

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 managing the NMAS arrangements for internal nuclear material movements within a nuclear licensed site. Internal nuclear material movements include physical movements of packages between on-site locations and transfer of material within or through a process.

Who is the NOS for?

This NOS is primarily for Nuclear Material Custodians and NMAS Managers within nuclear site license companies who are responsible for compliance with NMAS requirements for managing internal movements of nuclear materials at a plant or site level.

The main outcome of this activity is on site movements conducted in line with NMAS requirements.

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

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Control internal nuclear material movements on-site

Performance criteria

You must be able to:

- P1 document all the flow routes/material forms which are taken into account in the NMAS accounts or where transfers impact on material traceability (e.g. location transfers, re-containerisation, etc)
- P2 set out the checks and equipment requirements for each flow path and agree the source (measurement) which determines the quantity of material transferred and its associated measurement uncertainty
- P3 produce an accountancy plan for new flows in an existing plant before movements take place
- P4 follow **pre, during and post transfer arrangements**
- P5 **secure information on content and schedules of movements in line with sensitivity of materials and protective marking requirements**
- P6 meet Physical Inventory Take (PIT) scheduling conditions for suspension and restart of movements
- P7 control internal flows in bulk processes via processing monitoring capabilities which are capable of detection of non-trivial accumulations, leaks, input and output quantity differences
- P8 apply **quality control** to capture, validate, authenticate, approve, record and secure the data on the receipt or shipment, subsequent corrections, and communicate the data to the NMAS accountancy system
- P9 maintain material segregation during transfer between designated areas ensuring traceability and preventing unauthorised access to material
- P10 identify and implement independent verification activities as agreed with **stakeholders**
- P11 maintain good housekeeping in designated areas and allow access/holding when independent safeguards verification has been agreed
- P12 identify and resolve problems associated with the transfers and follow procedures in case of **anomalies**
- P13 confirm that transfers of containers which are empty or contain non nuclear materials do not contain accountable quantities of nuclear material

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Knowledge and understanding

You need to know and understand:

- K1 organisational procedures for internal material transfers on-site, including pre, during and post transfer arrangements.
- K2 the NMAS roles and responsibilities and the system for controlling and accounting for nuclear material and the prevention of un-authorised removal of nuclear material.
- K3 fuel cycle processes, NMAS data, transfer boundaries, material types, and key measurements relevant to the two material balance accountancy areas involved in the transfer.
- K4 organisational procedures relating to **record management system requirements**, location of information sources and change control arrangements.
- K5 tools and technology for applying and reading automatic identification systems (bar codes, radio frequency tags etc) and for handling and measuring the shipments.
- K6 conditions for acceptance, prescribed pick-up and put-down areas, out of hours arrangements and how to verify/check/accept/refuse/quarantine transfers.
- K7 **data verification errors and discrepancies** and how to resolve them within the extent of your authority or how to refer them to the appropriate authority.
- K8 software systems in use for handling the control and recording of nuclear material movements on site.
- K9 security, safety, criticality and waste management arrangements including information security and protective markings.
- K10 organisational procedures defining the levels at which nuclear material must be accounted for.

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Additional Information

Glossary

Anomalies: the NMAS discrepancies that are consistent with the absence or gain of a significant amount of nuclear material. These include:-

- 1 unacceptable losses detected by the account balances or by process monitoring
- 2 loss of a discrete item on site or in transit
- 3 significant finds of nuclear material
- 4 unacceptable shipper/receiver difference

Data verification errors and discrepancies: include those revealed during authentication, authorisation and validation or through arrangements for identifying incomplete data, data errors and discrepancies, and unusual features (such as damage of stock or container).

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

Pre, during and post transfer arrangements: includes:

- 1 obtaining appropriate approvals and authorisations; uniquely identifying the transfer event and the individual items/batches being transferred; correct labelling and markings; and checking/preserving seal and container integrity
- 2 meeting the conditions to be satisfied for custodial handover and adhering to procedures to promptly deal with(including quarantine) disputed transfers; and applying appropriate security, escorting and information classification arrangements
- 3 verification of the receipt; obtaining appropriate approvals and authorisations to make the material available for use
- 4 application of quality controls to data capture, validation, authentication, approvals, record and secure the data on the material transfer, subsequent corrections, and to the communication of the data to the NMAS accountancy system(even if the data is incomplete)

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Quality Control: includes performance monitoring and testing, quality control and quality assurance, record keeping, and where appropriate, measures to protect from unauthorised tampering or prevent measurement systems being bypassed.

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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