



ONR GUIDE			
GUIDANCE: LC15 Periodic Review			
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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.
- 1.2 To support inspectors undertaking compliance inspection, ONR produces a suite of guides to assist inspectors in making regulatory judgements and decisions in relation to the adequacy of licensee compliance with the requirements of the licence conditions 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 LC15 compliance inspection and to provide assistance to inspectors while carrying out their duties in this area. The guidance should not be regarded as either comprehensive or mandatory. There is also an ONR Technical Assessment Guide (TAG) available for periodic safety reviews, which should also be consulted; this is available as NS-TAST-GD-050 (Ref 1).
- 2.2 The guidance does not indicate when or to what extent compliance inspections should be undertaken as these matters are covered in programme intervention plans.
- 2.3 The guidance provided is split into four main elements:
- 1) Purpose of the Licence Condition.
 - 2) Guidance on arrangements for LC15.
 - 3) Guidance on inspection of arrangements.
 - 4) Guidance on inspection of implementation of arrangements.

3 LICENCE CONDITION 15: PERIODIC REVIEW

- 3.1 Licence Condition 15 consists of four sections as below:
- 15(1)** The licensee shall make and implement adequate arrangements for the periodic and systematic review and reassessment of safety cases.
- 15(2)** The licensee shall submit to ONR for approval such part or parts of the aforesaid arrangements as ONR may specify.
- 15(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.
- 15(4)** The licensee shall, if so directed by ONR, carry out a review and reassessment of safety and submit a report of such review and reassessment to ONR at such intervals, within such a period and for such of the matters or operations as may be specified in the direction.

4 PURPOSE OF LICENCE CONDITION 15

- 4.1 This condition requires the licensee to ensure that throughout its declared lifetime, the plant remains adequately safe and that the safety cases are kept up to date. Towards this end, the condition of the plant and the currency and adequacy of the extant safety cases should be periodically reviewed. There are three types of periodic review of safety case: Periodic Safety Reviews (PSR); short term reviews; and exceptional or reactive reviews.
- 4.2 NS-TAST-GD-050 (Ref. 1) describes the purpose of a PSR :
- 4.3 The licensee's arrangements for periodic review should include a programme specifying the periodicity of these reviews. In some cases the licensee arrangements may include "interim reviews", "site-wide reviews", and "corporate reviews" - see NS-TAST-GD-050 (Ref. 1).
- 4.4 Additionally, licensees may be moving to approaches where periodic reviews are based upon business processes which look for "continuous improvement" to provide much of the evidence on which the periodic review is based. Where this is the case the arrangement at individual sites should reflect these agreements. Further guidance on these approaches is available in NS-TAST-GD-050 (Ref. 1).
- 4.5 A number of licensees have arrangements that facilitate a 'live' safety case approach, where the intention is that the safety cases are updated in a much more dynamic fashion so that there are no significant gaps between the physical configuration of the facility and its reflection in the safety case analysis. This is a more desirable safety case approach in the context of ensuring that PSR submissions can be more easily delivered.
- 4.6 Reviews of the safety cases undertaken on a short term basis should confirm that the safety case remains valid; that implications of all modifications have been addressed, and in addition, that other developments, such as the implication of and learning from plant incidents, have been taken into account.
- 4.7 The outcome of reviews may include the revision and re-issue of the safety case incorporating all safety submissions made since the case was last issued (sometimes referred to as "safety case consolidation").
- 4.8 LC15(1) provides for the making and implementation of arrangements for review of safety cases. It is these arrangements that can provide ONR with secondary or derived powers from the licensee to control the safety case periodic review process.

LC15(2) gives the power to ONR to specify the arrangements or parts of arrangements for approval. Specifications and approvals are rarely used for this LC.

LC15(3) ensures that where ONR has approved arrangements, the licensee must apply for approval to amend or alter these arrangements..

LC15(4) gives the power to ONR to direct the licensee to carry out a review of safety and submit a report at such intervals as ONR may specify. This clause provides the primary powers to ensure that the licensee carries out periodic reviews at such intervals as we may specify. These powers are not generally used: most periodic review is regulated via derived powers under the licensee's arrangements.

5 GUIDANCE ON ARRANGEMENTS FOR LC15

- 5.1 This section provides ONR's views on what the licensee's arrangements might be expected to contain to comply with LC15. It comprises of a list of expectations. The list is neither exclusive nor exhaustive, and will be subject to review and revision in light of operational experience. If licensees have generic model(s) for arrangements then it is for the site to justify any deviation from the model(s).
- 5.2 Adequate arrangements should be provided and be implemented to comply with LC15, and these arrangements shall address all requirements 1 to 4 of the licence condition.
- 5.3 The arrangements should be readily available and should be up to date, signed by an appropriate senior manager and controlled under a system compliant with the requirements of LC17.
- 5.4 The arrangements may identify, as appropriate, a tiered system of reviews and reassessments of safety cases with a corresponding level of detail for each tier. The arrangements may typically refer to three types of review and reassessments:
- 1) Short term reviews. Examples may be
 - For plant (e.g. power reactors) subject to LC30 periodic shutdown and ONR consent to restart, reviews carried out at the time of a periodic shutdown of the plant, process or system, and the results of tests and examination carried out during the outage.
 - For plant not subject to LC30 periodic shutdown, some licensees carry out annual reviews which revalidate the current state of the installation, and the adequacy of staffing and operational arrangements.
 - 2) PSRs of plant, processes and systems which are carried out at regular intervals (no longer than 10 years); and
 - 3) Exceptional (or reactive) reviews. Examples may be:
 - Following an event or incident on or off the site.
 - Following recognition of changes in a known (or a new) degradation mechanism(s).
 - Following adverse changes in design/safety methodology that may lead to the safety case to be questioned, e.g. range of validity of the methods, change in basic data , revalidation of key assumptions, etc,
- 5.5 The arrangements should ensure that the routine safety case reviews and reassessments include, as appropriate the following aspects:
- 1) Confirmation that the licensee is legally compliant;
 - 2) operating experience since the last review;
 - 3) maintenance, inspection and testing experience since the last review;
 - 4) modifications to the plant since the last review;
 - 5) the history of incidents and abnormal events since the last review;
 - 6) worker doses;
 - 7) the accumulation and monitoring of radioactive waste;
 - 8) radiation and contamination levels in and around the plant;
 - 9) changes in safety standards or safety methodology/assumptions;
 - 10) changes to and behaviour of life limiting items;
 - 11) changes in the organisational structure and resources and their cumulative impact;

- 12) changes in the arrangements and practices for leadership and management for safety;
 - 13) plant structural integrity changes;
 - 14) a demonstration that the plant will be adequately safe until the next routine review.
- 5.6 ONR guidance on the scope and coverage of a PSR is given in NS-TAST-GD-050 (Ref. 1).
- 5.7 The scope and outcome of all reviews should be independently assessed and if appropriate (as indicated in the licensee's arrangements) they should be considered by the Nuclear Safety Committee (NSC). Each review should be directed towards demonstrating that the safety case will remain valid at least until the next safety review occurs – longer term reviews, such as PSR should also look forward over planned future operation, and review the whole of the remaining life of the facility, including post-operational clean-out (POCO) and decommissioning.
- 5.8 The arrangements should state clearly that where a review reveals an inadequacy in a safety case for existing plant then modifications to the safety case will be dealt with in accordance with LC22 arrangements.
- 5.9 The arrangements should specify the timescales for submission of documentation associated with reviews to ONR (refer to NS-TAST-GD-050 (Ref. 1) for submission targets associated with PSRs). In some cases (e.g. where the review/reassessment is associated with an LC30 periodic shutdown), this may relate to the programme of work associated with ONR issuing a licence instrument (e.g. a consent to restart following a statutory periodic shutdown).
- 5.10 The LC15 arrangements should ensure that:
- 1) The persons carrying out the safety case review are suitably qualified and experienced (SQEP).
 - 2) Reviews are carried out relevant both to the current and the projected lifecycle phases of plant, process or system e.g. construction, commissioning, operation and decommissioning.
 - 3) A full and accurate report is made of each review, compiled, signed and authorised by the appropriate level in the licensee's management structure identified in the procedures before being submitted to the licensee NSC (if required by arrangements, and possibly depending on the nature of the plant or facility) or, if required, to ONR.
 - 4) The review includes a full up-to-date description of the plant or process with any modifications clearly defined.
 - 5) The review demonstrates that the plant, process or system meets all safety functional claims and modern standards, so far as is reasonably practicable (SFAIRP).
 - 6) If any new life limiting feature or degradation mechanism is identified that appropriate action is taken and the details reported under LC7, if necessary.
 - 7) There is a defined process for taking forward the conclusions drawn, and shortfalls identified, from any review of the safety case, ensuring these are taken through an appropriate management review and sentencing process and result (as appropriate) in an implementation plan.
 - 8) Any change to a safety case arising from the review is to be managed in a similar manner as any other plant modifications (LC22).
 - 9) SFAIRP arguments are made for any shortfall in achievement of modern standards where further work is judged to be not reasonably practicable

- 5.11 The arrangements should identify the role and responsibilities of the person who reports non-compliance with LC15 to ONR.
- 5.12 The arrangements should enable the licensee to respond to any Specifications or Directions issued by ONR under LC15(2) or LC15(4). Such procedures should identify the person responsible for responding to the Specification and identify the system whereby constraints, caveats or conditions imposed by ONR are implemented.
- 5.13 The arrangements should ensure that any parts Specified and Approved by the ONR (LC15(2)) can only be changed or amended with the further Approval of ONR. The person(s) responsible for ensuring compliance with this requirement should be identified in the procedures in terms of their role and responsibility.

6 GUIDANCE ON INSPECTION OF ADEQUACY OF ARRANGEMENTS

- 6.1 This section is to assist ONR inspectors judge the adequacy of the licensee's arrangements. It comprises of a list of expectations which is neither exclusive nor exhaustive and will be subject to review and revision in light of operational experience. It does however provide an initial checklist of aspects of the licensee's LC15 arrangements that can be examined during routine inspection.
- 6.2 Check that arrangements have been made to demonstrate compliance with LC15.
- 6.3 Examine the LC15 arrangements documentation layout and check that it is consistent with corporate guidance and subject to configuration control under LC17 arrangements. Review the LC15 arrangements to establish their validity (have the arrangements completed the licensee's due process for internal approval of management control documents under LC17?), whether any changes have been made since the last PSR review and whether the roles of the identified responsible persons are correct. Note whether any instructions, methods and quality assurance rules claimed in associated procedures have been followed and whether any changes have been correctly incorporated and validated by the licensee's own internal document approval process.
- 6.4 Check that the arrangements ensure a requirement to identify a baseline safety case for the review process. This should include the suite of safety case documentation at the correct revision status. Confirm that the arrangements state the means to achieve an operational plant safety case (e.g. by LC23 and LC22 arrangements), and that for production and assessment of safety cases (e.g. under LC14 arrangements).
- 6.5 Check that the arrangements identify appropriately tiered safety case reviews with a corresponding level of detail for each tier. Confirm that as a minimum the following three types of review are included and that the criteria are clearly defined for when each type of review is appropriate :
 - 1) Short term reviews (e.g. at periodic shutdown of the plant and at start-up meetings, or annual reviews);
 - 2) PSRs; and
 - 3) Exceptional (or reactive) reviews, as appropriate.
- 6.6 Check that the arrangements include all the aspects listed in para 5.5. If their scope is not as comprehensive as this, discuss with the responsible person identified in the arrangements.
- 6.7 Confirm that the arrangements require the scope and outcome of PSRs to be independently assessed and then considered by the NSC. Check that the arrangements state that the review process needs to demonstrate that safety cases remain valid for the period up to the next scheduled review.

- 6.8 Ensure that the arrangements specify the timescales for submission of review-associated documentation to ONR as defined in NS-TAST-GD-050 (Ref 1).
- 6.9 Check that the arrangements with respect to review activities ensure that:
- 1) the persons undertaking the review are suitably qualified and experienced;
 - 2) any contractors used for review work are appropriate and the individuals involved are SQEP (including criteria for selecting contractors and assessing their competence before, during and after completion of the work);
 - 3) sufficient licensee Intelligent Customer capability is in place to ensure adequate oversight of any contractors employed in delivery of any aspects of the review;
 - 4) a fully resourced PSR project plan is in place with identified milestones and deliverables, both internal to the PSR review project but also for deliverables to ONR in accordance with the expectations of delivery dates as defined in NS-TAST-GD-050 (Ref. 1);
 - 5) a full and accurate report is made of each review, authorised at appropriate level in the licensee's management structure,
 - 6) the report is carried through appropriate company processes, including being submitted to the NSC (if appropriate) or to ONR (if required);
 - 7) the report includes a full list of the current Relevant Good Practice, safety standards and safety principles against which the review has been carried out;
 - 8) any change to a safety case is managed using appropriate company processes (e.g. for safety case modifications under LC22),
 - 9) reviews are carried out relevant to the current and projected status of the plant, process or system "time of life" e.g. construction, commissioning, operation or decommissioning;
 - 10) account is taken of conclusions/recommendations drawn from any review of the safety case;
 - 11) the plant, process or system meets all safety functional claims and modern standards – SFAIRP, and that there is a full up to date description of the plant or process with any modifications clearly defined;
 - 12) any life-limiting features are identified; and
 - 13) where shortfalls against modern standards / modern safety cases are identified, the arrangements should clarify that :
 - the shortfalls are categorised in terms of their nuclear safety significance and the risk arising from each shortfall is quantified. The inspector should be mindful of the risk criteria used to categorise the shortfalls to ensure that they are based on nuclear safety considerations;
 - the shortfall remediation is prioritised in terms of immediately addressing those shortfalls that make the largest contributions to overall facility risk;
 - if further work is judged reasonably practicable, an appropriate programme of work is implemented to address the shortfalls and the programme of work to remediate the shortfalls should be identified in a fully resourced plan with clear delivery dates for shortfall remediation work;
 - if further work is deemed not reasonably practicable then appropriate SFAIRP justifications should be made for the shortfalls. The inspector should be mindful of the need for rigour in the licensee justification of not performing remediation work. Ideally a robust deterministic SFAIRP

argument should be made that demonstrates conclusively why it would be disproportionate to do additional work to remediate the shortfall. Arguments for doing nothing based purely on probabilistic arguments are unacceptable.

- 6.10 With respect to ensuring suitable interaction with ONR, check that the arrangements:
- 1) cover a system for submission for approval to ONR of those part or parts of the arrangements that may be specified;
 - 2) contain such controls that any consequent amendments only take place with ONR's approval; and
 - 3) ensure that in response to a direction from ONR a review and reassessment of safety will be undertaken and relevant reports submitted to a specified timescale.

7 GUIDANCE ON INSPECTION OF IMPLEMENTATION OF ARRANGEMENTS

7.1 This section is to assist ONR inspectors in judging the adequacy of the implementation of the licensee's arrangements. It comprises lists of expectations, specific to different forms of review. The lists are neither exclusive nor exhaustive, and will be subject to review and revision in light of operational experience. The lists provide some specific aspects of implementation of LC15 arrangements that can be examined during routine inspections.

For overall periodic review strategy

- 7.2 Discuss with the responsible person(s) identified in the procedures the strategy adopted at the site for periodic reviews.
- 7.3 Check that the scope and terms of reference for periodic reviews are adequate. NS-TAST-GD-050 (Ref. 1) gives guidance on the scope and terms of reference for PSRs.

Note: Discuss with and seek the advice of appropriate ONR assessment inspectors and professional leads before accepting the periodic review programme from the licensee.

For short term reviews and reassessments

- 7.4 Prior to the inspection, identify recent modification/PSR safety cases to identify weaknesses and strengths that need to be examined (depending on the plant this may be done by consulting with relevant ONR assessment inspectors). Based on that information, examine a sample of modifications in progress, or completed since the last inspection of LC15, and establish whether an adequate review of the safety cases was made. If any changes were made to a safety case, check that there was compliance with LC14.

For plant subject to LC30 periodic shutdown and ONR consent to restart

- 7.5 Discuss with the person responsible for organising the periodic shutdown that the following aspects are reviewed, in relation to the safety case(s), at the start up meeting held prior to start-up of the plant or system:
- 1) Operating experience since the last review;
 - 2) Maintenance, inspection and testing experience since the last review;
 - 3) Modifications to the plant since the last review;

- 4) The history of incidents and abnormal events since the last review;
 - 5) Worker doses;
 - 6) The accumulation and monitoring of radioactive waste;
 - 7) Radiation and contamination levels in and around the plant;
 - 8) Changes in safety standards;
 - 9) Changes to and behaviour of life-limiting items;
 - 10) Changes to the management of safety affecting the site; and
 - 11) Plant structural integrity changes;
- 7.6 Establish that the start-up review has been directed principally towards demonstrating that an adequate safety case is available for the start-up of the plant or system and for the next period of operation.

For periodic safety reviews

- 7.7 Check that the scope and outcome of PSRs have been independently assessed and then considered by the NSC and if not, why not? Establish whether the reviews demonstrate that adequate safety margins exist until the next PSR is due.
- 7.8 Ensure that review reports are assessed by the appropriate ONR assessment inspectors/professional leads (if appropriate to the plant or facility) and an agreed action plan is produced for any area that does not meet current standards, and where improvements are considered to be reasonably practicable.
- 7.9 Ensure that an implementation programme is agreed and check the licensee's progress against such a programme. In the event of non-compliance with the implementation programme, consideration should be given, following discussions with ONR line management, to enforcement action.
- 7.10 NOTE: PSRs can differ greatly in scope and scale. The PSRs for plant or facilities whose safety case is more complex, or which presents greater potential hazards, or where there is likely to be greater regulatory or stakeholder concern may require a specific assessment intervention project, and probably appointment of a project inspector to coordinate the intervention project.

8 FURTHER READING

Periodic safety review of nuclear power plants. Specific Safety Guide No. SSG-25 International Atomic Energy Agency (IAEA). 2013. www.iaea.org.

Ref. 1 - Nuclear Safety Technical Assessment Guide – Periodic Safety Reviews (PSR), NS-TAST-GD-050