COGNMAS12
Enter data onto the nuclear material accountancy and safeguards system and verify data

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 validate and enter data in the NMAS system.

Who is the NOS for?
This NOS is primarily for Nuclear Material Accountants. It may also be applicable to plant process and technical support staff within the nuclear license company who are responsible for managing compliance with NMAS requirements for data capture, verification and authorisation at a plant or site level.

The main outcome of this activity is the entry into the NMAS accountancy database of nuclear material transactions based on validated source data.

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 carry out active management of records in line with **record management system requirements**

P2 capture and collate all data needed by the NMAS system for recording flows of nuclear materials into and out of accountancy balance areas and for entering the results of inventory takes

P3 apply accounting conventions and processes to convert source data (e.g. using calibration, measurement and sample result data etc) into nuclear material masses both elemental and if appropriate isotopic

P4 calculate and generate non-physical transactions and batch naming/rebatching and reporting information in line with **NMAS requirements** or as agreed in **supplementary safeguards arrangements**

P5 record and enter approved nuclear material transfers between civil and defence use, record any co-processing, and report any unauthorised transfers as nuclear material control **discrepancies**

P6 operate **front end computerised accountancy tools and techniques**

P7 deploy **quality control** to source documents, data transformations and calculations, and entry into the accountancy system

P8 measure **data integrity** to monitor system effectiveness, risks, deficiencies and corrective actions

P9 carry out correction matching with previous declarations and transit matching of issues/receipts (if more than one NMAS system in use)

P10 structure and consolidate operating data

P11 interrogate and transfer data from automated plant systems into the NMAS system. Ensure that data from point of use inventory systems (automated stores) is in line with the NMAS records

P12 validate transactions (if using shop floor data capture directly into the accountancy system) before they take place

P13 identify and report **deficiencies** in NMAS data entry and verification systems

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Knowledge and understanding

You need to know and understand:

K1 organisational procedures for internal and external material balance and accounts

K2 the NMAS requirements, the NMAS **implementation framework,** and the policies, standards, guidelines, procedures and working instructions relevant to collection, collation, checking and authentication of NMAS data

K3 information security requirements and procedures for reporting suspected data falsification

K4 the **process context**

K5 **general metrology** sufficient to ensure appropriate understanding and use of units and constants

K6 change controls and other record management systems requirements

K7 data format to meet NMAS reporting requirements

K8 data integrity systems and techniques, and arrangements to deal with **Data verification errors and discrepancies**

K9 information technology software systems handling NMAS accountancy and associated source data

K10 security, safety, criticality and waste management arrangements and other **associated regulatory requirements** for the data

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Additional Information

Glossary

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

Front end computerised accountancy tools and techniques: appropriate for data entry, data manipulation, validation, search, interrogation and tracking, preparing/printing movement documentation, and providing stock/transaction lists for safeguards verification and audit. This may include state of the art data capture systems.

Data integrity: includes data timeliness, quality (free from defects), authenticity, provenance, authorisation, completeness, adherence to required format and content, traceability, freedom from contamination/corruption.

Data verification errors and discrepancies: includes 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).

Deficiencies: shortcomings in performance or capability which put the NMAS system at risk. These vulnerabilities include for example:

1. insufficient protection of NMA data against falsification or loss of classified data
2. unreliable or inadequate measurement systems subject to frequent failure, bias, or intolerable uncertainties.

Discrepancies: include:

1. differences between nuclear materials accounting information
2. differences in material balance
3. incorrect labelling of nuclear material packaging
4. incorrect characterisation of nuclear materials
5. nuclear material location errors

General Metrology: includes SI units, factors and fundamental constants, types of measurement and standards, traceability and measurement terminology.

Implementation Framework: includes the NMAS physical and the managerial arrangements. It defines; the Material balance areas; transfer boundaries; key measurement points; NMAS capabilities, resources and infrastructure; control arrangements. It defines; organisational structures, responsibilities and accountabilities, separation of duties, those with direct custodial care of nuclear material and the competency framework.

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

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.

Process Context: includes the plant design, the measurement envelope, the physical and chemical properties of materials in the plant flow-sheet, the ionising radiation environment, measurement system maintenance and eventual decommissioning policy and the plant operating parameters and expected throughputs.

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

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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