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| ONR Technical Inspection Guide (TIG)  LC 28 – Examination, Inspection, Maintenance and Testing (EIMT) |



ONR Technical Inspection Guide (TIG)

LC 28 – Examination, Inspection, Maintenance and Testing (EIMT)

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# Introduction

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. Many 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 licensee who remains responsible for safety.

## Purpose and scope

1. 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 technical inspection guide (TIG) has been prepared as a guide to inspections performed by ONR inspectors during which they judge the adequacy of licence condition (LC) compliance arrangements and their implementation.
2. Effective examination, inspection, maintenance and testing (EIMT) of plant important to safety is essential for safe operation of nuclear facilities.   
   LC 28 therefore covers a wide range of topics. It is not the intention for this TIG to provide detailed guidance on each topic and repeat information readily available elsewhere. Further details are available in other national and international guidance such as ONR’s nuclear safety technical assessment guide (TAG) on EIMT (Ref. [1]) and International Atomic Energy Agency (IAEA) guidance (for example, Ref. [2]).
3. There is some alignment between the requirements of LC 28 and relevant legislation for ONR’s other purposes (for example, nuclear security, safeguards, conventional health and safety). In such cases it may be appropriate and efficient to seek assurances on the EIMT of the system, for all relevant purposes, as part of a single inspection. Joint inspections require careful planning to ensure that all ONR purposes are able to achieve their objectives. Appendix A contains further details of topics where there may be opportunities for joint inspections. Consideration should also be given to opportunities to cooperate with other external regulators in joint inspections in accordance with obligations under the regulators’ code (Ref. [3]).

## 

## Definitions

Table 1 – Table of Definitions

| Term/Acronym | Description |
| --- | --- |
| EIMT | Examination, Inspection, Maintenance and Testing |
| FSyP | Fundamental Security Principle |
| IAEA | International Atomic Energy Agency |
| LC | Licence Condition |
| MACE | Material Accountancy and Control Expectation |
| NISR | Nuclear Industries Security Regulations 2003 |
| NMACS | Nuclear Material Accountancy, Control, and Safeguards |
| NSR19 | The Nuclear Safeguards (EU Exit) Regulations 2019 |
| ONMACS | ONR Guidance for Nuclear Material Accountancy, Control and Safeguards |
| ONR | Office for Nuclear Regulation |
| PMS | Plant Maintenance Schedule |
| PSA | Probabilistic Safety Assessment |
| SQEP | Suitably Qualified and Experienced Person |
| SSC | Structure, System and Component |
| SP | Security Plan |
| SyAPs | Security Assessment Principles |
| SyDP | Security Delivery Principle |
| TAG | Technical Assessment Guide |
| TIG | Technical Inspection Guide |

# 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:

* 1. by suitably qualified and experienced persons;
  2. in accordance with schemes laid down in writing;
  3. within the intervals specified in the plant maintenance schedule; and
  4. 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.

# Purpose of Licence Condition 28

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 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.
2. A number of other LCs have interactions with LC28. As detailed later, these include LC 6, LC 7, LC 12, LC 22, LC 24, LC 26 and LC 30. Many of the expectations for LC 28 align with the requirements for compliance with other legislation and this is discussed further in [Appendix A.](#_Appendix_A_–)

# Guidance on arrangements for Licence Condition 28

1. LC 28 requires that all plant which may affect safety, receives regular and systematic EIMT. 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 (for example, through failure or other fault condition) as well as plant which has a direct safety purpose.
2. Licensees often divide their overall maintenance catalogue into subsets, for example a maintenance catalogue may comprise some or all of the following subsets:
   1. EIMT necessary to satisfy the requirements of the safety case (LC 23) (with appropriate reliability) which comprises the plant maintenance schedule (PMS). **Note**: Not all licensees use the initialism PMS.
   2. EIMT necessary to satisfy the requirements of other legislation, e.g. pressure systems, lifting equipment regulations, or environmental legislation.
   3. EIMT to support the operational reliability of the plant (without a specific contribution to safety).
   4. EIMT to support decommissioning.
3. SSCs 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. Some licensees may argue that 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. 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).
5. ONR may specify a high-level section of the licensee’s 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. ONR has currently approved the PMS preface at reactor sites using LC 28(4).
6. The arrangements should ensure that all EIMT on plant which may affect safety is:

* carried out by suitably qualified and experienced persons (SQEP);
* in accordance with written schemes;
* within intervals specified in the PMS;
* under the control and supervision of a SQEP person appointed by the licensee for that purpose.

1. 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, refer to the TIG for LC 24 (Ref. [4]) for further information.
2. 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.
3. In relation to SQEP of persons appointed by the licensee to control and supervise EIMT on plant which may affect safety, the inspector is referred to the TIG on LC 12 (Ref. [5]). In addition, TIG 26 applies (Ref. [6]) since, as noted before, maintenance, examination, and testing are “operations” as defined in LC 1(1).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 reference [7].
4. 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.
5. The arrangements should describe the requirements in LC 28(8) for notifying, recording, investigating, and reporting defects or deficiencies revealed by EIMT.
6. 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 reports should constitute “records to demonstrate compliance with any of the conditions attached to this licence” as defined in LC 6(1). The TIG on LC 6 (Ref. [8]) and the TAG on the management of records (Ref. [9]) provide further guidance.

# Guidance on inspection of arrangements and their implementation

1. LC 28 is a licence condition that covers a wide range of topic areas with the IAEA definitions of EIMT extending to both technical and administrative aspects (Ref. [10]). High level areas of interest for LC 28 compliance inspections include:

* The maintenance organisation;
* The PMS;
* Implementation of EIMT;
* Other supporting aspects (for example, spares and test equipment).

1. Table 2 provides a more detailed set of topics that can be inspected during routine compliance inspections along with supporting guidance. The list of topics and the supporting guidance is neither exclusive nor exhaustive and will be subject to review and revision in light of operational experience.
2. Inspectors should use a risk informed approach in deciding which topics to target. Factors to consider include divisional strategy, licensee performance and previous inspection findings. Inspectors should consider recording the LC 28 topic areas examined within their intervention record.
3. There are overlaps with a number of other licence conditions and this provides opportunities for themed inspections across a number of licence conditions. There is also some alignment between the requirements of LC 28 and relevant legislation for ONR’s other purposes (refer to [Appendix A](#_Appendix_A_–)).   
   In such cases it may be appropriate and efficient to seek assurances on the EIMT of the system, for all relevant purposes, as part of a single inspection.

Table – LC 28 Inspection Guidance

|  | Topic | Supporting guidance | Further guidance |
| --- | --- | --- | --- |
| 1 | Organisational Capability  (links to LC 36) | The licensee’s organisation should have sufficient resources to implement the EIMT programme. This should include assigning roles and responsibilities associated with EIMT and identification of the resources required to fulfil the EIMT programme (for example, numbers of SQEP personnel from each engineering discipline). These should be captured on the nuclear baseline. | [2], [7] and [11] |
| 2 | Governance | The licensee should have appropriate governance and oversight of EIMT performance. This may be through use of metrics to monitor delivery of EIMT activities and trend backlogs or through governance of system health processes. | [2] |
| 3 | Interfaces between different groups | The licensee’s EIMT programme will involve interfaces between different groups (for example, operations, one or more engineering disciplines, radiation protection, contractors). The interfaces between these groups should be clear with roles and responsibilities and any handover arrangements defined. | [2] |
| 4 | SSC classification | The licensee’s arrangements should describe the methods and criteria for identifying the safety significance of all SSCs with clear linkage to the safety case. These SSCs may comprise the PMS.  Where a graded approach is used there should be a proportionate approach within the arrangements for control of EIMT. If there are categories of lesser safety significant SSCs that are not included on the PMS (for example, emergency equipment) then there should still be appropriate EIMT (a requirement of LC 28(1)). | [12] |
| 5 | EIMT requirements | The licensee’s PMS should state the EIMT required to support the safety case with the activity and frequency (including applicable tolerance(s)) underpinned and evidenced by suitable engineering substantiation and/or operational experience. This is also applicable for any lesser safety significant SSCs not included on the PMS.  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. | [1] and [2] |
| 6 | PMS suspensions (links to LC 22) | Where an extension of the interval for EIMT is required, the licensee’s 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).  If the PMS is not approved, then the intervals may be extended by following the licensee’s LC 22 arrangements. The arrangements should describe the appropriate control and authorisation measures with the justification for extensions giving consideration to operational experience and engineering substantiation.  **Note**: If the licensee defers an LC 28 inspection they should confirm that they remain compliant with other legally binding inspection requirements (for example, from the Pressure Systems Safety Regulations (2000) or Lifting Operations and Lifting Equipment Regulations 1998). |  |
| 7 | EIMT Modifications (links to LC 22) | The licensee should have an appropriate level of control on changes to EIMT for plant that may affect safety. The licensee’s arrangements should require a safety justification that is graded according to the safety significance of the SSC and in accordance with its LC 22 arrangements. |  |
| 8 | Periodic Shutdown (links to LC 30) | 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.  In the case of operational reactor power stations, ONR has approved part of the maintenance schedule referred to as the ‘preface’ under LC 28(4). In such cases the preface specifies the duration of operation between periodic shutdowns. Therefore, should the licensee wish to permanently amend such an interval, as defined within the preface, its arrangements should reflect the requirement for an approval to be sought from ONR in accordance with LC 28(5). | [13] |
| 9 | Maintenance Optimisation | The licensee should have a process that uses operating experience (for example, from EIMT findings or defects) to optimise maintenance operations.  For facilities where safety cases have been updated or renewed the licensee should review the PMS to ensure that the contents reflect the current safety case and hazard. | [2] |
| 10 | Ageing, degradation and obsolescence | The licensee’s arrangements should take due consideration of asset management requirements (for example, ageing, degradation, obsolescence) including the strategies for reviewing and managing the obsolescence of SSCs important to safety. EIMT methods and frequency of application should be effective in detecting or mitigating ageing and degradation mechanisms before they adversely impact safety. | [14] |
| 11 | Maintenance backlogs | The licensee should have a process to prevent maintenance backlogs and ensure that, if present, any backlogs do not have an adverse effect on the safety of the plant. |  |
| 12 | Defects (links to LC7) | The licensee should have a process for reporting and investigating defects, determining the urgency and any remedial actions required to ensure continued safe operation of the plant. Defect records should identify the implications of the defect and appropriate corrective actions. |  |
| 13 | Condition monitoring | Condition monitoring can be used to inform the requirement for maintenance. This maybe through walkdowns at an appropriate frequency or by use of diagnostic methods.  The licensee’s techniques and diagnostic methods need to be appropriate for the situation. The parameters to be monitored, the acceptance criteria and whether all potential failure modes are addressed should be clear. | [1] and [2] |
| 14 | Plant safety during maintenance | If plant is required to be taken out of service for EIMT then the minimum plant configuration should be specified by the licensee’s safety case and this should be defined as a condition / limit under LC 23. This may be informed by assessments of risk using PSA. The SSCs unavailability should be recorded, assessed and drawn to the attention of staff responsible for operating the plant. | [1] |
| 15 | Setting to work and workplace standards | Inspectors should consider inspecting EIMT work that is about to commence or is ongoing. Aspects of interest may include:   * the setting to work briefing * confirming appropriate isolations are in place and that appropriate authorisation has been given for the work to commence (for example, via a permit to work system) * the requirement for and adherence to foreign material exclusion controls * the use of test equipment that is in calibration * the written instructions in use. | [15] |
| 16 | SQEP (inc contractors) (links to LCs 10, 12 and 26) | The licensee’s arrangements should require that EIMT is carried out by SQEP (LC 28(6)(a)) and under the control and supervision of a SQEP person appointed for that purpose by the licensee (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.  Licensees may use contractors to carry out EIMT. The licensee should act as the intelligent customer and check and approve the qualifications and experience of such workers prior to the work being authorised. The contractors should be SQEP for the work assigned.  In order to determine the suitability of those undertaking EIMT work, consider discussions with person(s) carrying out work, their team leaders and section heads, as well as reviewing training/competence records. | [5], [6] and [7] |
| 17 | Written schemes (or procedures) (links to LC 24) | The licensee’s arrangements should require all activities to be carried out in accordance with written schemes (LC 28(6)(b)). There should be a clear auditable trail from the safety case to the specified EIMT requirements and the operating instruction.  The procedures should be reflective of the safety significance of the SSC, appropriately categorised (for example, reference vs continuous use) and used correctly. There should be consideration of potential shortfalls in human performance, quality assurance proportionate to the safety significance (for example, use of independent verification checks & hold points) and a clear pass/fail criteria for the EIMT being undertaken. | [4] and [15] |
| 18 | Return to service | Following EIMT it is important that the plant/equipment/system is returned to service in a controlled manner with its operational functionality proven prior to reinstatement. SSCs that have had maintenance carried out should be reinstated, tested and accepted by an appropriate person (for example, a duly authorised person appointed under LC 12(2)) before being declared operable and available. |  |
| 19 | Records (links to LC6) | Records (LC 28(9)) of EIMT carried out on SSCs which may affect safety should be compiled and retained in an appropriate manner 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 and should be signed off by the SQEP who controls and supervises the work. Where there are failures to meet PMS requirements these should be reported under LC 7 (LC 28(8) requirement). | [8] and [9] |
| 20 | Spares & Stores | Control of spares and appropriate storage is important in ensuring replacement SSC’s provide the required safety function. The licensee should have processes that ensure that correct stores items have been received, appropriately stored and with a suitable level of control on issue. This should include an acceptability check by a SQEP on receipt of the item and prior to use.  The licensee should be able to demonstrate understanding of minimum stock levels required for critical spares, the shelf life for stored SSCs and any necessary environmental conditions for storage. Personnel should be aware of the potential for counterfeit, fraudulent and suspect items with arrangements in place, to quarantine, investigate and sentence suspect items.  Replacement and configuration of plant items should be controlled with respect to design, specification, manufacture, function, procurement, storage, issue, fitness for purpose and installation. | [15], [16] and [17] |
| 21 | Test Equipment | Test equipment is used to confirm equipment is within calibration (or specification). Specific considerations for this topic include how the equipment is calibrated and controlled. This includes ensuring any equipment used is within calibration and the licensee’s controls over use of third party test equipment. Appropriate facilities for undertaking the testing should also be in place. |  |
| 22 | Specialisms | Specialisms may identify topics of interest or themes for inspections, through sub-divisional plans or based on operational experience. For example, corrosion management or the maintenance of passive components. |  |

# References

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| [1] | ONR, NS-TAST-GD-009, Examination, Inspection, Maintenance & Testing of Items Important to Safety. |
| [2] | IAEA, SSG-74, Maintenance, Testing, Surveillance and Inspection in Nuclear Power Plants. |
| [3] | Department for Business Innovation & Skills, Regulators’ Code, April 2014. |
| [4] | ONR, NS-INSP-GD-024 - LC 24 Operating Instructions. |
| [5] | ONR, NS-INSP-GD-012, LC 12 Duly authorised and other suitably qualified and experienced person. |
| [6] | ONR, NS-INSP-GD-026, LC 26 Control and Supervision of Operations. |
| [7] | ONR, NS-TAST-GD-049, Licensee Use of Contractors and Intelligent Customer Capability. |
| [8] | ONR, NS-INSP-GD-006, LC 6 Documents, Records, Authorities and Certificates. |
| [9] | ONR, NS-TAST-GD-033, Licensee Management of Records. |
| [10] | IAEA Nuclear Safety and Security Glossary - Terminology Used in Nuclear Safety, Nuclear Security, Radiation Protection and Emergency Preparedness and Response, 2022 (Interim) Edition. |
| [11] | ONR, NS-TAST-GD-065, Function and Content of the Nuclear Baseline. |
| [12] | ONR, NS-TAST-GD-094, Categorisation of Safety Functions and Classification of Structures, Systems and Components. |
| [13] | ONR, NS-INSP-GD-030, LC 30 - Periodic Shutdown. |
| [14] | ONR, NS-TAST-GD-109, Ageing and Degradation Management. |
| [15] | ONR, NS-TAST-GD-102, General Guidance for Mechanical Engineering Specialism Group. |
| [16] | ONR, NS-TAST-GD-077, Supply Chain Management Arrangements for the Procurement of Nuclear Safety Related Items or Services. |
| [17] | ONR Advice Note, Supply Chain Management - Counterfeit, Fraudulent and Suspect Items (CFSI, 2022/73725). |
| [18] | ONR Nuclear Material Accountancy, Control, and Safeguards, ONR-CNSS-MAN-001. |
| [19] | ONR, SG-INSP-GD-001, Safeguards. |
| [20] | HMG, Nuclear Industries Security Regulations 2003/403. |
| [21] | ONR, CNS-TAST-GD-5.2 - Examination, Inspection, Maintenance and Testing of Physical Protection Systems. |
| [22] | ONR, Security Assessment Principles for the Civil Nuclear Industry, 2022 Edition, Version 1. |
| [23] | ONR, CNS-INSP-GD-001 - Nuclear Security Inspections. |

# Appendix A – Guidance for joint EIMT inspections

1. Many of the expectations for LC 28 align with the requirements for compliance with other legislation when the SSC serves both a nuclear safety and other purpose (for example, for a security, safeguards or conventional health and safety purpose). This appendix provides guidance on areas of common interest for consideration when planning LC 28 interventions.
2. Where there is alignment it may be appropriate and efficient to seek assurances on the EIMT of the system, for relevant ONR purposes, as part of a single inspection. Joint inspections require careful planning to ensure that all ONR purposes are able to achieve their objectives, and that the licensee has the resource to facilitate the additional inspection burden.

**Safeguards**

1. If a system provides both a nuclear safety and safeguards function then many of the expectations for LC 28 arrangements in this guidance are applicable for compliance with The Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19) and the associated ONR Guidance for Nuclear Material Accountancy, Control and Safeguards (ONMACS) (Ref. [18]). 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.
2. 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 (Ref. [19]).
3. 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 for 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 NMACS, 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.

**Protective security**

1. The Nuclear Industries Security Regulations (NISR) 2003 (Ref. [20]) require dutyholders to have an approved Security Plan (SP), and to comply with the standards, procedures and arrangements described in the approved SP. Plans are assessed and approved using the Security Assessment Principles (SyAPs) framework, supported by TAGs (CNS-TAST-GD-5.2 for EIMT)   
   (Ref. [21]).
2. The relevant section of SyAPs (Ref. [22]) is Security Delivery Principle (SyDP) 5.2 – Examination, Inspection, Maintenance and Testing (which forms part of Fundamental Security Principle (FSyP) 5 – Reliability, Resilience and Sustainability). SyDP 5.2 (SyAPs para.147) states that:

“A process for in-service testing, inspection and other maintenance procedures of security structures, systems and components should be identified in the security plan.”

1. Inspecting EIMT of security SSCs is one area in which joint inspections and specialist support would be beneficial. ONR’s Nuclear Security Inspections TIG (CNS-INSP-GD-001) (Ref. [23]) encourages security inspectors to consider a cross-purpose approach for FSyP 5 (Section 4.3, paragraph 37).
2. SyAPs (para.150) states that:

“EIMT is part of normal operation and it should be possible to carry out these tests without any loss of any security function.”

1. Whilst this may appear obvious, there have been several examples of security functions being accidentally disabled whilst EIMT is conducted on non-security SSCs (for example, switching off an electrical board which also supplies the site’s Perimeter Intrusion Detection Systems). Such mistakes are often the result of stove-piped EIMT arrangements (for example, specialist security sub-contractors), with dutyholders sometimes neglecting to exercise adequate supervision and control of security EIMT arrangements. For reasons of both safety and security, an integrated dutyholder approach to EIMT is vital.
2. SyAPs (para.150) states that:

“…the potential for EIMT to be exploited by an adversary should be analysed and the risks so arising mitigated.”

1. Security inspectors actively consider deliberate, malicious acts which can contribute to sabotage or theft of nuclear material and other radioactive material. Safety inspectors may wish to share the scope of future EIMT inspections with the Site Security Inspector, who can advise whether the SSCs are also of security interest (and thus whether the insider threat needs to be considered). One example is consideration of a “two person rule” for maintenance of critical systems which could be sabotaged by an insider.
2. Inspectors should also consider whether security is routinely considered and embedded into the dutyholder’s EIMT arrangements. This might include:

* Advance notification of planned EIMT which may affect security SSC   
  (to allow time for contingency planning and, if necessary, submission of a Temporary Security Plan to ONR).
* An appreciation that EIMT on one safety SSC may temporarily increase the vulnerability and security importance of another SSC. Such a situation may require dynamic security management under the approved SP (for example, temporary armed guarding).

1. In all cases where there is a security aspect, the first point of contact should be the Site Security Inspector.

**Cyber security**

1. As operational technology becomes more prevalent across new installations and upgrades to nuclear sites, EIMT requirements may be influenced by both nuclear safety and cyber security outcomes. This is likely to increase the opportunities and need for joint inspections on equipment where EIMT is required for both LC 28 and cyber security requirements.

**Site safety**

1. EIMT may be required on SSCs to meet the requirements of both nuclear safety and conventional health and safety legislation and this presents opportunities to inspect compliance with LC 28 and conventional safety regulations. Examples include lifting equipment or pressure systems which are required to be maintained in accordance with relevant regulations.
2. There are also opportunities to carry out themed inspections where LC 28 and additional maintenance topics could be inspected. For instance, a maintenance themed inspection could include control of work and the permit to work system which are important in ensuring the safety of those doing the maintenance.