

# COGNMAS7

## Identify, incorporate and implement nuclear material accountancy and safeguards requirements in decommissioning plans



### Overview

This NOS forms part of a suite of standards which cover the activities carried out by individuals working within and on behalf of nuclear site licensed companies to meet nuclear material accountancy, control and safeguard (**NMAS**) requirements.

What is the NOS about?

A nuclear licensed site must ensure that nuclear materials are accounted for, controlled and safeguarded in order to demonstrate; good governance arrangements; meeting international safeguards commitments; and compliance with legal requirements and any voluntary undertakings. This NOS describes the standard expected of individuals who are responsible for incorporating NMAS requirements in Decommissioning plans.

Who is the NOS for?

This NOS is primarily for Decommissioning Project Managers and NMAS Managers responsible for ensuring that NMAS requirements are incorporated into decommissioning plans at a project, plant or site level.

The main outcome of this activity is a report confirming whether the design intent for NMAS requirements has been achieved in a new or refurbished plant, system or equipment.

Where text is highlighted in bold, it is more fully defined in the Glossary section of this NOS.

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### Performance criteria

*You must be able to:*

- P1 obtain sufficient information from all available sources and **stakeholders** to enable **assessment of the residual nuclear material inventory** in a plant that has undergone clean out.
- P2 identify the **NMAS requirements** relevant to the inventory assessment and benchmark against good practice and similar plants, systems or equipment
- P3 conduct an **NMAS risk assessment** of the **decommissioning** plans.
- P4 determine, communicate and address any shortfalls or non-compliance with NMAS requirements in the decommissioning plan.
- P5 produce and communicate a report detailing technical and administrative options available to ensure that the decommissioning plan complies with NMAS requirements.
- P6 inform the safeguards inspectorates of the changed status of the plant, agree on revised **supplementary safeguards arrangements** and agree on NMAS arrangements for recovered material and possible treatment as waste.
- P7 specify, obtain and commission measuring equipment suitable for determining the nuclear material content in the decommissioning waste streams.
- P8 justify any plans for unmeasured or poorly measured transfers to waste with internal and external stakeholders.
- P9 continually assess the adequacy of NMAS during decommissioning, notifying stakeholders of significant differences with regard to
  - P9.1 the supplementary safeguards information;
  - P9.2 the level of material recovered against the assessment of the likely residual nuclear material inventory.
- P10 revise and improve the hold-up measurement arrangements by evaluating performance of non-destructive assay of material held up in the plant with that recovered
- P11 measure recovered material close to source of arising and document.
- P12 apply controls to inventory pending its transfer to waste and ensure transfer to waste as soon as possible.
- P13 ensure that material brought onto account is attributed to the originating area (where measurements on waste consignments are made in a downstream plant).

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### Knowledge and understanding

*You need to know and understand:*

- K1 decommissioning end states, passive safe storage and waste packaging arrangements
- K2 decommissioning project structures, roles and responsibilities and the overall decision making authority
- K3 the NMAS requirements and other **associated regulatory requirements** that might impinge on **NMAS capabilities, resources and infrastructure**
- K4 the requirements for classifying material as retained waste, and the mechanisms for reporting, accounting for and controlling retained waste transfers
- K5 the requirements of the UK ONR safeguards function on bringing finds onto book
- K6 organisational procedures relating to **record management system requirements, knowledge management**, assessment of plans for NMAS requirements, and communications with key stakeholders
- K7 organisational waste management procedures; conditions of acceptance of waste receiving plants and sites; and letters of compliance for long term disposal of wastes
- K8 sources of specialist support, good practice, advice and information and how to access these
- K9 requirement for conduct of NMAS risk assessments
- K10 classification, declassification and archiving and record retention requirements
- K11 how to interpret technical drawings and plans
- K12 application and assessment of designs and administrative measures to ensure compliance with NMAS requirements
- K13 the likely and possible consequences of inappropriate decommissioning plans

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## Additional Information

### Glossary

**Assessment of residual nuclear material inventory:** includes capturing all relevant records (from previous stages of the plant's lifecycle through to Post Operational Clean Out [POCO]), managing that knowledge, and documenting all important decisions and communications relating to the production of the assessment report. The inventory assessment should identify the highest sensitivity material processed during operations.

**Associated Regulatory requirements:** such as Safety, Security, Waste Management, Environmental Protection, Import/Export controls, and Transport

**Decommissioning:** is taken to include plants, systems or equipment that have ceased operation and have undergone Post Operational Clean out (POCO) but where nuclear material may still be expected to be present as:

- 1 hold-up from legacy operations
- 2 contaminant in waste streams
- 3 previously un-revealed discrete items, e.g. Post Irradiation Examination (PIE), off-cuts, orphan sources and shielding

The international Safeguards authorities definition of decommissioning is that essential equipment has been removed or made totally inoperable

**Knowledge Management:** includes capture of all available sources of knowledge, including tacit knowledge of previous operational staff

**NMAS:** is taken to include nuclear materials accountancy, nuclear materials control and nuclear material safeguards.

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**NMAS capabilities, resources and infrastructure:** includes provision of:

- 1 technical support for NMAS issues
- 2 equipment for measurement and for material control
- 3 sampling and analytical capabilities with timely results
- 4 sufficient time and scope of duties to meet NMAS requirements
- 5 training and development
- 6 a competent workforce of Suitably Qualified and Experienced Personnel (SQEP)'d to carry out NMAS duties.
- 7 clear NMAS points of contact and responsibility within design and decommissioning project teams.
- 8 computerised data capture and accounting systems

**NMAS requirements:** comprise mandatory requirements set down in binding legal contracts, set, set down in UK policy and commitments, and set down in national and international Treaties and Regulations (particularly the safeguards reporting regulations and associated implementation guidelines). They also include optional requirements to which the site voluntarily subscribes.

**NMAS risk Assessment:** the analysis of the risk of diversion of nuclear material and involves postulating unauthorised removal scenarios and assessing the controls required to mitigate the risk. It also includes assessing the risk of various material forms and flows and measurement limitations to the overall capability and quality of the NMAS system.

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**Record management system requirements:** the site's overall records management system should be compliant with or equivalent to relevant standards. The emphasis in NMAS record management is:-

- 1 Authorising, securing, retaining, archiving, and destroying records.
- 2 Ensuring provenance of data by traceability of accounting records to their source documents (operating records) and authenticity checks
- 3 Provision of linkage and activity logs to facilitate tracking nuclear material batch/item histories (of movement, modification, and correction)
- 4 Segregation of the handling of records for civil nuclear material from those for defence materials

**Stakeholders:** include:

- 1 contacts within the site, the organisation, the parent company, the site owner.
- 2 customers and contractors
- 3 public groups,
- 4 national bodies with responsibilities for NMAS including the Department for Energy and Climate Change (DECC), the Office for Nuclear Regulation (ONR) Safeguards function and the Ministry of Defence.
- 5 regulators including:
  - 5.1 the ONR Safety function, the ONR Security function, and the ONR Transport function (Radioactive Materials).
  - 5.2 environmental (EA, SEPA)
  - 5.3 the International Safeguard Inspectorates (the European Commission's Euratom Safeguards Inspectorate and the International Atomic Energy Agency Safeguards Inspectorate)

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**Supplementary safeguards arrangements:** this includes:

- 1 **BTC** - Basic Technical Characteristics required by the Euratom regulation to describe the site fuel cycle processes and NMAS related systems
- 2 **DI** - Design Information is the IAEA counterpart of the BTC and serves the same purpose
- 3 **PSP** - Particular Safeguards Provisions are additional (to the regulation) safeguards requirements specific to your site set out by Euratom.
- 4 **FA** - Facility Attachments is the IAEA counterpart of the PSP.
- 5 **AP submissions** - Details as required by the safeguards Additional Protocol.

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