



ONR GUIDE			
LC 19: Construction or Installation of New Plant			
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TABLE OF CONTENTS

1	INTRODUCTION	2
2	PURPOSE AND SCOPE	2
3	LICENCE CONDITION 19: CONSTRUCTION OR INSTALLATION OF NEW PLANT	2
4	PURPOSE OF LICENCE CONDITION 19	3
5	GUIDANCE ON ARRANGEMENTS FOR LC 19.....	4
6	GUIDANCE ON INSPECTION OF ARRANGEMENTS FOR LC 19.....	4
7	GUIDANCE ON INSPECTION OF IMPLEMENTATION OF ARRANGEMENTS FOR LC 19	7
8	CONSULTATION WITH OTHER REGULATORS	8
9	REFERENCES	8

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 The purpose of this guidance is to facilitate a consistent approach to LC 19 compliance inspection and to provide assistance to inspectors while carrying out their duties in this area. The guidance should not be regarded as mandatory. Although every attempt has been made to deal with all the key features which are likely to arise in inspecting for compliance against this licence condition additional aspects may need to be examined to ensure a comprehensive and complete inspection.

2.2 This guidance is for use by all Nuclear Safety Inspectors in ONR. The guidance does not indicate when or to what extent LC 19 inspections should be carried out as these matters are covered in other documents such as site inspection plans.

2.3 The guidance provided is split into four main elements:

- Purpose of Licence Condition 19.
- Guidance on arrangements for LC 19.
- Guidance on inspection of arrangements for LC 19.
- Guidance on inspection of implementation of arrangements for LC 19.

3 LICENCE CONDITION 19: CONSTRUCTION OR INSTALLATION OF NEW PLANT

19(1) Where the licensee proposes to construct or install any new plant which may affect safety the licensee shall make and implement adequate arrangements to control the construction or installation.

19(2) The licensee shall submit to ONR for approval such part or parts of the aforesaid arrangements as ONR may specify.

19(3) The licensee shall ensure that once approved no alteration or amendment is made to the approved arrangements unless ONR has approved such alteration or amendment.

19(4) The aforesaid arrangements shall where appropriate divide the construction or installation into stages. Where ONR so specifies the licensee shall not commence nor thereafter proceed from one stage to the next of the construction or installation without the consent of ONR. The arrangements shall include a requirement for the provision of adequate documentation to justify the safety of the proposed construction or installation and shall where appropriate provide for the submission of this documentation to ONR.

19(5) The licensee shall, if so directed by ONR, halt the construction or installation of a plant and the licensee shall not recommence such construction or installation without the consent of ONR.

4 PURPOSE OF LICENCE CONDITION 19

- 4.1 This Licence Condition is part of the group of conditions (LCs 19, 20, 21, 22 & 35) that require the licensee to provide a system of rigorous and appropriate control of: construction or installation of any new plant which may affect safety (LC 19); modification to the design which may affect safety to any plant during the period of construction (LC 20); commissioning of any plant or process which may affect safety (LC 21); modification or experiment on any part of existing plant or processes which may affect safety (LC 22); and, decommissioning of any plant or process which may affect safety (LC 35).
- 4.2 This group of conditions refers to plant which may affect safety. ONR considers that plant which may affect safety should include plant which has the potential to affect safety as well as plant which has a direct bearing on safety. Hence plant and equipment which does not have direct bearing on safety but which may indirectly affect safety via its failure or other fault conditions is included in the definition of plant which may affect safety.
- 4.3 The purpose of LC19 is to maintain the integrity of the design of new plant which may affect safety and thus compliance with its nuclear safety case during the construction or installation phase. Hence, LC19 does not directly seek to assess the adequacy of the safety case or the detailed design proposal. However, it is expected that the licensee's arrangements under LC19 link into its LC14 arrangements to ensure that the safety case and detailed design produced under LC14 arrangements demonstrates the safety of each stage before it commences.
- 4.4 This is achieved by LC19(4) requiring that the licensee's arrangements for compliance with LC19(1) include for the provision of adequate documentation to justify the safety of the proposed construction or installation. This documentation to justify safety should be produced in accordance with the licensee's arrangements for compliance with LC14(1) "arrangements for the production and assessment of safety cases consisting of documentation to justify safety during the design, construction, manufacture, commissioning, operation and decommissioning phases of the installation".
- 4.5 If ONR uses its primary powers under LC19(4) or derived powers under arrangements made under LC19(1) to specify hold points in the construction or installation of new plant, ONR may assess the adequacy of the safety case produced under the licensee's LC14(1) arrangements to inform ONR's subsequent permissioning decisions. In such cases, ONR will use applicable guidance such as ONR's Safety Assessment Principles and relevant Technical Assessment Guides.
- 4.6 LC 19 arrangements are aimed specifically at the construction or installation of new plant which may be part of a new or existing nuclear installation. In the case of the latter the new plant may be constructed within the envelope of an existing plant facility. In such circumstances the licensee may wish to introduce the new plant as a modification to an existing plant, i.e. under its arrangements for compliance with LC 22.
- 4.7 It is expected that LC19 requirements will generally be applied to such projects as the construction of a new nuclear power plant or the addition of significant plant or facilities outside the envelope of an existing plant facility, such as a new radioactive waste store on an existing site.
- 4.8 Either way, the LC19 or LC22 arrangements shall address the impact of the introduction of the new plant upon the safety of the existing nuclear installation. In

addition, the arrangements shall clearly identify and define ownership and responsibilities both during construction and installation and prior to commencement of commissioning.

- 4.9 Modifications to the design of plant under construction in accordance with LC19 arrangements shall be progressed under arrangements made under LC 20.
- 4.10 The regulation of conventional health safety matters and applicable legislation such as Construction (Design and Management) Regulations 2015 in relation to the construction or installation of new plant is excluded from LC 19. As such, ONR inspectors should refer to ONR's guidance on "The regulation of conventional health and safety on GB nuclear sites" (Ref. 1).
- 4.11 The regulation of security aspects in relation to the construction or installation of new plant is excluded from LC 19. As such, ONR inspectors should refer to the relevant Security Assessment Principles (SyAPs) for guidance on security requirements in relation to the construction or installation of new plant, of particular relevance is SyDP 6.6 - Nuclear Construction Sites (Ref. 2).

5 GUIDANCE ON ARRANGEMENTS FOR LC 19

- 5.1 In addition to the general requirements for all Licence Conditions the licensee's arrangements shall satisfy the specific Licence Condition requirement(s) for Licence Condition 19 which are:
- A clear requirement that the arrangements control construction or installation of new plant which may affect safety. 19(1)
 - The requirement to submit to ONR for approval such part or parts of the arrangements as ONR may specify. 19(2)
 - The requirement that once approved by ONR arrangements cannot be altered or amended without the approval of ONR. 19(3)
 - The requirement, where appropriate, that the construction or installation shall be divided into stages. 19(4)
 - The requirement that where ONR so specifies, the licensee shall not commence nor thereafter proceed from one stage to the next without the consent of ONR thereby providing regulatory control by requiring hold points in the implementation process. 19(4).
 - The requirement for the provision of adequate safety documentation to justify the safety of the construction or installation and where appropriate provide for the submission of this documentation to ONR. 19(4).
 - The requirement to halt the construction or installation if so directed by ONR and not to recommence without the consent of ONR. 19(5)

6 GUIDANCE ON INSPECTION OF ARRANGEMENTS FOR LC 19

- 6.1 The following list includes elements of good practice which have been compiled from information currently available. This list is neither exclusive nor exhaustive and will be subject to review and revision in the light of operational experience.
- 6.2 If licensees have generic model(s) for arrangements then it is for the site to justify any deviation from the model(s). Site staff should be able to demonstrate how their

arrangements meet the regulatory requirements. **[Note: not all licensees use generic models].**

- 6.3 Arrangements should include the appropriate use of the licensee's' arrangements under LC 14 for the production and assessment of the safety cases consisting of documentation to justify safety during the design, construction, manufacture, commissioning, operation and decommissioning.
- 6.4 The LC 19 arrangements should ensure that that the safety case produced under the licensee's LC14 arrangements is sufficiently mature to ensure the safety of the applicable stage of construction or installation before it commences. In some cases, where the construction or installation is complex, the relevant safety case may need to be further sub-divided, for example, into civil structures (or particular constituent civil structures) and facility installation (or particularly aspects of facility installation).
- 6.5 It is ONR's expectation that LC19 arrangements ensure that the safety case is adequately developed to ensure that the detailed design to be constructed or installed will meet the safety objectives before construction or installation commences. Further guidance on ONR's expectations with respect to the purpose, scope and content of safety cases can be found in NS-TAST-GD-051 (Ref.3).
- 6.6 The licensee's programme for construction or installation shall include the time necessary for ONR, and other regulators, to complete an assessment of any safety submissions as required by LC 19(4) where ONR has specified a primary hold point under LC 19(4) or a derived powers hold point under arrangements made under LC19(1). This time shall be independent of, and additional to, the time required for the licensee to apply its own internal peer review and governance processes to the safety submission.
- 6.7 The arrangements for construction and installation shall ensure that the integrity of the justified design is maintained during construction and installation. These arrangements shall include for the management of technical queries, non-conformities and omissions, etc. In the event that a technical query, non-conformity or omission modifies the design of the new plant, the arrangements shall require such modifications to be managed in accordance with the licensee's arrangements for compliance with LC 20.
- 6.8 Arrangements for the construction and installation of a new plant at an existing installation shall address the impact upon, and the continued validity of, that installation's safety case.
- 6.9 Where the construction or installation of a new plant at an existing installation impacts upon the extant safety case the licensee shall use its arrangements under LC 22 to manage that impact.
- 6.10 Where the construction or installation of new plant takes place on a licensed site separate from, but nearby to, a different licensed site the arrangements should include appropriate liaison with the licensee of the nearby site to manage the impact of construction or installation upon the safety of the nearby site.
- 6.11 Arrangements should include for the preservation of completed structures and/or installed equipment until such time they are required for commissioning and/or responsibility is transferred from that part of the licensee's organisation responsible for construction/commissioning to that part of the licensee's organisation responsible for operations.
- 6.12 Arrangements should require that there is a clear linkage to the arrangements for compliance with associated licence conditions. For example:

- LC 6: Documents, records, authorities and certificates.
 - LC 10: Training.
 - LC 12: Duly authorised and other suitably qualified and experience persons.
 - LC 13: Nuclear safety committee.
 - LC 14: Safety documentation.
 - LC 17: Management systems.
 - LC 20: Modification to design of plant under construction.
 - LC 21: Commissioning.
 - LC 22: Modification or experiment on existing plant.
 - LC 36: Organisational capability.
- 6.13 ONR's internal guidance "Construction Assurance" (NS-TAST-GD-076), (Ref.4), provides guidance and advice that will inform a judgement on the adequacy of a licensee's arrangements for civil engineering aspects of construction assurance. This guidance may also inform ONR's judgement of the broader aspects of the licensee's arrangements for securing construction and installation assurance.
- 6.14 The IAEA Specific Safety Guide SSG-38, (Ref. 5), provides recommendations and guidance based upon international good practice and applies to the construction stage of new nuclear installations and to major modifications and refurbishment of existing nuclear installations. The guide may also inform a judgement on the adequacy of the licensee's arrangements for compliance with LC 19.
- 6.15 A licensee's arrangements for compliance with LC 19(1) shall, in line with LC 19(4), where appropriate divide the construction or installation programme into stages and have arrangements for managing both the commencement of and also proceeding from one stage to the next of the programme, e.g. via programme hold points. Such arrangements shall recognise ONR's option to use its primary powers under LC 19(4) to specify that the licensee shall not commence nor thereafter proceed from one stage to the next of the construction or installation without the consent of ONR.
- 6.16 ONR may opt to permission all or only selected stages of the construction or installation.
- 6.17 The licensee shall give ONR the option to exercise flexibility when permissioning construction or installation of a new plant which may affect safety. Thus the arrangements should give ONR the necessary derived powers via the use of licence instruments to, for example, agree or acknowledge the licensee's intent to commence or proceed from one stage to the next of the construction or installation.
- 6.18 The ONR internal guidance "Flexible Permissioning Including the use of Derived Powers" (NS-PER-GD-001), (Ref 6), will inform a judgement on the acceptability of the derived powers contained within a licensee's arrangements by reference.

7 GUIDANCE ON INSPECTION OF IMPLEMENTATION OF ARRANGEMENTS FOR LC 19

- 7.1 Inspectors are required to apply their experience and discretion to determine the extent and depth of a particular inspection taking due account of a number of factors such as safety significance, novelty, complexity, importance and technical specialism of the area.
- 7.2 The following list of areas for inspection of implementation of arrangements for compliance with LC 19 has been compiled from best information available. This list is neither exclusive nor exhaustive and will be subject to review and revision in light of operational experience.
- 7.3 Inspect the effectiveness of quality and surveillance arrangements in ensuring that construction or installation is delivered in accordance with the justified design and to expected quality standards using an appropriate quality management system assessed under LC 17. This should include effective oversight of supply chain for systems, structures and components manufactured off the construction site
- 7.4 Inspect the application of the licensee's system for progressing issues arising from design, construction or installation activities including the management of technical queries, concessions and omissions to ensure integrity of the justified design intent.
- 7.5 Inspect the arrangements for ensuring appropriate links to the safety case requirements for every stage of construction and installation and that those responsible for undertaking and implementing these activities are aware of/have access to the safety case requirements. Inspect the licensee's safety classification system for construction or installation of new plant, challenge as necessary.
- 7.6 Inspect the licensee's implementation of its arrangements to construct or install any new plant which may affect safety, including whether:
- work has been subject to the licensee's internal approval or hold point processes before commencement;
 - responsibilities for securing and maintaining compliance with the nuclear safety case are clearly defined and recognised, including interfaces between licensees and contractors;
 - appropriate instructions have been written for on-site activities having the potential to impact nuclear safety;
 - the licensee's oversight of the contractors' control and supervision of construction and installation activities is adequate; and,
 - adequate segregation is in place to limit interaction with nuclear safety related plant.
- 7.7 Inspect the licensee's readiness for proceeding to the next significant construction stage.
- 7.8 Inspect the adequacy of packaging, shipping, handling, receipt and storage of equipment, including at off-site manufacturing facilities, to prevent abuse, misuse, damage, deterioration or loss of identification.
- 7.9 Inspect the arrangements for the preservation and maintenance of completed structures and installed equipment pending commencement of commissioning and/or transfer of responsibility for ownership of the same to the licensee's operations organisation. The arrangements should ensure that completed structures and installed equipment are suitably protected from degradation due to environmental effects or

damage and subject to appropriate maintenance and inspection during the construction phase. This will include the requirement to produce sufficient records of maintenance and inspection under LC6.

- 7.10 Although construction or installation delays are largely a commercial matter for the licensee, progress on some activities may be critical to the success of other projects, such as the addition of a waste store that facilitates wider decommissioning. The licensee should recognise the knock-on effects of any such delays.
- 7.11 Where significant delays are experienced the licensee's arrangements should ensure the continued appropriateness and adequacy of preservation and maintenance arrangements during the construction phase.
- 7.12 Inspect the licensee's arrangements for the retention of documents, records, authorities and certificates relating to the construction or installation of new plant which may affect safety, as required under LC 6.

8 CONSULTATION WITH OTHER REGULATORS

- 8.1 The inspector should refer to relevant Memoranda of Understanding to ensure that ONR's regulation of construction or installation is informed by appropriate consultation and liaison with other regulatory bodies, for example; Environment Agency; the Scottish Environment Protection Agency; Natural Resources Wales; the Health and Safety Executive; the Defence Nuclear Safety Regulator etc (Ref. 7).

9 REFERENCES

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- 1 ONR Nuclear Safety Technical Inspection Guide, The Regulation of Conventional Health and Safety on GB Nuclear Sites - NS-INSP-GD-051 - http://www.onr.org.uk/operational/tech_insp_guides/ns-insp-gd-051.pdf
 - 2 ONR, Security Assessment Principles for the Civil Nuclear Industry - <http://www.onr.org.uk/syaps/security-assessment-principles-2017.pdf>
 - 3 ONR Nuclear Safety Technical Assessment Guide, The Purpose, Scope, and Content of Safety Cases - NS-TAST-GD-051 - http://www.onr.org.uk/operational/tech_asst_guides/ns-tast-gd-051.pdf
 - 4 ONR Nuclear Safety Technical Assessment Guide, Construction Assurance - NS-TAST-GD-076 - http://www.onr.org.uk/operational/tech_asst_guides/ns-tast-gd-076.pdf
 - 5 IAEA Safety Standards, Construction for Nuclear Installations. Specific Safety Guide No. SSG-38. IAEA Website. <https://www-pub.iaea.org/MTCD/Publications/PDF/Pub1693Web-54107132.pdf>
 - 6 ONR Nuclear Safety Permissioning Guide, Flexible Permissioning Including the use of Derived Powers. NS-PER-GD-001 - http://www.onr.org.uk/operational/tech_insp_guides/ns-per-gd-001.pdf
 - 7 ONR Memoranda of Understanding - <http://www.onr.org.uk/agency-agreements-mou.htm>