



AN LMG GUIDE

## SAFETY ISSUES TASK FORCE



An Assessment of the Records and Documents Required

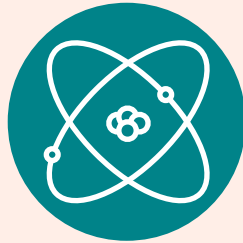
# *for* **Efficient** **Liabilities** **Management**



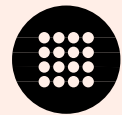
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## APPENDIX

### Business Case

- 1 An economic loss to an organisation occurs where it carries out actions for which it receives no additional funding. This is particularly in efficient within a fixed price contract framework, leading to a direct reduction in profit margins.
- 2 Efficient liabilities management is a matter for all bodies engaged e.g. the nuclear industry, contractors and government. Where efficiency can be obtained then all parties should gain economically.
- 3 It has been recognised for some time that the keeping of records and documents, for liabilities management, could be significantly improved.
- 4 At decommissioning if the 'right' documents are not readily available the decommissioning team has the following problems.
  - ❖ The plant state, will not be understood.
  - ❖ Development of a decommissioning strategy will be delayed until the plant is understood (added cost).
  - ❖ A search will have to be put in hand to recover data (added cost).
  - ❖ Data will need to be filtered assessed and decisions made on what to keep and what to discard (added cost).
  - ❖ If data, drawings, calculations, safety documentation cannot be recovered, then it will need to be reconstructed. Such an eventuality is known to have happened at considerable cost (added cost).
  - ❖ In addition, if data cannot be recovered substantial detailed walkdowns, sampling, and R and D may have to be undertaken (added cost).
- 5 If the noted (Sec 4) investigations have to be carried out for different plants, different geographical locations and/or on different time frames (staggered decommissioning) then substantial funds will need to be committed with an impact on profit margins.
- 6 It is notable that ten persons working for a year costs, at present values, around £1M. To carry out a search, assemble data, delay in project timescales etc could take tens of millions out of profit margins.
- 7 It would appear self-evident that efficient record and document management systems is not only indicative of a professional organisation, in control of its business, but has major cost implications if mis-managed.
- 8 Investment in records management now, must enhance efficient liabilities management in the future.

Working Doc. Category	Working Document	Comments
(4 continued)	b. A schedule of plant and equipment removed and added to the plant is required	
5. Database of People	a. As Table 1 section 4(a)(b)	To capture knowledge and experience from people engaged on the specific decommissioning activity
6. Termination Documents	a. As for Table 1 Section 5	Termination should include photography as appropriate. Should also address any potential remaining chemicals that could be an environmental risk.
	b. <u>Must</u> have a process/procedure to do this such that at the end point (Table 2, Section 1(a)) the state of the plant is properly recorded	
	c. <u>Must</u> become and hence satisfy Table 1 Sections 1 to 5.	
7. Documents for Litigation	a. As for Table 1 Section 6	Documentation produced will now become the record for the next phase.

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# Introduction

- 1.1 The Industry wide DTI Liabilities Management Group Safety Issues Task Force has identified the need for guidance on the records and documents required for efficient liabilities management.
- 1.2 It is proposed that a minimum records/documentation set is required to enable preparation for, and then decommissioning of, nuclear facilities. It is suggested that the minimum records/documentation set is independent of the requirements under Nuclear Licence Condition 6 but may form a subset of requirements for LC6.
- 1.3 This paper has been produced from cross industry meetings and informal discussion with the regulators.
- 1.4 The Business Case for fit for purpose records and documents, with regards to liabilities management, is given in the Appendix.
- 1.5 This document also serves to build on the guidance given by the HSE Nuclear Safety Directorate to its Inspectors (see HSE Nuclear Safety Directorate Guidance for Inspectors on the Management of Radioactive Materials and Radioactive Waste on Nuclear Licenced Sites, Appendix 7: Records for Radioactive Waste Management and Decommissioning, 13 March 2001)

Working Doc. Category	Working Document	Comments
3. Safety Case	<ul style="list-style-type: none"> <li>a. Overview document to give the strategy for the totality of safety case production to the defined end point 1 (a).</li> <li>b. Review and update of the historic safety case, bring to life and modify as appropriate.</li> <li>c. Specific Safety cases for specific work packages.</li> <li>d. Supporting Safety Case, Environmental procedures/documentation and associated auditable trail.</li> <li>e. Documented strategy adding to the historic safety case as operations progress and plant conditions change.</li> <li>f. Development of emergency procedures for the liabilities stage.</li> <li>g. Documentation that underwrite/justify the safety/ plant integrity at each stage of decommissioning.</li> <li>h. Documentation to address the plant maintenance requirements during decommissioning.</li> <li>i. Documentation to enable the licensee to comply with the licence and other regulatory requirements.</li> </ul>	<ul style="list-style-type: none"> <li>Include environmental statements.</li> <li>Procedures should take account of environmental risk. Maintenance is considered to be a primary activity for generating environmental hazards.</li> </ul>
4. Nuclear (and others e.g. chemicals) Materials, Wastes and Transport	<ul style="list-style-type: none"> <li>a. Documentation is required to record the fate of material. <ul style="list-style-type: none"> <li>❖ Discharges/known spillages or leakage.</li> <li>❖ Waste materials.</li> <li>❖ Flow sheet/material balance.</li> <li>❖ Waste stream analysis.</li> <li>❖ Nuclear materials accountability.</li> <li>❖ Physical movement of waste to and from sites or to and from plants.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>To address the movement of materials out of the plant to storage, repository or tip. To cover nuclear and chemical materials.</li> </ul>

Table 2 Working Documents

Working Doc. Category	Working Document	Comments
1. Work Package Strategy Document	a. Strategy Document including <ul style="list-style-type: none"> <li>❖ Policy.</li> <li>❖ Environmental Impact Assessment.</li> <li>❖ Best Practicable Environmental option Studies.</li> <li>❖ Reference to optioneering process.</li> <li>❖ The decommissioning strategy.</li> <li>❖ Includes site strategy and building strategy.</li> <li>❖ Programme of work.</li> <li>❖ A clearly defined end point.</li> <li>❖ Documentation out put programme.</li> <li>❖ Relevant documentation on associated operation plant.</li> <li>❖ Typical example, effluent plant.</li> <li>❖ Documentation supporting any significant plant build to carry out decommissioning.</li> <li>❖ Local Authority Planning documentation.</li> </ul>	<p>This working Package is to be available at the commencement of the 'next phase' of decommissioning. From the previous 'phase' the end point should include a schedule of potential environmental, nuclear and radiological risks that exist at the end point.</p>
	2. Environmental Health and Safety (EH&S) Management System	

## Scope

- 2.1 The assessment:
  - ❖ Considers what records need to be kept.
  - ❖ Does not address how the records should be kept.
  - ❖ Considers the following stages of liabilities management.
    - a. Post Operational Clean Out including defuelling.
    - b. Decommissioning including conventional plant decommissioning.
    - c. Care and Maintenance including Safe Store.
    - d. Addresses records that may be required for litigation.
    - e. Post Plant closure and site clearance, including licensing/delicensing.
  - ❖ Has reflected on some possible weaknesses in the current records.
- 2.2 Matters regarding where records and documents should be kept is not within the scope of this guidance.
- 2.3 Records should include those arising from Environment Health and Safety issues. There will also be a need to retain records for legal requirements.
- 2.4 This document only addresses the requirements for nuclear licensed sites in the UK only.

## Definitions

- 3.1 A **record** is anything which conveys information. A record may be categorised as written, computer, electronic, photographic, model, videos, drawing or map records. It is not considered to be live but to be historic.
- 3.2 A **document** is defined as a live instrument eg a safety case written to assist the decommissioning process.
- 3.3 **Decommissioning** means the actions taken to allow contaminated plant or facilities to be decontaminated, dismantled and disposed of as appropriate.
- 3.4 **Post Operational Clean Out (POCO)** sometimes referred to as Stage 1 decommissioning; means the preparation for decommissioning of plant by removing residual materials eg removal of fuel from a reactor; removal of normal operational material from a chemical plant. These actions are assumed to involve the normal operations plant staff prior to hand over to a decommissioning team or prior to placing the plant into care and maintenance/safe store. (There are exceptions to this i.e. where plant have been closed and left many years in a 'normal operational' configuration).

### Historic Record Category Records

### Comments

5 Plant Termination	a. Records of historical terminations back in time.	May support or be contributed too by 4(b). Records should include matters addressing chemicals which may have potential environmental impact.
	b. End of plant life termination after the last liabilities work stage. (handover document).	
	c. Plant monitoring policy/strategy to arrest deterioration; environmental and radiological.	
6 Records for Litigation	a. Compliance e.g. site licence, discharge authorisations, environmental issues	These records may be required to protect against criminal or civil legal action. Discharge authorisations should include trade effluents.
	b. The correspondence record with regulators (to address the above).	
	c. Discharge records including destination of discharge.	
	d. Personnel records (dose, chemical exposure, work patterns etc).	
	e. Demonstration of an adequate delicensing process post closure.	
	f. Personnel records will be required post closure.	
	g. PR information will be given out in public for the specific plant. (There may also be public statements by regulators that need to be kept).	
	h. Litigation/enforcement/notices/improvement notices.	

### Historic Record Category Records

### Comments

3	Operational Records	<ul style="list-style-type: none"> <li>a. Records of plant failures and abnormal operations (planned or unplanned).</li> <li>b. Plant Log Books.</li> <li>c. Annual Operational Reports.</li> <li>d. Nuclear Safety Committee Records.</li> <li>e. Records of Historical Isolation.</li> <li>f. Plant and equipment audits.</li> <li>g. Health Physics Annual Summary Report.</li> <li>h. Appropriate records addressing off site operations.</li> </ul>	<p>To enable areas of radiological or chemical difficulty that have been experienced, to be identified, on the plant. Should include plant incidents, enforcement notices, spillage's and leakage's. The record should indicate what action was taken to alleviate or repair. Enables the possible exposure of decommissioners to be determined.</p> <p>To identify non compliance and cross check above.</p> <p>This would include any appropriate Sub-committees of the NSC.</p> <p>To cross check on 3(a) and 2(e). These records are considered to be of particular importance, particularly with regard to environment.</p> <p>Records required for environmental issues off site.</p>
4	Database of People	<ul style="list-style-type: none"> <li>a. Records of Plant Staff.</li> <li>b. Records of debriefing of staff who leave the plant.</li> </ul>	<p>To include name, job, duration of stay at specific plants. To uncover unusual occurrences in the plant, unusual events that went unrecorded etc. (this process of debriefing is considered currently to be inadequate by most licensees). Address historic patterns of behaviour ie unauthorised stores, plant not operated as designed. It is noted that this database will have to be treated and developed with caution. People may not be open or memory may be poor. Due consideration needs to be given to the implications of the Data Protection Act.</p>

## Minimum Documentation

4.1 The Cross industry group identified the following points:

- i. All the steps 2.1 a. to 2.1.d. have a generic set of records and documents that move and develop from one stage to the next of liabilities management, Figure 1. The Post Plant Closure 2.1 e. is a special case. As each stage progresses, the live documents of one stage become the historic record for the next stage.
- ii. The generic records and documents have three components;
  - ❖ The records needed to understand the plant – The Historic Record.
  - ❖ The documents needed to carry out the phase of liability management POCO, decommissioning etc – Working Documents.

Plus the special issue of:

- ❖ Plant Closure Records.

## 4.2 The Historic Record

4.2.1 The following is considered to be a minimum set of records needed to understand a facility. (The Cross industry group emphasised that too many records may hinder liabilities management and lead to an unnecessary complex search and compilation exercise).

4.2.2 A facilities Historic Record is judged to need the following records set, at the time point, when some liabilities action is proposed.

- ❖ The current physical plant state (ie what does it look like, what is operational and how was the plant constructed).
- ❖ The plants inventory at this point.
- ❖ Operational records to the time point (which will include POCO, or partial decommissioning if this has occurred).
- ❖ A database of people employed on the plant. Records of peoples knowledge of the plant.
- ❖ Plant termination handover records (ie isolation schedule for the plant, clearance certificates).
- ❖ Records for litigation/enforcement/notices/improvement notices.

The proposed detail records are given in Table 1.

### Historic Record Category Records

	Comments
1b Off Site	Such records will be required to address off site environmental issues, for example, off site land contamination.
2 Plant Inventory	<p>a. Inventory records on the presence of and quantity of nuclear and chemotoxic/chemical materials within the plant.</p> <p>b. Inventory of engineering materials and quantities, ie what the plant is constructed of.</p> <p>c. Bio-medical hazards records e.g. asbestos.</p> <p>d. Records demonstrating material currently stored and where it is located.</p> <p>e. A comprehensive plant flow sheet as built and as process changes have occurred.</p> <p>f. Records of plant surveys and local plant contamination surveys (if applicable).</p> <p>g. Nuclear/chemical waste records for material removed from plant historically.</p> <p>h. Sample records and calculations that have lead to the total inventory assessment and the methods used.</p> <p>i. Ground water movement assessments and ground contamination records.</p> <p>j. Matters noted above will be required for off site plant.</p>
	<p>The lack of this information has, from experience, been found to be a costly exercise since it has then to be generated to enable the specific liabilities stage to move forward.</p> <p>Important for identifying potential plant areas where activation has occurred (primarily a reactor issue). Also can indicate where materials may have degraded from chemical attack, e.g. rubber seals.</p> <p>This would be used to address mass balance and validate the inventory.</p> <p>To be used to identify areas of contamination both chemical and nuclear. Can be used to validate the inventory. Enable potential exposure of decommissioners to be assessed.</p> <p>To confirm inventory and activation locations.</p> <p>These records will be a component of environmental assessments.</p> <p>These records will be required to address off site environment issues, for example, off site contamination issues.</p>

Table 1 The Historic Record

Historic Record Category Records		Comments
1a Plant State	a. Photographs (or visual images) if available of the construction phases of the plant.	At the commencement of a liabilities stage POCO, Decommissioning etc the actual state the plant at the current point in time is required. Items 'a' to 'f' are of importance when considering environmental matters with regard to liabilities.
	b. Photography (or visual images) if available during plant operation.	
	c. As built drawings.	
	d. Schedule of plant modifications.	
	e. The 'as is' drawings of modifications.	
	f. Accident records.	
	g. Engineering Codes to which the plant was built and the codes used on subsequent modifications.	
	h. High level engineering and structures audits.	To identify any ageing effects on the plant or developed weaknesses.
	i. Working plant instruction and appropriate plant maintenance instructions.	To understand how the plant worked.
	j. The emergency plan and procedures left for the plant in its current state.	
	k. Plant inventories up stream and down stream.	To assess plant interactions e.g. The location of drains, possible pipe inventories, checks on isolations.
	l. Interaction drawings e.g. service routes etc	
	m. Materials samples e.g. construction. Also calculations on material deterioration e.g. dose calculations.	
	n. Design calculations to establish the substantiation of the plant design and its integrity.	

4.3 Working Documents

4.3.1 The Working Documents are considered to be specific documents that need to be produced (or are historic records brought back to life) to enable some particular stage of liabilities management to be carried out. As such they are 'live documents'. In due course they form the historic record for the next stage in the liabilities programme, Figure 1.

4.3.2 The Working Documents required to carry out work are considered to be:

- ❖ The plants Historic Records (Section 4.2.2).
- ❖ Work package strategy document.
- ❖ The Safety (and Environmental) Management System for the proposed activities.
- ❖ A Safety case for the proposed work and the historic plant safety case.
- ❖ Nuclear (and others e.g. chemical) materials, wastes and transport documents. These are to identify the fate of these materials following the liabilities operation.
- ❖ Work termination documents.
- ❖ People database.
- ❖ Litigation documents.

Proposed detail documents under each category noted, are given in Table 2.

4.4 Plant Post Closure Records

Current view on the records required is:

- i. Those records required to be kept only by law and statute and as identified by Corporate (liabilities) memory to be useful.
- ii. Records required to protect the Company against litigation.
- iii. Do not keep decommissioning records that are not required under i and ii (or not a requirement of any licence condition).

Table 1 gives possible documents to address 4.4 (ii). Further, in this paper plant post closure records, in this context, are for EH&S issues only and preclude such issues as, land ownership for example.

## Possible Weakness in Current Records

Historically some liabilities projects have identified some of the following issues:

- ❖ No policy to debrief personnel who leave a facility. The 'Corporate' knowledge of a plant is not documented.
- ❖ Inadequate archiving of records.
- ❖ Inadequate termination (ie isolation) records.
- ❖ Poor inventory records of which there are two types; Inventory of what materials the plant is built and two, the contents of the plants radioactive chemical inventory.
- ❖ Each facility has its own records system and filing structure.
- ❖ Poor modifications records.
- ❖ Poor incident inquiry records.

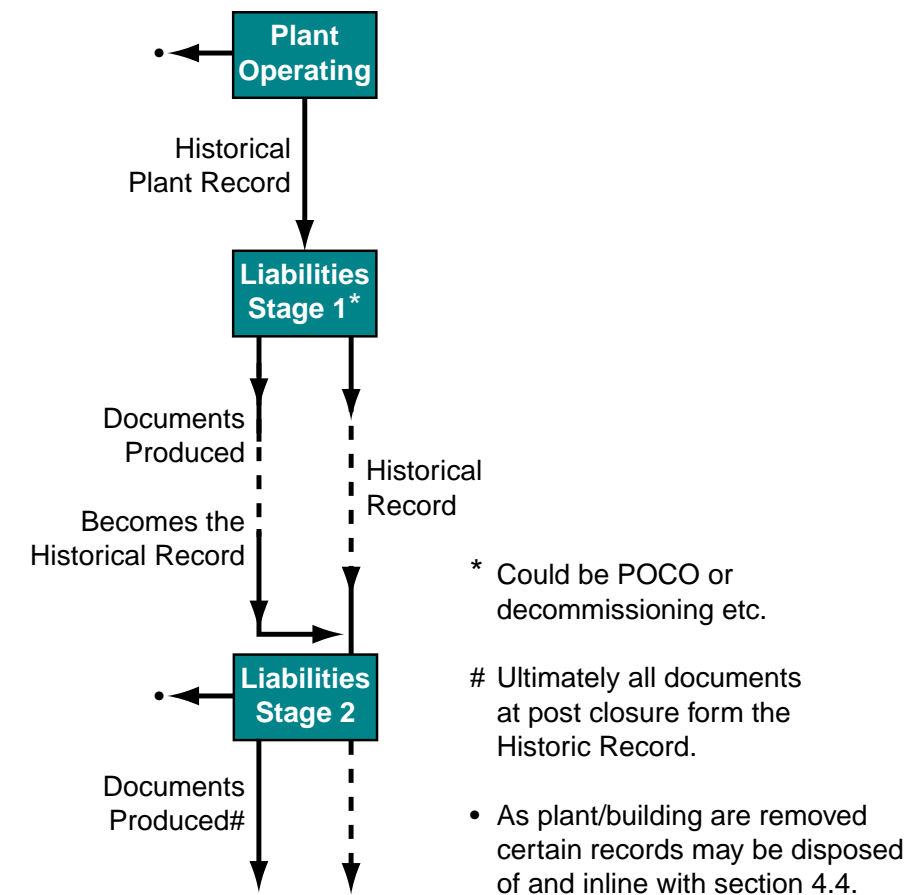


Figure 1 Schematic showing Documentation Produced at one stage, become the Historic Record for the Next.