy of arrangements for the decommissioning of any plant or process which may affect safety. ONR's policy is that these documents demonstrate how ONR links its guidance to the International Atomic Energy Agency (IAEA) safety standards and meets the Western European Nuclear Regulators Association (WENRA) Safety Reference Level for decommissioning.
- 2.3 Licence Condition 35(1) requires licensees to make and implement adequate arrangements for decommissioning facilities on a nuclear licensed site. Although decommissioning is the last stage of the overall lifecycle of a facility, planning and preparation for decommissioning should occur with appropriate levels of detail from the moment that the design of a facility commences. The aim is to ensure that facilities are designed and operated so that they can be safely decommissioned to achieve the final end-state and there is a smooth transition from the arrangements and safety case for the operating phase to the decommissioning phase. This guidance has therefore been written to apply to all stages of a facility's lifecycle. However, it is important that the guidance is applied proportionately across all the lifecycle stages.
- 2.4 Inspectors should be mindful that decommissioning programmes may also require some construction work or other significant modifications. Hence the decommissioning arrangements need to link with the arrangements under, for example LC22.
- 2.5 Inspectors should be aware that consent must be obtained from ONR under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 as amended (EIADR) before decommissioning of reactors can commence. In applying for consent the Licensee must submit an Environmental Statement, which reports upon its environmental impact assessment for the decommissioning project, to ONR. Inspectors should contact the EIADR Team for further information.
- 2.6 As most decommissioning operations include elements of construction work, the Construction (Design and Management) Regulations 2015 will also often apply. Inspectors should contact the ONR Conventional Safety specialists for further information.

3 LICENCE CONDITION 35: DECOMMISSIONING

- 35(1)** The licensee shall make and implement adequate arrangements for the decommissioning of any plant or process which may affect safety.
- 35(2)** The licensee shall make arrangements for the production and implementation of decommissioning programmes for each plant.
- 35(3)** The licensee shall submit to ONR for **approval** such part or parts of the aforesaid arrangements or programmes as ONR may **specify**.
- 35(4)** The licensee shall ensure that once approved no alteration or amendment is made to the arrangements or programmes unless ONR has **approved** such alteration or amendment.
- 35(5)** The aforesaid arrangements shall where appropriate divide the decommissioning into stages. Where ONR so **specifies** the licensee shall not commence nor thereafter proceed from one stage to the next of the decommissioning without the **consent** of ONR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed decommissioning and shall where appropriate provide for the submission of this documentation to ONR.
- 35(6)** The licensee shall, if so **directed** by ONR where it appears to them to be in the interests of safety, commence decommissioning in accordance with the aforesaid arrangements and decommissioning programmes.
- 35(7)** The licensee shall, if so **directed** by ONR, halt the decommissioning of a plant and the licensee shall not recommence such decommissioning without the **consent** of ONR.

4 PURPOSE OF LICENCE CONDITION 35

- 4.1 Licence Condition 35(1) is intended to ensure that Licensees can demonstrate fit-for-purpose arrangements to ensure nuclear safety is secured and associated risks reduced so far as is reasonably practicable during decommissioning. To achieve this, the arrangements should consider decommissioning at all stages in a facility's lifecycle, from planning, design, construction and operational stages of a facility, including modifications to existing plant.
- 4.2 Licence Condition 35(2) requires the licensee to have a decommissioning programme(s) for each plant or building, which identifies and secures the necessary resources to achieve a systematic and progressive reduction in hazard to a defined end state within a justifiable timescale.
- 4.3 Licence Condition 35(3) allows ONR to Approve all or parts of a licensee's arrangements. For example this condition could be used to Approve the principles underpinning the licensee arrangements. This would ensure that licensees cannot deviate from the agreed principles without further ONR Approval.
- 4.4 Licence Condition 35(4) ensures that no approved arrangements can be altered without further approval from ONR.
- 4.5 Licence Condition 35(5) ensures where appropriate, that licensees' arrangements provide for decommissioning to proceed as a series of sequential stages with the objective of each stage resulting in a significant reduction in hazard.
- 4.6 ONR may then apply regulatory control by Specifying hold points between stages. Subsequent Consent would then be required for the licensee to commence a stage or to proceed from one stage to the next.

- 4.7 Licensees' arrangements must provide a safety case to demonstrate that the proposed decommissioning programme can be carried out safely. Arrangements should allow for the safety case to be submitted ONR.
- 4.8 Licence Condition 35(6) gives the power to ONR to direct that decommissioning commences but only within the licensees' arrangements and programmes.
- 4.9 Licence Condition 35(7) gives discretionary powers to ONR to direct that decommissioning of any plant or process be commenced in accordance with the decommissioning programme or halted.

5 GUIDANCE ON ARRANGEMENTS FOR LC35

- 5.1 The licensee should have satisfactory arrangements to address all the requirements of LC35 including compliance with the regulatory powers in LC35(3), 35(4) and LC35(5), 35(6) and 35(7) should they be applied. The arrangements should be readily available, up to date and controlled under a management system compliant with the requirements of LC17 (Management Systems).
- 5.2 ONR expects that licensees will have a clear documented strategy that will demonstrate how all redundant, operational and proposed plant can be decommissioned safely at end of life. The strategy document will consider options and timescales for decommissioning the facility and the end-state after completion of all decommissioning activities.
- 5.3 During the initial design phase of each facility, features and operational philosophies should be considered and incorporated into the design. These design features should be referenced in the decommissioning programme, demonstrating that the extent of decommissioning is minimised and risks reduced so far as is reasonably practicable.
- 5.4 The strategy should be a live document which explains the scope of work and the approach to be taken. This includes a requirement to develop a decommissioning strategy during the design phase of new facilities. The strategy should be iterative and proportional to the life cycle phase of the facility. During initial design, the strategy should include detailed descriptions of layouts, transport routes and decommissioning features. At this stage it would be acceptable to have conceptual level of design of the decommissioning techniques that are to be used.
- 5.5 This document should as a minimum include:
 - a) A consideration of the options for decommissioning redundant, operational and proposed facilities. Reasons for the preferred options should be identified and options not involving immediate dismantling shall be rigorously justified.
 - b) How the decommissioning activities will be staged within the overall timescale for decommissioning the site.
 - c) How interactions with other facilities both on and off site will be managed.
 - d) Management arrangements for decommissioning.
 - e) Adequate costed plan and resourcing for all decommissioning.
 - f) Decommissioning end states for plants, buildings and site.
 - g) How all forms of waste arising from operational and decommissioning phases including waste retrieved from legacy facilities will be managed.
 - h) A demonstration that priorities and associated timescales have been established and are based on a sound risk-reduction basis.
 - i) How institutional knowledge of facility, plant and site will be generated and maintained throughout the lifecycle of the facility. This should include appropriate records and reports that are relevant to decommissioning, e.g.

design and modifications, records on the use of the facility, events and incidents, radionuclide inventories, dose rates and contamination levels.

- 5.6 The Licensee should develop a decommissioning programme for each facility that will become more detailed as the facility approaches end of life. The programme should deal with higher risk plant early and demonstrate a continued reduction in risk until clearly defined end states are achieved. The programme should be reviewed regularly as decommissioning progresses. Progress against hold points and milestones should be monitored and the Licensee should justify any programme slippage as delays in completion could have critical impact on other plants or decommissioning programmes.
- 5.7 These programmes will describe the activities, including the timeframe and the end state of the decommissioning project, and the content of the individual stages if a phased approach is applied. Prior to commencement of decommissioning, the licensee would be expected to discuss its programme with ONR.
- 5.8 The decommissioning programme should demonstrate how each facility will be safely decommissioned, and as a minimum should:
- a) Be consistent with the decommissioning strategy.
 - b) For new facilities, identify design features that have been incorporated to optimise decommissioning operations
 - c) Detail the decommissioning methodology.
 - d) Detail the systems and equipment needed to perform the decommissioning works.
 - e) Detail the associated maintenance system to ensure that assets remain current where possible and obsolescence is monitored and acted upon.
 - f) Identify the human resources required for safe decommissioning.
 - g) Identify wastes generated and demonstrate robust waste management and disposal plans.
 - h) Detail the characterisation surveys required to demonstrate progressive hazard reduction and to demonstrate that the final end state has been achieved.
- 5.9 Decommissioning should be carried out as soon as is reasonably practicable, taking into account all relevant factors. Should the licensee propose to defer plant decommissioning, then this should be explicitly justified in the safety case and strategy. The safety case should limit the period of deferment and demonstrate that the risks posed by the plant will be acceptable and properly controlled throughout. It should also justify how future safe decommissioning and the management of resultant radioactive wastes will not be prejudiced by the deferment. Where decommissioning of a facility will be completed following a period of care and maintenance, the facility should undergo post-operational clean out. The licensee should demonstrate that the facility is passively safe and risks are reduced so far as is reasonably practicable prior to entering a care and maintenance phase. Should the licensee inform ONR of its intention to defer decommissioning, the inspector should consult ONR's Liabilities Regulation Specialism.
- 5.10 Robust change control processes should be included in the arrangements. These will control changes during decommissioning when they occur. Changes should be categorised according to the potential safety significance. ONR's prior agreement to changes in the most significant category should be required. Prior to any changes being enacted, Licensees should be able to demonstrate that the change does not have a significant detrimental impact on achieving a systematic reduction in hazard and that all associated risks have been reduced so far as is reasonably practicable. In

order to exert regulatory control, ONR may consider Approval of the licensee's change control process.

- 5.11 ONR expects that adequate disposal or storage routes for all waste generated from decommissioning activities exist before specific plant decommissioning is commenced. Where the timescales for storage of particular wastes are lengthy, these wastes should be stored in accordance with good engineering practise and in a passively safe condition.
- 5.12 Facilities should be designed and operated so that they can be safely decommissioned. The Licensees arrangements need to identify how decommissioning will be considered during the planning, design, construction and operational stages of a new facility to achieve this. Modifications to an existing facility should also consider the impact on the existing decommissioning strategy and programme.

6 GUIDANCE ON INSPECTION OF ARRANGEMENTS AND THEIR IMPLEMENTATION

- 6.1 The Inspector should review the decommissioning programme and check that all plant and buildings (including proposed new build facilities) on site are included even if they are still operating. Progress with decommissioning should be compared with the programme and strategy.
- 6.2 The Inspector should examine the organisational capability of the licensee to safely decommission their facilities. This should include as a minimum, competency of staff and contractors, maintenance arrangements during decommissioning, supply chain control, control and supervision and emergency preparedness.
- 6.3 Where changes to the programme or strategy have been made, the inspector should confirm that the change has been adequately controlled and that the Licensee is managing the alignment between the safety case documentation and decommissioning activities and the decommissioning strategy and programme. For reactors, any changes in decommissioning programme also need to align with the EIADR consent received prior to decommissioning commencing.
- 6.4 As decommissioning progresses, changes may be introduced into the decommissioning methodology that may cause advancement or delay. The Inspector should sample and review any changes to decommissioning methodology or programme and check that the licensee can demonstrate that risks remain reduced so far as is reasonably practicable.
- 6.5 The Inspector should sample and check the licensee's control of actual decommissioning. The following list includes topics as minimum that the Inspector should consider reviewing
 - a) Progress of decommissioning compared to programme.
 - b) Quality plan is being adhered to and resulting records are captured, controlled and archived.
 - c) Demarcation of the decommissioning area and access/egress control.
 - d) Suitable and sufficient systems of work are in place and being adhered to.
 - e) Control and supervision of staff and contractors.
 - f) Clearly defined and recognised responsibilities and demonstration of competency (staff and contractors).
 - g) Demonstration of adequate maintenance.
 - h) Inclusion of operational experience into decommissioning methodology.

- i) Demonstration of monitoring interdependencies with other facilities, systems or services.
- 6.6 The inspector should check that the Licensee is capturing institutional knowledge of the facility adequately throughout the life-cycle so that it is accessible during decommissioning. Documents and records that may be required for decommissioning purposes should be identified, prepared, updated, retained and owned so that they will be available when required.

7 FURTHER READING

- 7.1 Office for Nuclear Regulation Technical Assessment Guide: Decommissioning on Nuclear Licensed Sites, NS-TAST-GD-026.
- 7.2 Office for Nuclear Regulation Safety Assessment Principles for Nuclear Facilities, 2014
- 7.3 Fundamental Safety Principles, (SF-1), IAEA
- 7.4 Decommissioning of Facilities, GSR part 6, IAEA Safety Standards Series
- 7.5 Safety Assessment for the Decommissioning of Facilities using Radioactive Material, WS-G-5.2, IAEA
- 7.6 WGWD Decommissioning safety reference levels report (version 2.2), April 2015, WENRA
- 7.7 Guidance on the Purpose, Scope and Content of Nuclear Safety Cases Section 10, T/AST/051.