



ONR GUIDE			
LC 28 EXAMINATION, INSPECTION, MAINTENANCE AND TESTING			
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1 INTRODUCTION

1.1 Many of the Licence Conditions (LCs) attached to the standard nuclear site licence require, or imply, that licensees should make arrangements to comply with regulatory obligations under the conditions. The Office for Nuclear Regulation (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 in making 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 a 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 Licence Condition 28 (LC 28) 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 that are likely to arise in inspecting for compliance with this licence condition, additional aspects may need to be examined to ensure a comprehensive and complete inspection.

2.2 The guidance does not indicate when or to what extent these compliance inspections should be made as these matters are covered in individual inspectors' inspection programmes.

2.3 Inspectors should be aware that additional guidance is available in ONR's Nuclear Safety Technical Assessment Guide (TAG) Examination, Inspection, Maintenance and Testing of Items Important to Safety (Ref. 1).

2.4 The guidance provided is divided into five main elements:

- 1) Providing the wording of LC 28.
- 2) Purpose of LC 28.
- 3) Guidance on arrangements for LC 28.
- 4) Guidance on inspection of arrangements.
- 5) Guidance on inspection of implementation of arrangements.

2.5 Inspectors may also take account of relevant requirements in The Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19) and the associated ONR Guidance for Nuclear Material Accountancy, Control and Safeguards (ONMACS). For equipment and systems that fulfil a Nuclear Material Accountancy, Control, and Safeguards (NMACS) function as well as a safety function, there is some alignment between LC 28 and safeguards regulation and guidance. Please see the appendix concerning Examination, Inspection, Maintenance and Testing (EIMT) of safeguards equipment and systems in this document for further information.

3 LICENCE CONDITION 28: EXAMINATION, INSPECTION, MAINTENANCE AND TESTING

28(1) The licensee shall make and implement adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of all plant which may affect safety.

28(2) The licensee shall submit to ONR for approval such part or parts of the aforesaid arrangements as ONR may specify.

28(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.

28(4) The aforesaid arrangements shall provide for the preparation of a plant maintenance schedule for each plant. The licensee shall submit to ONR for its approval such part or parts of any plant maintenance schedule as ONR may specify.

28(5) The licensee shall ensure that once approved no alteration or amendment is made to any approved part of any plant maintenance schedule unless ONR has approved such alteration or amendment.

28(6) The licensee shall ensure in the interests of safety that every examination, inspection, maintenance and test of a plant or any part thereof is carried out:

- a) by suitably qualified and experienced persons;
- b) in accordance with schemes laid down in writing;
- c) within the intervals specified in the plant maintenance schedule; and
- d) under the control and supervision of a suitably qualified and experienced person appointed by the licensee for that purpose.

28(7) Notwithstanding the above paragraphs of this condition ONR may agree to an extension of any interval specified in the plant maintenance schedule.

28(8) When any examination, inspection, maintenance or test of any part of a plant reveals any matter indicating that the safe operation or safe condition of that plant may be affected, the suitably qualified and experienced person appointed to control or supervise such examination, inspection, maintenance or test shall bring it to the attention of the licensee forthwith who shall take appropriate action and ensure the matter is then notified, recorded, investigated and reported in accordance with arrangements made under Condition 7.

28(9) The licensee shall ensure that a full and accurate report of every examination, inspection, maintenance or test of any part of a plant indicating the date thereof and signed by the suitably qualified and experienced person appointed by the licensee to control and supervise such examination, inspection, maintenance or test is made to the licensee forthwith upon completion of the said examination, inspection, maintenance or test.

4 PURPOSE OF LC 28

4.1 The overall purpose of LC 28, as expressed in sub-condition LC 28(1), is to ensure that all plant which may affect safety, receives regular and systematic Examination, Inspection, Maintenance and Testing (EIMT). The purpose of this EIMT is to ensure the nuclear plant remains capable of performing its safety functions, with the required level of reliability.

4.2 In relation to the overall purpose of LC 28, further guidance is provided in Paragraphs 4.3 to 4.7. This is followed by a discussion of other purposes of LC 28 expressed in the other sub-conditions of LC 28.

4.3 It should be noted that licensees often divide their overall maintenance catalogue into subsets, for example a maintenance catalogue may comprise some or all of the following subsets:

- a) EIMT necessary to satisfy the requirements of the safety case (Licence Condition 23) (with appropriate reliability) which comprises the Plant Maintenance Schedule (PMS). [Not all licensee's use the acronym PMS].
 - b) EIMT necessary to satisfy the requirements of other legislation, e.g. pressure systems or lifting equipment regulations.
 - c) EIMT necessary to satisfy the requirements of environmental legislation.
 - d) EIMT to support the operational reliability of the plant (without a specific contribution to safety).
 - e) EIMT to support decommissioning.
- 4.4 ONR interprets plant as Structures, Systems and Components (SSCs) and 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.
- 4.5 The items important to safety in respect of LC 28 should be listed in the PMS. The licensee's arrangements should include the criteria by which EIMT is specified, controlled and changed.
- 4.6 Due to their safety case arrangements, some licensees may argue that some items of lesser safety significance should not be included on the PMS. This should be justified. Adequate EIMT of these items is still a requirement of LC 28(1).
- 4.7 Historically PMSs have been compiled on the basis of deterministic assessments of SSCs needed to comply with the requirements of the safety case. Necessary EIMT has then been specified to ensure that SSCs will function with adequate reliability and that the nuclear plant remains within its safe operating envelope. Later PMSs have been influenced by the evaluation of the contribution made by SSCs in reducing the overall risk from the site as measured by the site Probabilistic Safety Assessment (PSA).
- 4.8 The purpose of LC 28(2) and 28(3) is to provide ONR with primary powers to specify and freeze (by approval) part or parts of the licensee's arrangements for compliance with LC 28(1). An approval is normally issued once the specified arrangements have undergone technical assessment and ONR is satisfied with the contents. Once the specified arrangements are approved the licensee can no longer alter or amend these arrangements without the permission of ONR.
- 4.9 The purposes of LC 28(4) and 28(5) are to require the licensee to prepare a PMS for each plant and to provide ONR with primary powers to specify and freeze (by approval) part or parts of any PMS. ONR may specify a high level section of the PMS, often termed the preface, for approval. If ONR approves the PMS preface, subsequent amendments to the main body of the PMS may be made by the licensee, using suitable internal arrangements, without the need to apply to ONR for approval.
- 4.10 The purpose of LC 28(6) requires the licensee to ensure that all EIMT on plant which may affect safety:
- Is carried out by Suitably Qualified and Experienced Persons (SQEPs).
 - Is in accordance with written schemes.

- Is within intervals specified in the PMS.
 - Is under the control and supervision of a SQEP person appointed by the licensee for that purpose.
- 4.11 In relation to SQEP persons carrying out EIMT on plant which may affect safety, the inspector is referred to the ONR Nuclear Safety Technical Inspection Guide (TIG) for LC12 (Ref. 2).
- 4.12 Where EIMT is to be carried out by contractors, the licensee as Intelligent Customer [see ONR's TAG Licensee Core Safety and Intelligent Customer Capabilities (Ref. 3)] should satisfy itself that the contractor is SQEP to do the work assigned to it.
- 4.13 In relation to written schemes the term "operations" is defined in LC 1(1) as "includes maintenance, examination, testing and operation of the plant...". Therefore, written schemes for maintenance, examination and testing form part of LC 24 operating instructions, see the TIG for LC 24 (Ref. 4) for further information.
- 4.14 Explicitly it is expected that time intervals for EIMT will be specified in the PMS. The time interval is significant because failure to complete work within this interval would be a non-compliance with the LC. ONR has previously taken enforcement action in this area.
- 4.15 In relation to SQEP of persons appointed by the licensee to control and supervise EIMT on plant which may affect safety, the inspector is again referred to TIG 12. In addition TIG 26 applies (see Ref. 5) since, as noted before, maintenance, examination, and testing are "operations" as defined in LC 1(1). Section 4(10) of the Nuclear Installations Act 1965 (NIA65) places an absolute responsibility upon the holder of the nuclear site licence as regards compliance with the conditions attached to that licence. It provides that in the event of a breach of a LC both "the licensee, and any person having duties upon the site in question who committed the contravention" is guilty of an offence. The licensee should be in a position to exercise effective day-to-day control over all activities on the site, whether undertaken by its own people, by contractors or by tenants. Based on this, the person appointed by the licensee to control and supervise EIMT on plant which may affect safety should be part of the licensee's core safety capability as defined in Ref. 3.
- 4.16 As noted before, maintenance, examination, and testing are "operations" as defined in LC 1(1). In addition, LC 1(1) defines "modification" as "...any alteration to buildings, plants, operations, processes or safety cases...". The effect of this is that alterations to maintenance, examination and testing need to be treated as modifications under the licensee's LC 22 arrangements. Licensees may therefore alter EIMT intervals in accordance with its LC 22 arrangements. However, the purpose of LC 28(7) is to provide ONR with a primary power to agree to an extension of any interval specified in the PMS.
- 4.17 Some licensees have written specific procedures within their PMS preface to allow them to change the schedule and for dealing with extensions to EIMT intervals. In these cases, in order to exert regulatory control, ONR has approved this PMS preface, and issued an agreement, agreeing to extension of EIMT intervals that are controlled in accordance with procedures specified in this PMS preface.
- 4.18 One purpose of LC 28(8) is to ensure that EIMT results on plant which may affect safety which indicate that the safe operation or safe condition of the plant may be affected are brought to the attention of the licensee forthwith so that appropriate action is taken. Following any such action, a further purpose of LC28(8) is to require that the matter is notified, recorded, investigated and reported in accordance with the licensee's arrangements for compliance with LC 7.

- 4.19 The purpose of LC 28(9) is to require the licensee to provide full and accurate reports of all activities carried out under LC28, ensuring that the report is signed off by the SQEP who controls and supervises the work. These reports should constitute “records to demonstrate compliance with any of the conditions attached to this licence” as defined in LC 6(1). The LC6 TIG (Ref. 6) and the TAG “Duty Holder Management of Records” (Ref. 7) provides further guidance.

5 GUIDANCE ON ARRANGEMENTS FOR LC 28

- 5.1 In addition to the general requirements for all Licence Conditions the licensee’s arrangements shall satisfy the specific Licence Condition requirements which are:
1. A clear requirement that the arrangements cover regular and systematic examination, inspection, maintenance and testing of all plant which may affect safety. 28(1)
 2. The requirement to submit for approval to ONR such part or parts of the LC 28(1) arrangements as ONR may specify. 28(2)
 3. The requirement that once approved by ONR arrangements cannot be altered without the approval of ONR. 28(3)
 4. The requirement for the LC28(1) arrangements to provide for the preparation of a PMS for each plant. 28(4)
 5. The requirement to submit for approval to ONR such part or parts of any PMS as ONR may specify. 28(4)
 6. The requirement that once approved by ONR a PMS cannot be altered without the approval of ONR. 28(5)
 7. The requirement that all EIMT on plant which may affect safety is carried out by SQEP persons. 28(6)
 8. The requirement that all EIMT on plant which may affect safety is carried out in accordance with written schemes. 28(6)
 9. The requirement that all EIMT on plant which may affect safety is carried out within the intervals specified in the PMS. 28(6)
 10. The requirement that all EIMT on plant which may affect safety is under the control and supervision of a SQEP person appointed by the licensee for that purpose. 28(6)
 11. The requirement for the licensee’s arrangements to be clear about the conditions under which the licensee needs to request ONR agreement for extension to an interval in the PMS. LC 28(7)
 12. The requirement that when any EIMT on plant which may affect safety indicates that the safe operation or safe condition of the plant may be affected, this is brought to the attention of the licensee forthwith by the SQEP person appointed to control and supervise such EIMT. LC 28(8)
 13. The requirement for the licensee to take appropriate action when EIMT results indicate that the safe operation or safe condition of the plant may be affected are brought to its attention. LC 28(8)

14. The requirement for the licensee to notify, record, investigate and report matters brought to its attention under LC 28(8) in accordance with its arrangements for compliance with LC 7. LC 28(8)
 15. The requirement to ensure full and accurate reports of all EIMT of any part of a plant indicating the date thereof and signed by the SQEP person appointed to control and supervise such EIMT. LC 28(9)
- 5.2 Arrangements for regular and systematic EIMT, covering the totality of SSCs that may affect safety, should be provided in accordance with all LC 28 requirements. The arrangements may be defined in a single document or a suite of linked documents.
 - 5.3 The PMS should describe the EIMT activity required to support the safety case. This may either be a single document or comprise several tiered parts, each tier perhaps reflecting a different level of safety significance.
 - 5.4 Where the contents of the PMS are based on demonstrations of operability/availability and continuing plant reliability, the EIMT activity identified should be sufficient to achieve adequate compliance with the assumptions contained in the site PSA.
 - 5.5 The arrangements should require activities to be carried out within the time interval specified in the PMS. If the licensee wishes to include permitted tolerances to the identified periods these should be clearly defined. Both the interval and any tolerance should be underpinned and evidenced with suitable engineering substantiation and / or operational experience.
 - 5.6 Where an extension of the interval for EIMT is required, the arrangements should set expectations for the level of justification as well as identify the potential need to request agreement from ONR under LC 28(7). The arrangements should be reflective of the safety significance of the SSCs in question, defining how such an extension would be controlled, as this is particularly important for PMS activities. Alternatively, provided the PMS is not approved, then the intervals may be extended by following the licensee's LC22 arrangements. Further information is in Paragraph 4.16.
 - 5.7 The licensee's arrangements should include the means of controlling amendments to EIMT requirements in general. This should be via a modification proposal, considered in accordance with the licensee's LC 22 arrangements.
 - 5.8 Where EIMT activities that are specified in the PMS can only be carried out during a plant shutdown, the maximum operating period between periodic shutdowns should be defined. ONR inspectors should liaise with the licensee to facilitate the timely completion of any regulatory activities, such as the review or witnessing of EIMT if appropriate. The licensee's arrangements should require post periodic shutdown results to be issued to ONR within 28 days of plant start up.
 - 5.9 The arrangements should require that EIMT is carried out on SSCs by suitably qualified and experienced persons (LC 28(6)(a)) and that an appropriate level of control and supervision is identified and provided (LC 28(6)(d)). Control and supervision arrangements should be reflective of the specific task and how the activity may affect wider safe operation of the plant.
 - 5.10 The arrangements should require all activities to be carried out in accordance with written instructions. The arrangements should include a system for ensuring a clear auditable trail from the specified EIMT requirements, to the operating instruction. The instruction should be reflective of the safety significance of the SSC they are for. They should identify all the necessary steps needed to complete the work safely (including any preparatory work), the work that is required, the acceptance criteria (if appropriate), and the precautions that must be taken to safely undertake the work.

- 5.11 The arrangements may allow for EIMT to be carried out by SQEPs employed by the licensee on the site, or by SQEPs appointed by the licensee who are not directly associated with the site, such as contractors or external agencies.
- 5.12 Records (LC 28(9)) of EIMT carried out on SSCs which may affect safety should be compiled and retained by the licensee under its arrangements for compliance with LC 6. These should be commensurate with the safety significance of the SSCs to which they relate, reflecting the work completed, tasks left outstanding and issues identified.
- 5.13 The arrangements should describe the requirements in LC 28(8) for notifying, recording, investigating, and reporting defects or deficiencies revealed by EIMT.
- 5.14 The arrangements should allow for SSCs to be taken out of service and ensure that such unavailability is recorded, assessed and drawn to the attention of staff responsible for operating the plant. The arrangements should ensure that plant or systems that have had preventative or breakdown maintenance carried out are reinstated, tested, and accepted by an appropriate person [e.g. a Duly Authorised Person (DAP) appointed under LC12(2)] before being declared operable and available.
- 5.15 The arrangements should ensure that replacement plant items are controlled with respect to design, procurement, storage, issue, fitness for purpose and installation and that records are updated to reflect replacement plant items.

6 GUIDANCE ON INSPECTION OF ARRANGEMENTS

- 6.1 This part of the guidance is to assist inspectors in judging the adequacy of the licensee's arrangements. The following list is neither exclusive nor exhaustive, however it provides a list of aspects of LC 28 compliance requirements that might be examined during routine inspections carried out on the basis of sampling.
- 6.2 This part of the guidance identifies KEY ELEMENTS. The inspector should normally inspect against these elements, as being closely aligned to the wording of the licence condition, or as being important regulatory expectations to the goal setting aspects of the licence condition. This part of the guidance also identifies SUPPORTING ELEMENTS, which the inspector may also choose to cover within the inspection scope.
- 6.3 Inspectors should endeavour, through a sampling approach, to review the arrangements against the following elements:

KEY ELEMENTS

- The arrangements should describe the methods and criteria for identifying the safety significance of all SSCs, and identify the safety significance of all EIMT activities.
- There should be a clear link between the safety case and the PMS.
- Where the licensee argues that some items of lesser safety significance are not included in the PMS, this should be justified. Adequate EIMT of such items is still a requirement of LC 28(1).
- Emergency equipment may or may not be included in the PMS. Where it is not, such equipment is still considered to be plant which may affect safety. Adequate EIMT of these items is still therefore a requirement of LC 28(1).
- The arrangements should, for each item listed, identify the interval for such EIMT activity. Where included, tolerances to the identified periods should be clearly defined.

- Changes to the PMS require a safety justification produced and assessed in accordance with the licensee's arrangements, against LC 22.
- Failures to meet PMS requirements should be notified, recorded, investigated and reported in accordance with LC 7. The licensee should also monitor its adherence to the requirements of the PMS.
- Intervals in the PMS should not be extended without the agreement of ONR, unless the licensee has gone through due process in accordance with its arrangements (i.e. using LC 22). The arrangements should describe the appropriate control and authorisation measures.
- All EIMT work should be undertaken by SQEPs, with the licensee acting as Intelligent Customer when the work is undertaken by contractors.
- All EIMT work should be under the control and supervision of a SQEP appointed for that purpose by the licensee.
- All EIMT work should be undertaken in accordance with schemes laid down in writing.
- The requirements for record keeping associated with completed EIMT should be clear.

SUPPORTING ELEMENTS

- The format should be clear to those responsible for implementing the arrangements, should be in line with other licensee document management systems, and should be readily available to those who require them.
- Arrangements should remain valid following any changes, through appropriate configuration control procedures.
- Instructions, methods and quality assurance procedures should have been followed in producing the arrangements.
- Confirm whether the PMS is a single document or comprises several parts. If the latter option is chosen, it should be produced in a tiered format, each tier or part reflecting safety significance.
- Confirm that the arrangements give due consideration to equipment required for emergency situations.
- Where work activities that are specified in the PMS can only be carried out with the plant shutdown, the arrangements should define the maximum operating period between periodic shutdowns.
- Arrangements should include the regular review of EIMT performance, including trend analysis capable of identifying any backlogs.
- The arrangements may allow for EIMT to be carried out by people not directly associated with the site. In this case confirm that the licensee checks and approves qualifications and experience of such workers prior to the work being authorised (in accordance with licensee control of work arrangements).
- When plant is taken out of service it is important that the arrangements ensure sufficient items of plant remain in service or available for use to provide the necessary level of safety that is justified in the plant safety case. This may be informed by assessments of risk by PSA, and may include a contribution from a site "risk-monitor" (as defined in Ref. 8).

- SSCs that have had maintenance carried out should be reinstated, tested and accepted by an appropriate person [e.g. a DAP appointed under LC12(2)] before being returned to service.
- Replacement and configuration of plant items should be controlled with respect to design, specification, manufacture, function, procurement, storage, issue, fitness for purpose and installation. The arrangements should require SQEPs to control these aspects and complete appropriate records.
- Arrangements should recognise and assess longer term impacts on SSCs. The arrangements should take due consideration of asset management requirements (e.g. ageing and degradation, obsolescence) or reference out to a separate management system.
- Metrics should be available to monitor and forecast delivery of EIMT activities and hence ensure that EIMT is undertaken within the intervals specified in the PMS.

7 GUIDANCE ON INSPECTION OF IMPLEMENTATION OF ARRANGEMENTS

- 7.1 This part of the guidance is to assist inspectors in judging the adequacy of the licensee's implementation of their arrangements. The following list is neither exclusive nor exhaustive, nevertheless it provides a list of aspects of LC 28 that can be examined during routine inspections.
- 7.2 This part of the guidance identifies KEY ELEMENTS. The inspector should normally inspect against these elements, as being closely aligned to the wording of the licence condition, or as being important regulatory expectations to the goal setting aspects of the licence condition. This part of the guidance also identifies SUPPORTING ELEMENTS, which the inspector may also choose to cover within the inspection scope.
- 7.3 Inspectors should endeavour, through a sampling approach, to review the implementation of the arrangements against the following elements:

KEY ELEMENTS

- Examine the PMS and associated records to ensure that all necessary EIMT has been completed within the stated timescales.
- Ensure that EIMT has been carried out in accordance with licensee maintenance instructions.
- Review the output records from the EIMT activity, and check they have been completed to the detail required by the arrangements.
- Check that the EIMT output records are stored in an appropriate manner and are readily available.
- Check that the PMS is linked to the safety case, through appropriate safety classification schemes.
- Check the link between the safety case, the PMS and the maintenance instructions is logical.
- For those SSCs that support operating rules, check that the required availability with respect to items important to safety is met, whilst EIMT is undertaken.
- Check that licensee personnel undertaking EIMT activities are SQEP.
- If contractors are undertaking EIMT, check that they are SEQP and check that the licensee is acting as Intelligent Customer.

- Check those controlling and supervising EIMT activities are SQEP and appointed for the purpose under LC 28(6)(d).
- Check that the SSCs are deemed acceptable at the end of the specified activity. Check that any comments from the person who completed the work have been followed up, and that this has been captured within incident reporting arrangements as appropriate.
- When safety mechanisms are shown on maintenance records to have been tested, check to ensure that the full functionality has been tested, in accordance with the maintenance schedule and maintenance instructions.

SUPPORTING ELEMENTS

- Inspectors may also wish to check that the extent of EIMT on the SSC is linked to the reliability claims and lifetime margin claims made within the safety case.
- Check that EIMT is adequate to detect and monitor ageing and degradation processes. This should enable timely mitigation of ageing and its effects.
- Review results from the EIMT of SSCs listed in the PMS and compare with the criteria that are required to satisfy equipment qualification schedules, operating instructions, or emergency requirements.
- If repair / refurbishment has been required, confirm that this has been completed, that any tests required were performed satisfactorily, that any test equipment was appropriately maintained and calibrated.
- Establish if the correct stores items have been received, stored and identified as nuclear safety important spares and issue of such is controlled to ensure the correct use. Such control should include an acceptability check by a SQEP on receipt of the item to the stores, and prior to use.
- Establish that appropriate facilities, equipment, and tools are available for undertaking EIMT activities.
- Establish that suitable measures are in place to manage foreign material exclusion during EIMT.
- Sample the records for LC22 to establish whether the modifications procedure was invoked where alternative items have been used during EIMT.
- Check that future EIMT activities identified during shutdown are detailed and included in the programme for the next periodic shutdown as necessary.
- For decommissioning sites or sites where safety cases have been updated or renewed, ensure that a progressive review of the PMS is carried out to ensure that the contents relate to the current safety case and hazard, and that changes to the PMS are properly controlled.
- The suitability of maintenance staff may be sampled by:
 - i) Discussions with the person carrying out EIMT;
 - ii) Reviewing with the appropriate section head that those persons controlling and supervising activities have suitable job specifications identifying their responsibilities;
 - iii) Reviewing, with those responsible for training, records to establish that persons responsible for completing activities are SQEP.
- Review the way plant defects are handled:

- i) Examine a sample of reported defects and check what follow up actions were identified;
- ii) For defects sampled, check the implications of the defect (specific and generic) and recommended investigation and reporting requirements;
- iii) Review a sample of defect records and check that any necessary action(s) were completed and signed off;
- iv) Examine a sample of defect records to establish that, for activities with the greatest nuclear significance, defects only occur on an infrequent basis. For other items, establish that there is not a rising trend in the number of defects.
- v) Review any defects of safety significance with the appropriate personnel and establish if changes to the safety case are needed.

8 REFERENCES

1. ONR Nuclear Safety Technical Assessment Guide, Examination, Inspection, Maintenance and Testing of Items Important to Safety - NS-TAST-GD-009 - http://www.onr.org.uk/operational/tech_asst_guides/ns-tast-gd-009.pdf
2. ONR Nuclear Safety Technical Inspection Guide, Licence Condition 12 - Duly authorised and other suitably qualified and experienced persons - NS-INSP-GD-012 - http://www.onr.org.uk/operational/tech_insp_guides/ns-insp-gd-012.pdf
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APPENDIX – EIMT FOR SAFEGUARDS SYSTEMS AND EQUIPMENT

Many of the expectations for LC 28 arrangements in this guidance are applicable to compliance with NSR19 and expectations within ONMACS [\[link\]](#). Regulation 6(1) of NSR19 requires operators to “maintain a system of accountancy and control of the relevant qualifying nuclear material in each qualifying nuclear facility”. The guidance on EIMT for safeguards systems is in ONMACS, Material Accountancy and Control Expectation (MACE) 5.2.

The safeguards alignment with LC 28 only arises for systems which serve both a safety and safeguards function. In such cases it may be appropriate and efficient to seek assurances on the EIMT of the system, for both purposes, as part of a single inspection. Joint inspections require careful planning to ensure that both ONR purposes are able to achieve their objectives, and that the licensee has the resource to facilitate the additional inspection burden. The maintenance of a safeguards system would normally be assessed as part of a Safeguards Systems Based Inspection, for more information on different Safeguards inspection types please refer to the general Safeguards TIG [\[link\]](#).

Some of the main aspects of MACE 5.2 that bear commonality with this TIG are highlighted below:

- Systems and components that have a Nuclear Material Accountancy, Control, and Safeguards (NMACS) purpose should receive regular and systematic EIMT, and there should be a process for in-service testing, inspection and other maintenance. Where the system also serves a safety function, this is in alignment with the purpose of LC 28. The maintenance requirements the system should be identified and listed in a suitable maintenance schedule. Licensees may maintain separate maintenance schedules for safety and safeguards, but the need for maintenance to support both purposes should be listed by the licensee.
- The EIMT for safeguards and safety should be commensurate with the required NMAC, or claimed Safety function, of the system. It is not always clear which purpose makes the more demanding EIMT requirements. For example safeguards may require greater precision from measurement equipment than is needed to ensure safe operation of the plant, and so the measurement equipment should be maintained more regularly to achieve this. Conversely safety critical equipment may demand more EIMT than needed for the safeguards function as the consequences of equipment failure could be much greater for safety.
- When plant is taken out of service it is important that the arrangements ensure sufficient items of plant remain in service or available for use to provide the necessary level of safety that is justified in the plant safety case. Similarly, for safeguards operators are expected to maintain NMACS function at all times, ensuring that there are compensatory measures in place when a system is taken offline for maintenance.