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| ONR Technical Assessment Guide  Management of records |

ONR Technical Assessment Guide (TAG)

Management of records

**Head of Profession**: Human and organisational capability

**Authored by**: Nuclear Safety Inspector

**Approved by**: Deputy Head of Profession

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| Issue | Description of update(s) |
| 8 | Review of relevant good practices and references, organised content into lifecycle of records with enabling tools. |
| 8.1 | Minor edit to Appendices 2 and 3. |

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# Introduction

1. ONR has established its [Safety Assessment Principles](http://www.onr.org.uk/saps/saps2014.pdf) (SAPs) [1] which apply to the assessment by ONR specialist inspectors of safety cases for nuclear facilities that may be operated by potential licensees, existing licensees, or other dutyholders. The principles presented in the SAPs are supported by a suite of guides to further assist ONR’s inspectors in their technical assessment work in support of making regulatory judgements and decisions. This Technical Assessment Guide (TAG) is one of these guides.

# Purpose and scope

1. TAG's contain guidance to advise and inform ONR inspectors in the exercise of their regulatory judgment. They are also part of the demonstration on how ONR meets the Western European Nuclear Regulator’s Association (WENRA) Reference Levels and how ONR links its guidance to that contained in the International Atomic Energy Agency (IAEA) safety standards. TAGs are not written for dutyholders, and although they may be used as a source of guidance or good practice, they are not a prescriptive set of legal requirements.
2. The purpose of this TAG is to provide further guidance for ONR inspectors when exercising regulatory judgment on the adequacy of a licensee’s, potential licensee’s and dutyholders records management arrangements made under Licence Conditions (LCs) 6 and 25 [2]. Throughout this TAG the term licensee will be applied as the global term, but it is for the inspector to apply the correct context to the guidance.
3. Management of records is an important topic and relevant guidance is available in standards and guidance. There are also rapidly developing technologies which can be applied to records management, which are referred to in this TAG as enabling tools. This TAG provides advice to inspectors on the basic principles which are applicable to any records management system.
4. The TAG describes the general quality management arrangements required for an effective records management system. This TAG complements Technical Inspection Guides (TIGs) ‘LC 6 Documents, Records, Authorities and Certificates’ [3] and ‘LC 25 Operating Records’ [4] which provide inspection guidance for inspectors. Site Inspectors should consider seeking Quality Management specialist inspector support when carrying out inspections against LC 6 and 25.
5. The TAG covers the typical lifecycle of all records, as illustrated in Figure 1, for the purpose of Nuclear Safety. However, the principles of this guide could be applied to all ONR purposes as records regardless of purpose follow similar lifecycles and require similar controls.
6. ISO standard ‘ISO 15489-1:2016 - Information and Documentation Records Management’ defines a record as

“information created, received and maintained as evidence and as an asset by an organisation or person, in pursuit of legal obligations or in the transaction of business.” [5]

Records management is important for legal compliance for a licensee and records are an asset that needs to be properly managed.

1. Records should enable a licensee to demonstrate how it has acted and how it has complied with the requirements of the licence conditions and other regulatory requirements. This guide focusses on the management of records in general but does not deal with the specific records that LCs or legislation require.

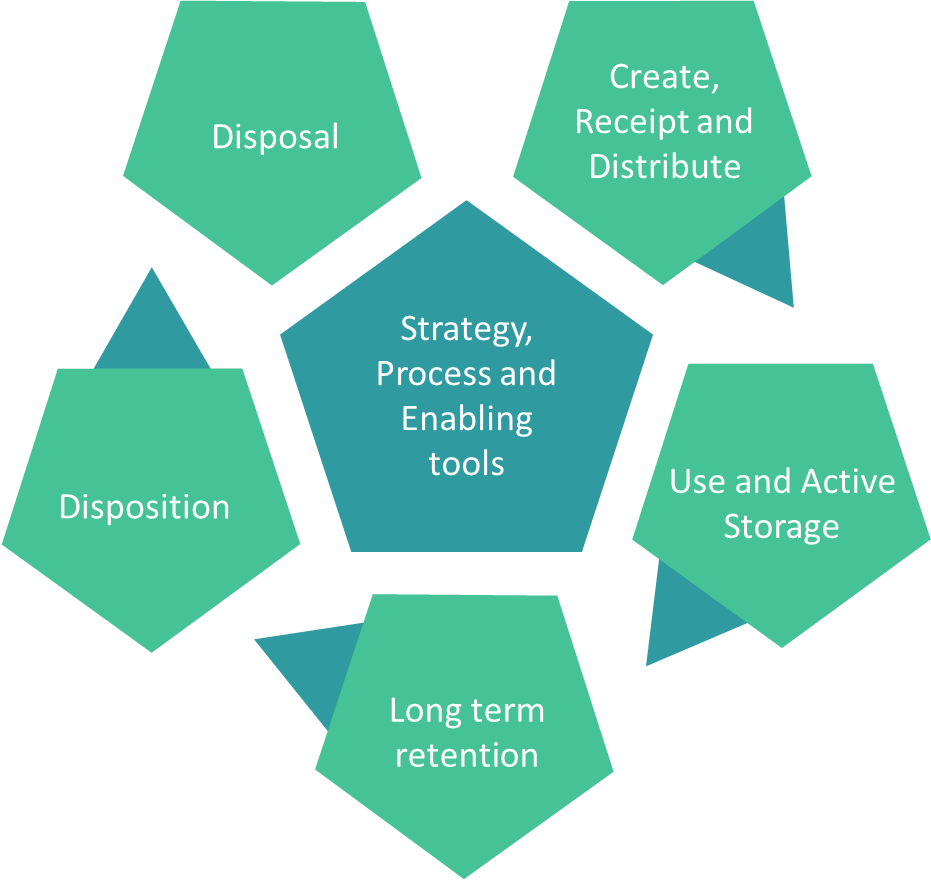
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Figure 1 - Summary of a general record lifecycle.

# Relationship to licence and other relevant legislation

1. The legal framework relating to management of records is made up of numerous pieces of legislation; key legislation includes the Health and Safety at Work Act 1974, Nuclear Installations Act 1965, The Energy Act 2013, Radioactive Substances Act 1993, The Radiation (Emergency Preparedness and Public Information) Regulation 2019 and The Ionising Radiations Regulations 2017.
2. Legislation which gives access to records includes the Public Records Act 58 (PRA58) and the Freedom of Information Act 2000 (FOI2000).   
   Other safety related legislation requiring records includes the Management of Health and Safety at Work Regulations 1999 and the Lifting Operations and Lifting Equipment Regulations 1998.
3. In addition to existing legislation, ONR’s LCs require records to be made and managed, the detail of which is summarised in the subsequent paragraphs.
4. LC 6 – Documents, Records, Authorities and Certificates:

6 (1) The licensee shall make adequate records to demonstrate compliance with any of the conditions attached to this licence.

6 (2) Without prejudice to any other requirements of the conditions attached to licence the licensee shall make and implement adequate arrangements to ensure that every document required, every record made, every authority, consent, or approval granted, and every direction or certificate issued in pursuance of the conditions attached to this licence is preserved for 30 years or such other periods as ONR may approve.

1. It should be noted that LC 5(3) includes a specific requirement for a retention period of 50 years for records of stolen, lost, jettisoned or abandoned nuclear matter from the date of such theft, loss, jettisoning or abandoning.
2. Licensees take account of relevant legislative and statutory requirements when identifying the records to be retained and the retention periods. Records that are generated to satisfy the requirements of LCs are subject to the controls developed under LC 6.
3. LC 17 requires that adequate quality management arrangements are developed and implemented by the licensee. An essential part of these arrangements is the development of procedures which detail the generation and control of records. These procedures should, as a minimum, detail:

* responsibilities for the identification (normally through record schedules) and control of records;
* methods, conditions and monitoring of storage/retention commensurate with the nature of the record and the media used;
* means of retrieval and update;
* levels of security to protect from corruption, unauthorised access, loss or damage;
* duration of storage;
* arrangements for the review and disposition of records; and
* arrangements for the periodic auditing of the control and storage of records.

1. LC 25 – Operational Records:

25 (1) The licensee shall ensure that adequate records are made of the operation, inspection and maintenance of any plant which may affect safety.

25 (2) The aforesaid records shall include records of the amount and location of all radioactive material, including nuclear fuel and radioactive waste, used, processed, stored, or accumulated upon the site at any time.

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# Relationship to Safety Assessment Principles, WENRA Reference Levels, IAEA Safety Standards and Guides and ISO Standards.

## Safety Assessment Principles

1. The Safety Assessment Principles (SAPs) for Nuclear Facilities [1] provides a framework to guide regulatory decision-making in the nuclear permissioning process. It is supported by TAGs which further aid the decision-making process. The following non-exhaustive list of principles are of specific relevance to this TAG:

* MS.1 – Leadership - Directors, managers and leaders at all levels should focus the organisation on achieving and sustaining high standards of safety and on delivering the characteristics of a high reliability organisation.
* MS.2 – Capable Organisation - The organisation should have the capability to secure and maintain the safety of its undertakings.
* MS.4 – Learning from Experience - Lessons should be learned from internal and external sources to continually improve leadership, organisational capability, the management system, safety decision making and safety performance.
* EQU.1 – Qualification Procedures - Qualification procedures should be applied to confirm that structures, systems and components will perform their allocated safety function(s) in all normal operational, fault and accident conditions identified in the safety case and for the duration of their operational lives.
* EMC.20 – Records - Detailed records of manufacturing, installation and testing activities should be made and be retained in such a way as to allow review at any time during subsequent operation.
* EMC.24 – Operation - Facility operations should be monitored and recorded to demonstrate compliance with, and to allow review against, the safe operating envelope defined in the safety case (operating rules).
* ECE.20 – Inspection, Testing and Monitoring - Provision should be made for inspection, testing and monitoring during normal operations aimed at demonstrating that the structure continues to meet its safety functional requirements. Due account should be taken of the periodicity of the activities.
* EGR.5 – Manufacturing Records - A record should be made of the manufacturing case histories.
* EGR.6 – Location Records - A record should be made of the position of individual components in the structure during construction.
* ENM.4 – Control and Accountancy of Nuclear Matter - Nuclear matter should be appropriately controlled and accounted for at all times.
* RW.7 – Making and Keeping Records - Information that might be needed for the current and future safe management of radioactive waste should be recorded and preserved.
* DC.6 – Records for Decommissioning - Documents and records that may be required for decommissioning purposes should be identified, prepared, updated, retained and owned so that they will be available when needed.

## Technical Assessment and Inspection Guides

1. The following TAGs and TIGs are of relevance to this TAG and contain related guidance for inspectors on specific elements of records management:

* NS-TAST-GD-027 – Training and Assuring Personnel Competence
* NS-TAST-GD-046 – Computer Based Safety Systems
* NS-TAST-GD-077 – Supply Chain Management
* NS-TAST-GD-079 – Licensee Design Authority Capability
* NS-TAST-GD-098 – Asset Management
* CNS-TAST-GD-7.1 – Effective Cyber & Information Risk Management
* CNS-TAST-GD-7.2 – Information Security
* CNS-TAST-GD-7.4 – Physical Protection of Information
* SG-TAST-GD-002 – Nuclear Material Accountancy
* NS-INSP-GD-006 – LC 6 Documents, Records, Authorities and Certificates
* NS-INSP-GD-017 – LC 17 Management Systems
* NS-INSP-GD-025 – LC 25 Operational Records
* SG-INSP-GD-001 – Safeguards

**Note:** For the sake of conciseness, the TAGs and TIGs listed above have not been formally referenced, only when they have been specifically referenced within the document do they appear as formal references. Reference should be made to the [ONR website](https://www.onr.org.uk/) for a complete list of up-to-date TAGs and TIGs.

## WENRA Safety Reference Levels for Existing Reactors

1. A principal aim of the Western European Nuclear Regulators’ Association (WENRA) is to develop a harmonised approach to nuclear safety within the member countries. The WENRA Safety Reference Levels (RLs) [6] are agreed by the WENRA members. They reflect expected practices to be implemented in the WENRA countries. As the WENRA members have different responsibilities, the emphasis of the RLs has been on nuclear safety, primarily focussing on safety of the reactor core and spent fuel.   
   The following RLs are relevant to this TAG and should be taken into account by the inspector. Each identified RL has been considered and incorporated through relevant sections of this TAG to ensure alignment:

### Issue C: Leadership and Management for Safety

#### C3. Management for safety

* C3.10. A description of the processes and supporting information that explain how work is to be prepared, reviewed, carried out, recorded, assessed and improved.
* C3.11 The documentation of the management system shall be understandable to those who use it. Documents shall be up to date, readable, readily identifiable and available at the point of use.
* C3.12 Documentation shall be controlled. Changes to documents shall be reviewed and recorded and shall be subject to the same level of approval as the documents themselves. It shall be ensured that document users are aware of and use appropriate and correct documents.
* C3.13 Records shall be specified in the management system documentation and shall be controlled. All records shall, for the duration of the retention times specified for each record, be readable, complete, identifiable and easily retrievable.

#### C5. Measurement, assessment and improvement

* C5.3 The licensee organisation shall evaluate the results of the assessments and take any necessary actions, and shall record and communicate inside the licensee organisation the results, the decisions and the reasons for the necessary actions.

#### D2. Competence and qualification

* D2.3 Appropriate training records and records of assessments against competence requirements shall be established and maintained for each individual with tasks important to safety.

#### K2. Programme establishment and review

* K2.3 Data on maintenance, testing, surveillance, and inspection of SSCs shall be recorded, stored and analysed. Such records shall be reviewed to look for evidence of incipient and recurring failures, to initiate corrective maintenance and review the preventive maintenance programme accordingly.

#### K3. Implementation

* K3.10 All items of equipment used for examinations and tests together with their accessories shall be qualified and calibrated before they are used. All equipment shall be properly identified in the calibration records, and the validity of the calibration shall be regularly verified by the licensee in accordance with requirements of the management system.

## IAEA Safety Standards

1. The IAEA Safety Standards (Requirements and Guides) were the benchmark for the revision of the SAPs in 2006, 2014 and 2020 and are recognised by ONR as relevant good practice. They should therefore be consulted, where relevant, by the inspector as complementary guidance. This TAG is broadly compatible with these standards as far as record management is concerned.
2. ONR expects licensees to meet the requirements of IAEA Safety Standard, ‘GSR Part 2 - Leadership and Management for Safety’ [7] with which this TAG is consistent. This standard is supported by two IAEA Safety Guides; ‘Application of the Management System for Facilities and Activities’ [8] and ‘The Management System for Nuclear Installations’ [9] .

## ISO Standards

1. ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). ISO standards in the field of nuclear safety are complementary technical documents and are recognised by ONR as relevant good practice. They should therefore be consulted, where relevant, by the assessor as complimentary guidance, although it should be appreciated that they are not regulatory standards or law.
2. Whilst, for brevity the full list of applicable ISO standards has not been listed, the following have been highlighted due to their overarching scope -

* BS ISO 15489 -1:2016 - Information and documentation – Records management Part 1 General [5];
* BS EN ISO 9001:2015 [10] - Quality management systems — Requirements and/or BS EN ISO 19443:2022 - Quality management systems: Specific requirements for the application of ISO 9001:2015 by organizations in the supply chain of the nuclear energy sector supplying products and services important to nuclear safety (ITNS) [11];
* BS 4971:2017 – Conservation and care of archive and library collections Guide for the storage and exhibition of archival materials [12]; and,
* BS EN 16893:2018 - Conservation of Cultural Heritage [13]. Specifications for location, construction and modification of buildings or rooms intended for the storage or use of heritage collections

1. BS ISO 15489 Parts 1 and 2 are suitable for records kept up to 30 years, beyond this BS4971 should be used. BS4971 requires environmental controls to be put in place to preserve records.
2. This TAG is broadly compatible with these standards as far as record management and arrangements are concerned.
3. Other specific international codes and standards where applicable, may be considered relevant good practice, including but not limited to – BSI, IEC, ASME, ASTM, ANSI, ANS, AWS and AFCEN (including RCC-M).

# Advice to Inspectors

## Establishing a records strategy and process with enabling tools

1. Licensee arrangements should reflect a clear commitment from senior management and enable a culture of effective records management from staff at all levels.
2. The licensee should ensure that records management is a core quality management arrangement within their management systems and is given adequate resourcing in terms of competent personnel and effective infrastructure, planning and review. A clear strategy should be set out within the management system that details the totality of the records required and how they are managed, including the use of enabling tools, especially during periods of organisational change.
3. Documented arrangements should detail expectations of records management throughout the organisation and extended enterprise (refer to [14] for further detail on extended enterprise).
4. There are many factors that can increase and diminish the integrity of records. Consideration and policy should be given for these factors such as, use of electronic signatures, utilisation of enabling tools and systems including cloud storage, artificial intelligence, and digitalisation of physical records.
5. The licensee must ensure that records are held for a period necessary to ensure that the safety case for operation is available at all times, that design and construction information is available for decommissioning, that operational records are available to assist investigations in the event of an accident or incident, and operational records are available for the statutory number of years after cessation of operations for the purpose of assisting any claims of damage to health as a result of exposure to ionising radiation.
6. The licensee should have a Records Retention Schedule which details the type of records to be kept and their retention and review periods.   
   The Record Retention Schedule should cover the whole lifecycle of the facility from the design phase through to the decommissioning programme with supporting and underpinning facility specific schedules. The Record Retention Schedules should provide the licensee with the means to determine the extent of its records and the means of controlling those records.
7. The Record Retention Schedule should identify the legislation requiring records to be retained; i.e. the Health and Safety at Work Act 1974, the Nuclear Installations Act 1965 (as amended), The Energy Act 2013 and the Ionising Radiation Regulations (IRR17).
8. Contracts awarded to suppliers of plant and equipment, or services should state the records to be provided and to what quality. NS-TAST-GD-077 provides guidance on records requirements in the supply chain [14].
9. Occasions may arise when an organisation is updating its records management arrangements or undergoing organisational changes which may include a change of ownership. When this situation arises an effective and robust link is required between the new arrangements and the records that have been generated under previous arrangements. A transition plan should be put in place to cover any organisational change affecting records in support of LC 36 submissions.
10. The records management process/strategy should also ensure that records:

* are classified and categorised;
* subject to appropriate review;
* are registered upon receipt;
* are readily retrievable in all required areas;
* are indexed and placed in their proper locations relevant to their use which may be at a number of locations with the retention times clearly specified;
* are stored in a controlled and secure environment;
* are stored in appropriate storage media ([Appendix 2](#_Appendix_2:_Media));
* are disposed of in a controlled manner;
* remain unchanged under normal circumstances;

1. The Strategy and Retention Schedule should be periodically reviewed and updated to ensure it is representative of the organisation’s activities.
2. The facilities for control of emergencies should hold appropriate information and records (or have secure access to them) for responding to an emergency.

## Creation, receipt and distribution of records

1. The records management process should ensure that records are specified, prepared, authenticated and maintained as required by the applicable codes, standards, and specifications. Records should be legible prior to acceptance into the record distribution, use or storage.
2. Arrangements should be in place to ensure that record integrity and traceability can be maintained. Where records are created during processes where there is potential for damage such as records generated in radiologically controlled areas, outside working, manufacturing, and welding records etc, arrangements should ensure risks of degradation are minimised.
3. The licensee should have means of preventing and detecting inaccurate or fraudulent information during the records creation and authentication.

### Creation of records

1. All records should be readable, complete, and identifiable with the product or process involved.
2. Records should be logged and registered in an index prior to distribution or receipt into storage. The methods of logging and indexing to be used should be established before the receipt of records. The index should include:

* The record owner;
* the title or unique identification of the record and the item, service or process it is related to;
* adequately protected or classified;
* nuclear facility code, plant and system code or building/level/room ID   
  (if not a plant item);
* the organisation or person generating the record;
* the retention time of the record;
* the location of the record in the storage facility; and
* revision dates and the persons approving the revisions.

1. The licensee should have arrangements for correcting or supplementing records. These should be of the same standard as those used for the approval of the original record. The correction or supplement should include the date and the identification of the appropriate person making the correction or supplement.

### Receipt of records

1. The licensee should have arrangements to ensure records received from external sources are of the correct quality and meet the requirements of the applicable codes, standards and (procurement) specifications. This includes records transmitted through enabling tools directly into the licensees management system.
2. Records packages should be inspected for legibility and, if necessary, quarantined if not conforming, until resolution. Records that cannot be improved may, for instance, be assessed, accepted, and be marked as best available copy.

### Distribution of records

1. Arrangements should be in place for the distribution of records to relevant parties (for example, distribution of manufacturing records for commissioning activities). The arrangements should include:

* the mode of distribution and use of enabling tools;
* authorisations of personnel and delegations;
* traceability of distribution;
* limits of distribution including classification and export controls; and
* protective measures.

## Use and active storage of records

1. Records can be required for use and as reference during operations.   
   During periods of record use, arrangements must be in place to ensure the integrity of the record is not diminished.
2. If it becomes necessary to correct errors, any revisions to records should be adequately controlled and tracked.
3. Enabling tools have many advantages particularly with regard to access and the ability to readily interrogate documents and records. Licensees utilising enabling tools will need to make adequate arrangements for the active and long-term retention of electronic records, which include administration and refreshment of system architecture. A licensee will need to have an appropriate IT strategy in place to securely manage and maintain electronic records and databases. The management system will need to include appropriate access control protocols.
4. Enabling tools used for the records management process should incorporate arrangements which enable differentiation and transition from documents in use to those which are already accepted as records.
5. Consideration should be given to storing documents that may be necessary in emergency conditions in a records storage facility at a location away from the nuclear facility. The management system should have essential back up arrangements which guarantee its functionality in emergency scenarios.

## Long-term retention

1. Responsibilities for maintaining and operating the records’ process and the facilities for the storage of records should be clearly defined and documented. Responsibilities for records should be assigned to personnel/role(s) who have the knowledge and authority to review and sentence them.
2. Access to records should be controlled and authorised as appropriate to ensure security and degradation mitigation.
3. The records should be accessible at all times during the specified retention periods. Access to locations where records are retained should be controlled.
4. To prevent the deterioration of records or in aid of prevention from obsolescence of media (recognising changes in media) during the retention period, it may be necessary to transfer records to a different medium or digitalised. The transfer process should include control, and verification that the information has been transferred accurately. If any copying is necessary to maintain image quality during the retention period, this should also be controlled and verified.
5. The licensee should establish appropriate criteria to enable it to draw up a Record Retention Schedule to identify the type and category of records it will be keeping. Record Schedules will identify the particular records to be retained. Record Schedules frequently list the licensee’s totality of records, not just those related to safety, for instance, financial and personnel records.
6. The process developed by the licensee will identify the strategy for each category of record including copying and archiving and how it will be stored, for example, a combination of hard copy, microfiche, and electronic media. The importance of the records to the organisation will influence the level of control exercised on them, including the retention period, the amount of copying, the media type and the number of locations used to retain them.
7. The licensee should have appropriate criteria for categorising records and apportioning retention periods. These criteria should take account of applicable statutory and legislative requirements, licensee organisational requirements and national and international good practice. The licensee should make adequate arrangements for retaining records commensurate with the categorisation and retention period of the records and the lifecycle phases of the nuclear facility generating the records. The record package associated with the decommissioning programme for a nuclear facility should contain sufficient information to enable succeeding generations to safely manage and discharge the ongoing nuclear and radiation liabilities. [Appendix 4](#_Appendix_4:_Record) provides guidance on retention periods.
8. Record storage facilities may be operated by the licensee, or the licensee may choose to contract records storage to a specialist service provider.   
   The interface between the licensee and the service provider will need to ensure that storage and retrieval arrangements are adequate. The licensee should also consider arrangements for storing duplicate sets of records; note that this might not be a complete set. These duplicate records may be important for managing emergencies or for business continuity and may be located at another equivalent records storage facility at a different location. The existence of the duplicate set of records should be identified on the appropriate record schedules.
9. Records need to be properly identified to facilitate future knowledge of what they are. This will require careful design and consistent application of the ‘metadata’. The arrangements for retrieval and access to records will need to be commensurate with the retention periods.
10. Management arrangements need to provide for adequate access and retrieval of records from service providers and for the safe return of records to the archive if they are removed. Records removed from archival storage should be recorded to identify them, identify the reason why and to record their return. Consideration should be given to a secure area including inspection or observation of what has been changed if anything.   
    Formal authorisation should be given by a responsible manager to change a record preserving the legibility of all data originally recorded i.e. use of a single line to cross out incorrect data. All changes to be authorised.

### Storage of records

1. The licensee should establish a suitable records storage facility (either directly or contracted through their extended enterprise) for the maintenance, preservation, and protection of records, be they paper, physical items or electronic, from the time of their receipt until the time of their disposal. [Appendix 3](#_Appendix_3:_Document) provides supplementary guidance on storage facilities.
2. If the necessary record storage conditions are unattainable, consideration should be given to the provision of a duplicate set of records stored in a diverse separate facility at a different site. In such cases, the location and construction features of both facilities should be such that the probability of the simultaneous destruction, loss or deterioration of both facilities is sufficiently low.
3. Records shall be stored in such a manner as to prevent deterioration.
4. Consideration should be given to segregating records in the storage facility associated with different facilities or projects to facilitate ease of ‘batch transfer’ at some future date.
5. Electronic storage media should be robust and adequate arrangements developed to ‘future proof’ the records held in this medium. The licensee will need to allocate sufficient physical and human resources to refresh electronic storage media to take account of advances in technology and obsolescence.
6. The records storage facility must be able to cope with the type and nature of the records being sent to it. If the licensee decides to outsource storage to a specialist service provider the service provider should be vetted to ensure that it is capable of handling the records that are to be sent to it. This will include retrievability and security requirements and, if appropriate, processes for handling hazardous material. A robust specification needs to be placed on the specialist service provider and periodic checks, by both the service provider and the licensee, made to ensure that key parameters of the storage service are being adhered to.
7. Some records may be physical items which will require different considerations for storage from paper or electronic records and there is a potential contamination issue to consider.
8. Record storage facilities must take into account the potential contamination of records with hazardous substances, including radioactive contamination.
9. Records belonging to different organisations which are stored in the same records storage facility need to be clearly identified.

## Disposition

1. The licensee should identify who is responsible for the decision to transfer or dispose of records. Authorisation to transfer or dispose of records should only be given by a specifically identified responsible manager who should record this decision and identify by unique reference the records involved. This authorisation should be documented and retained.
2. If there is a need to transfer records from one organisation to another, the licensee shall retain a clear auditable trail of the information transferred including the nature of information, date of transfer and relevant approvals. In these instances the wider considerations within this TAG should be applied.
3. The records system should be designed to provide adequate prompts to identify when a record reaches its review point prior to consideration for disposal. There should be adequate arrangements in place for reviewing records that have reached the end of their retention period. Before final disposal an appropriate review should be undertaken and approval for destruction or continued retention given by the licensee. Arrangements will need to reflect the involvement of contractors where they are used to store the records.

## Disposal

1. The disposal of records should be conducted in a manner which is in line with the nature of the record. Consideration should be given to:

* Classification of the record;
* Environmental impacts of disposal (electronic waste regulations);
* Potential uses of operational experience learning; and
* Whether disposal contractor use is adequately controlled.

1. Disposal arrangements should be detailed in the records management process.
2. BS EN 15713:2023 [15] provides recommendations and requirements for the management and control of physical destruction of confidential and sensitive material.

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Glossary

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| HSAW74 | The Health and Safety at Work etc Act 1974 |
| HSE | Health and Safety Executive |
| IAEA | International Atomic Energy Agency |
| LC | License Condition(s) |
| RGP | Relevant Good Practice |
| IRR17 | Ionising Radiation Regulations 2017 |
| NIA65 | Nuclear Installations Act 65 |
| ONR | Office for Nuclear Regulation |
| EDMS | Electronic Document Management System |
| PRO | Public Records Office |
| SAP | Safety Assessment Principle(s) |
| TAG | Technical Assessment Guide(s) |
| TIG | Technical Inspection Guide(s) |
| TEA | The Energy Act 2013 |
| WENRA | Western European Nuclear Regulators’ Association |

# Appendix 1: Electronic record management systems and use of enabling tools

## Electronic record management systems

1. So far as LC 6 and 25 are concerned, the requirement is for documents and records required, issued, or made in pursuance of the conditions to be preserved. How the licensees do this is ultimately a matter for them.   
   This appendix provides supplementary guidance for ONR inspectors relating to the use of electronic record management systems, The retention of records in electronic form will be consistent with the requirements of the licence condition. It has been held that computer records are "documents" for such purposes.
2. Another important aspect is that personnel inputting data into such systems will be required to verify that the information entered was an accurate representation of the input data. The underlying principle here is that first-hand knowledge (or provenance) of the information used to establish the record is essential to personnel inputting the data.
3. The possibility of technology becoming obsolete with the attendant possibility of records not being retrievable is an important consideration for an electronic records management system.
4. Detailed guidance on the preparation of electronic images of documents that may be required as evidence is given in relevant British Standards.   
   There are some practical safeguards that must be considered when dealing with the storage of records by electronic means. These include:

* The continued ability to read the data must be assured taking into account the technological changes that may occur between making the record and its subsequent retrieval. (This may mean periodically upgrading the record in line with new technology).
* The integrity of the electronic system should be confirmed (for example, Is it a proprietary product? Has it been adequately tested and de-bugged?).
* Evidence of maintenance of the system hardware and the continuing availability of software to read the electronic record.
* Assurance of the security of the system including the use of passwords and control of software amendment must be available.
* Sufficient back-up of recorded data to guarantee preservation of the information so that records can be regenerated in the event of loss/deterioration of the original. Alternative locations for record storage should be used.
* A system for recording and storing data must prevent the degradation of data.
* Readily obtainable data from the storage system by "authorised persons".
* Copies (in whatever medium is being used) must be (or be able to produce) an exact representation of the original record. Controls must be in place to ensure that the transfer is accurate. Quality control checks of the image to be stored, for example, immediately following scanning must be an integral part of the system.

1. There is an increasing use of electronic means to generate and store records. In many instances records generated electronically do not exist in other forms. Records stored electronically are usually effectively indexed and as such are readily retrievable.
2. The management of records in the nuclear industry is a considerable task, not least due to the volume and diversity of them. This may often influence the decision transfer from paper to electronic formats. There are no legal barriers to this provided that the above safeguards can be met, particularly with respect to the quality and accuracy of images.
3. The responsibility is with dutyholders to determine how to comply with their legal duties for managing records. It would be unlikely for a company to conclude that all its documents were suitable for imaging and destruction or that none were. It is unlikely that licensees will wish to destroy all original records following imaging. Documents such as consents, approvals, licence instruments, the licence itself and safety cases, for example, should be kept as original documents.
4. Admissibility and weight are two factors that must be considered with respect to evidence in court. It is the accepted view that electronic records will be admissible, particularly if they have been properly managed and controlled. Copies of documents, photographs and microfiche have been admissible for years. It is the weight that the court gives to the evidence that is uncertain and where an original document is available this should be produced.
5. Generic IAEA guidance on an EDMS can be found in Annex I of IAEA Safety Guide, GS-G-3.1 [8].
6. BS 10008 series provides guidance and specifications for electronically stored information (ESI) with the objective of enabling the user to ensure the authenticity and integrity of the ESI is maintained, so that it is trustworthy and is either accepted without dispute or successfully resists challenge.

## Enabling tools

1. For the purposes of records management, enabling tools are processes and/or systems that, alone or in combination with associated technologies, will provide a means to optimise the standard record lifecycle.
2. To date there is evidence of enabling tools being progressively considered and/or implemented by Licensees, and this is anticipated to become more prevalent over time. Examples of these enabling tools include:

* Digitisation of paper based records to reduce the likelihood of degradation to paper records.
* Digitalisation of core processes to transform business activities and reduce the potential for human errors.
* The introduction of Artificial Intelligence for verification, validation and analysis of records;

1. Whilst ONR are supportive of innovations within the industry, there will be a need for Licensees to ensure the introduction of any enabling tools is underpinned with evidence to demonstrate the proposed approach is equivalent to or an improvement to the current approach.
2. Where the introduction of enabling tools is being considered, the Licensee should engage with ONR.

# Appendix 2: Media for record storage

1. Examples of media which may be used to store records are:

* paper with a pH (acidity level) of between 6 and 9;
* film, 35 mm roll;
* silver–gelatin type microfilm or X ray film;
* microfiche;
* magnetic tape or disc;
* optical laser disc;
* hardware such as graphite samples, weld samples or other materials which have been or are able to be subjected to qualification testing;
* electronic firmware (computer or component) such as thermal luminescent dosimeters (short term use only);
* media for records that need special processing and control, such as computer codes and software and information stored on high density media or optical discs, which will need to be maintained and controlled to ensure that the records are readily retrievable and usable

1. For retention periods of up to 50 years, as required by LC 5 [2], the requirements of BS 4971 [12] should be examined.
2. The following media are considered to be acceptable for records with retention periods of up to 30 years:

* Paper copy retained in a controlled environment with an indexing system to allow retrieval in a reasonable time, for example, one working day;
* Microfilm or other microforms prepared appropriately and stored in adequate conditions;
* Punched paper tape or cards where the information is stored as physical artefacts on a paper/card medium. Such media will need to be stored in equivalent environmental conditions to hard paper copy;
* Magnetic media stored and maintained appropriately, such as disc packs, storage modules or disk cartridges and magnetic tape on open spool.

1. The following media are considered to be acceptable for records with retention times of up to five years:

* Any of those media considered acceptable for retention times of up to 30 years, plus optical discs. Records using optical disc media may be held for periods beyond five years provided that periodic checks are made to check for any deterioration in image quality. The record will need to be copied onto a new optical disc if any deterioration in image quality is found. This may be before the manufacturer’s certified lifetime of the original disc is exceeded.

1. The following media are considered to be acceptable for records with retention times of up to three years:

* Any of those media with retention times of five years or 30 years, plus flexible disk cartridges (floppy disks) and magnetic tape cartridges stored and maintained appropriately.

1. The preparation and storage requirements for the different media should reflect the manufacturer’s guidance for the media.
2. IAEA guidance can be found in IAEA Safety Guide GS-G-3.1 [8].

# Appendix 3: Document and record storage facilities

## General

1. All quality documents and records should be securely stored and maintained in such a way that they are readily retrievable in facilities that provide a suitable environment to minimise deterioration or damage and to prevent loss.
2. The type of record storage facilities required depends on factors such as the records media, environmental conditions (including insect or fungal infestation), safety significance (duplication of copies in diverse locations), duration of retention, security. Records received will have to be retained in an appropriate facility prior to acceptance into an archive store or prior to processing into another media, for example, hard copy to scanned copy.
3. Records should be retained in facilities appropriate to the media.   
   Care should be taken to ensure that record media requiring different storage environments are not stored in the same area. In particular, cellulose nitrate film should be stored in a separate facility.
4. Unsuitable environments can cause more damage to records than any other single factor. A dry or polluted atmosphere may lead to embrittlement of documents, dampness and poor ventilation may cause the growth of mould; excess heat may accelerate chemical damage. All three conditions can lead to irreparable damage to records. Contingency actions should be identified by the licensee if conditions monitored reach and exceed set values.   
   Careful control and observation of temperature, humidity and ventilation within the records facility is therefore essential. In general, low temperatures with adequate air movement are preferable.
5. Fire precautions, including limitations on the distance to travel to reach means of escape and the physical dimensions of the storage facility, are the subject of national legislation and local by-laws. The fire precautions adopted, however, should be designed to protect the contents and structure of the facility from damage caused by fire fighting operations, as well as to ensure the safety of staff and limit the fire to its source. The possibility of fires or explosions in adjacent facilities and the proposed type of fire fighting chemicals to be employed to counter such events should be taken into account when the facility is chosen.
6. Loose material should not be permitted, and smoking and accumulation of food matter should be prohibited at all times in and around the records storage facility. When siting storage areas consideration should be given to the store being away from highly flammable and corrosive materials and proofed from the potential for flooding from the sea and other water sources.
7. Precautions should be taken during the storage and handling of records to avoid finger marks, dust or scratching on microfilm records (by the provision of suitable hand covering), unnecessary bending or cracking of paper (by the suitable positioning on adequately designed shelving) and failure of components due to static discharge (by the provision of static handling precautions).
8. Records entering the records storage facility should be registered. To protect the integrity of the records, the facility should be secure, and wherever possible copies of archived records should be used for reference purposes rather than permitting the removal of the master record.
9. The licensee should have written instructions for the preparation, despatching, and receipt of records to the records storage facility.   
   Records entering the record storage facility should be complete, legible and in a form suitable for storage.

## Microfilm storage facilities for up to ten years

1. The following storage conditions are considered suitable for the storage of microfilm records for a time not longer than that sufficient for general business purposes. Such a time might be ten years but could vary depending on specific conditions

* Relative humidity and temperature requirements for the storage of microfilm:
  + The relative humidity of the storage facility should not exceed 60% and the temperature should not rise above 25°C. Rapid changes of humidity and temperature should be avoided.
* Protection of microfilms against fire and water:
  + Microfilms using safety film are difficult to ignite and combustion speed is low. To provide effective protection of microfilms against fire, as much attention should be paid to the presence of steam as to high temperatures. The protection available in a given room should take into consideration conditions special to that room and also the following general conditions.
  + Microfilm stored at 40% relative humidity can withstand a dry heat of 120°C for a time of 24 hr without appreciable loss of legibility and printability. At a dry heat of 150°C some distortion may take place after 6 hours, but individual microfilms of texts or figures are still printable. The action of dry heat of 180°C for at least 6 hr causes deformation of microfilms and reproduction generally becomes impossible.
  + In the presence of water vapour, temperatures of 90–110°C produce serious distortions and cause adhesion of coils or surfaces in contact; prolonged action or condensation will make the emulsion melt. Fireproof cabinets and safes thermally insulated by water vapour production are therefore not suitable for storing microcopies unless they have an inner moisture-proof chamber, or the films are placed inside suitably sealed airtight containers. To obtain complete protection from fire, safes or cabinets should be placed in premises which are themselves fireproof. Microfilms should be protected from the action of water resulting from leaks, fire sprinklers or flooding, by being stored above basement levels on shelves at least 150 mm from the ground. If films are immersed in water, allowing them to dry, even partially, will cause the layers to stick together. The films should be placed in water filled containers until they can be washed and dried properly.
* Chemical contamination:
  + Various noxious emanations can cause slow deterioration and a gradual fading of the image on film. Danger is presented by peroxides which may originate from bleaching agents, glues, varnishes, and other products used in manufacturing storage cabinets for film containers. Hydrogen sulphide, ozone, sulphur dioxide, sulphur trioxide, ammonia and oxides of nitrogen are the most common, but not the only, atmospheric gases which harm film. Such fumes should be eliminated, or an alternative store found.
  + Chemical products in the immediate vicinity of the films may also cause the presence of other impurities in the atmosphere. If dust and liquid particles suspended in the air are deposited on the microfilm, they may impair its legibility and cause permanent scratching. Microcopies on silver image film should be kept neither with other photographic records which do not conform to these recommendations, nor with those films explicitly excluded, such as microfilm on a nitrate film base. Cross contamination between microcopies can occur by the transfer of free thiosulphate to sodium (or ammonium) thiosulphate free film if they are stored with the emulsion sides in contact. Radiographs and other photographic media should be stored in chemically benign envelopes. Multiple films stored in envelopes should be separated by benign sleeves or separators.

## Additional recommendations for archival of microfilms in excess of ten years

* Air purification
  + Air should be filtered to remove dust, purified of noxious gases, and circulated by means of forced draught.
* Relative humidity
  + If sealed airtight containers are not used, the air in the archival storage facility should be conditioned to maintain the relative humidity at a level between 20 and 40%. If air conditioning is used, dehumidifiers using calcium chloride or other chemical desiccants should not be used. An electrical dehumidifier is recommended. If dehumidifiers are used, they should be of a type that does not produce rapid changes in the relative humidity.
* Temperature of the archival premises
  + The temperature in the archival storage area should be maintained between 15 and 25°C, but preferably should not exceed 20°C. If film which has been stored at a low temperature is handled in a room where the temperature or relative humidity is comparatively high, condensation will occur on the cold film surfaces. In these circumstances the film should not be removed from its closed container or the place where it is stored until the storage temperature has been brought up to the approximate temperature of the room where the film is to be handled.
* Containers
  + The following type of container are recommended:
    - (1) The closed non-airtight container.
    - (2) The sealed airtight container.
  + If the recommendations for relative humidity and temperature of the archives are observed, containers for storage of microfilm can be of the closed non-airtight type. Sealed airtight containers should be used if there are no other means of protection against the danger of an ambient atmosphere of which the relative humidity or temperature goes beyond the limits recommended in this appendix or which contains chemical impurities or dust. The containers used should be made from materials meeting the requirements below. These containers may be placed in boxes of paper or board, but such boxes should not be used alone.

## General precautions for the long-term protection of microfilm records

1. The use of non-corroding materials for containers is recommended but whatever the materials used for the containers, their corrosion resistance coating and their airtight seals should not melt, ignite, decompose, develop fumes, distort or be subject to excessive dimensional changes when subjected to a temperature of 150°C for 4 hr.
2. Care should be taken to avoid the deterioration or damage which may result from the rust, rubber joints, rubber bands and gum on certain types of envelope, and of lignin and other peroxide forming substances contained in certain wooden materials.
3. Microcopies stored in roll form may be mounted either on reels or on cores. Rolls more than 30 mm long wound on cores should be laid flat unless the core itself is carried on a horizontal spindle which prevents the lower part of the film from supporting the load of the core and its contents.

## Additional precautions for sealed airtight film containers

* Fire
  + The container should be of a type which will prevent steam reaching the film in the event of fire. Containers with a high resistance to corrosion are recommended. The container and its airtight seal should withstand an excess pressure inside the container of 70 kPa without rupture of the seal or other injurious effects.
* Relative humidity
  + The relative humidity inside a sealed airtight container should be within 20 to 40% at the storage temperature. Relative humidity exceeding 60% encourages the formation of mould which, in time, can completely destroy the image. Below 15% the film tends to curl and become more brittle as the relative humidity decreases.

## General guidance for microfilm

1. Specific guidance for microfilm storage can be found in BS 1153:1992 [16].

### Storage facilities for paper

* Relative humidity and temperature requirements for the storage of paper:
  + The relative humidity of the storage facility for paper should be within the range 55 to 65% and the temperature should be within the range 13 to 18°C. However, if the paper is in bound volumes and is little used, it may be stored at a relative humidity of 40%.
  + Further guidance for the storage of paper record for permanence can be found in BS EN ISO 9706:2000. [17]

### Storage facilities for magnetic tape or disc, optical laser disc, hardware, electronic firmware

1. Magnetic tapes or discs, optical laser discs, electronic firmware and general hardware records should be archived in accordance with the manufacturer’s requirements or the component media. The retention requirements should be consistent with the life expectancy of the media and should provide for rejuvenation and backup.
2. Further information and standard specific to imaging media types:

* ISO 18911:2010 - Imaging materials — Processed safety photographic films — Storage practices [18]
* ISO 18918:2000 - Imaging materials — Processed photographic plates — Storage practices [19]
* ISO 18920:2011 - Imaging materials — Reflection prints — Storage practices [20]
* ISO 18923:2000 - Imaging materials — Polyester-base magnetic tape — Storage practices [21] (Currently under review)
* ISO 18925:2013 Imaging materials — Optical disc media — Storage practices [22]

1. IAEA guidance can be found in IAEA Safety Guide GS-G-3.1 [8].

# Appendix 4: Record retention and storage

1. The licensee will need to have criteria for determining the records to be retained and the retention period for the different lifecycle phases of the facility including the record package associated with the decommissioning programme. Licensees should take account of relevant legislative and statutory requirements when identifying the records to be retained and the retention periods. The retention time for records is normally 30 years   
   (or more for radiological records) unless approval is given for shorter periods. LC 6 (2) states a preservation period of ‘…30 years or such other periods as ONR may approve.’ Whilst LC 5 (3) refers to a record preservation of 30 years and 50 years depending on the circumstances.   
   The licensee may standardise the record scheme as follows:
2. greater than 30 years;
3. 30 years;
4. 5 years;
5. 3 years.
6. Senior management will need to establish storage and location requirements for the maintenance, preservation and protection of records and associated test materials and specimens from the time of their receipt and their disposal. A record storage process will need to include the following:

* a description of the document or record storage facility;
* a description of the filing system to be used;
* a method for verifying that the records received are in agreement with the transmittal document and that the records are in good condition;
* a method that the records agree with the records index;
* rules governing access to and control of the files;
* a method for filing corrected or supplemental information and disposing of records that have been superseded;
* periodic checking to ensure that the records are not damaged, deteriorating or missing.

1. Continued ability to read the data will need to be ensured, with account taken of any technological changes that occur. Any changes in reading equipment and technology should only be made after consideration of how the capability to access and read existing recorded data will be maintained. This may necessitate transferring data to new media. In such cases checks will need to be carried out to ensure that the data are readable and accessible and that they are an exact copy of the original.
2. Paper records will need to be firmly attached in binders or placed in folders or envelopes for storage on shelves or in containers. Steel file cabinets or safes are preferred.
3. Records that are processed by special methods will need to be packaged and stored as recommended in the manufacturer’s instructions and in line with applicable standards. Examples are radiographs, photographs, microfilm, magnetic tapes, microdiskettes, laser discs and those records that might be sensitive to light, pressure, humidity, magnetic fields, dust, and temperature.
4. Where appropriate record storage facilities may need to accommodate contaminated records and physical specimens. The requirements for storing physical samples should be clearly defined and consideration given to preservation, storage environment, contamination (from the sample itself and cross-contamination from other materials and samples), identifying and marking items with a unique identification and periodic inspection checks.
5. Record storage facilities will need to protect the contents from possible damage or destruction by such causes as fire, flooding, insects and rodents and from possible deterioration under adverse environmental conditions of light, temperature, and humidity.
6. The following factors among others will need to be considered in the construction of a storage facility:

* location and security
* type of construction, including structural features and internal surface treatment
* pipework layout and drainage
* control of ventilation, temperature and humidity
* prevention, detection and fighting of fires
* protection against electromagnetic radiation

# Appendix 5: Selection of relevant information

* NS-INSP-GD-006: Documents, records, authorities and certificates
* NS-INSP-GD-025: Operational Records.
* ISO 15489-1:2016 - Information and documentation - records management. Part 1: General.
* BIP 0025-1:2002 - Effective records management. A management guide to the value of BS ISO 15489-1.
* BS ISO 11799:2015 - Information and documentation — Document storage requirements for archive and library materials (Under review)
* BS ISO/IEC 27001:2023. Information security, cybersecurity and privacy protection. Information security management systems. Requirements
* Requirements for the Approval of Dosimetry Services Under the Ionising Radiations Regulations 2017 - Part 3 - Co-ordination and Record Keeping.
* IAEA Safety Requirements No GSR Part 2 Leadership and Management for Safety
* IAEA Safety Guide No. GS-G-3.1 - Application of the Management System for Facilities and Activities
* IAEA Technical Report Series No. 467 - Long Term Preservation of Information for Decommissioning Projects
* BS EN ISO 9001: 2015 - Quality management systems – Requirements

Useful links:

* [BSI Group Shop](http://shop.bsigroup.com/) (Document search site)
* [USNRC Records Management](http://www.nrc.gov/reading-rm/records-mgmt.html)
* [National Archives](http://www.nationalarchives.gov.uk/default.htm)
* [IAEA Home Page](http://www.iaea.org/)
* [IAEA – GS-G-3.1 - ‘Application of the Management System for Facilities and Activities’](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1253_web.pdf)
* [Nuclear Quality Knowledge](http://www.thecqi.org/Documents/community/NUCSIG/NQK%202013/CH08%20-%20KNOWLEDGE%20%20INFORMATION%20MANAGEMENT.pdf) – published by Chartered Quality Institute (CQI)

Additional guidance when considering records of radioactive material:

* [Guidance on International Safeguards and Nuclear Material Accountancy at Nuclear Sites in the UK](https://www.onr.org.uk/our-work/what-we-regulate/civil-nuclear-security-and-safeguards/nuclear-safeguards/)
* The legal setting for Safeguards records keeping/systems and reporting as stipulated by the [European Commission](https://eur-lex.europa.eu/resource.html?uri=cellar:48e4f5fc-d06b-4069-ab40-8c47a3e6a1bb.0005.02/DOC_1&format=PDF) (the safeguards regulator)
* [EC recommendations on the implementation of the regulation above](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32006H0040&from=EN)
* NS-INSP-GD-032 - Accumulation of Radioactive Waste