

COGNMAS1

Configure and manage a nuclear material accountancy and safeguards system



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 configuring and managing the NMAS system.

Who is the NOS for?

This NOS is primarily for NMAS Managers within the nuclear site license companies responsible for managing NMAS compliance and performance at a site or organisational level. It may also be applicable to Senior Managers (with executive authority) and Middle Managers (with line management of NMAS and its technical support).

The main outcome of this activity is a resourced and configured system for managing the NMAS system.

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 develop strategy, policy, and procedures to meet **NMAS requirements** and provide assurance on **NMAS effectiveness**
- P2 ensure an awareness of NMAS objectives and obligations and a safeguards culture at all levels in the workforce
- P3 ensure the **implementation framework** optimises control and material balance performance
- P4 ensure all NMAS recording and reporting systems are evidence based, subject to **record management system requirements**, and secured
- P5 ensure that NMAS arrangements provide deterrence against theft or diversion of nuclear material, have a known detection capability, proportionate to the risk, and are in support of site security plans for protection of nuclear materials
- P6 ensure separation of duties and management supervision to avoid conflicts of interest, protect against unauthorised activities, and detect unauthorised use or removal of nuclear materials
- P7 manage NMAS interfaces, communications, working relationships and contractual arrangements across the organisation and with external **stakeholders**
- P8 approve and communicate **supplementary safeguards arrangements** with international and external stakeholders and NMAS staff
- P9 manage any conflicts that arise between NMAS requirements and other **associated regulatory requirements or operational constraints**
- P10 operate NMAS business continuity processes, including emergency procedures to enable reconstruction or reconstitution of the nuclear material accounts
- P11 deploy sufficient **NMAS capabilities, resources and infrastructure** to deliver a competent workforce and resilience and compliance with NMAS strategy, policy and procedures
- P12 deploy audit and review measures, performance monitoring and testing, and quality management for all aspects of NMAS
- P13 monitor NMAS risks, performance, benchmarking and good practice, and respond to **discrepancies, anomalies and deficiencies**
- P14 drive improvement and learning from experience
- P15 provide an annual NMAS assurance statement which reports on performance, fitness for purpose and planned actions and improvements

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Knowledge and understanding

You need to know and understand:

- K1 the **International nuclear non proliferation regime** and how this translates into **NMAS requirements**
- K2 information security requirements and NMAS information publishing requirements
- K3 how NMAS is implemented on your site, the interaction with other associated regulatory requirements and systems, and stakeholder management processes, particularly liaison with Safeguards Inspectorates
- K4 **record management systems and stakeholder reporting systems** requirements and information systems used by NMAS
- K5 nuclear material accountancy and measurement systems
- K6 the NMAS performance targets and performance achievement
- K7 safeguards requirements and **supplementary safeguards information**
- K8 the tools and techniques used by the safeguards authorities, the site arrangements on which they depend, and the scope and limits of authority of safeguards inspectors
- K9 emergency response arrangements and risk management including requirements for separation of duties for vulnerable NMAS activities such as inventory taking, investigations and anomaly resolution
- K10 training, development and competency assessment arrangements
- K11 quality management arrangements and performance testing used to confirm the effectiveness of the NMAS accountancy system
- K12 the NMAS business continuity processes and emergency procedures
- K13 the consequences of discrepancies and anomalies on stakeholders being able to draw non diversion assurances and safeguards conclusions

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Additional Information

Glossary

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

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

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

Deficiencies: are 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, or bias.

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

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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.

International Non Proliferation Regime: is a system of international controls to prevent the spread of nuclear weapons and includes export controls, physical protection and safeguards verification. It supports the nuclear Non Proliferation Treaty (NPT) to which the UK is a signatory.

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

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.

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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 ensure currency of data and data ownership by collection close to information source
- 4 provision of linkage and activity logs to facilitate tracking nuclear material batch/item histories (of movement, modification, and correction)
- 5 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 302/2005 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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Developed by	Cogent
Version number	03
Date approved	September 2011
Indicative review date	September 2013
Validity	Current
Status	Original
Originating organisation	Cogent
Original URN	COGNMAS1
Relevant occupations	NMAS Managers; Senior Managers; Middle Managers
Suite	Nuclear Materials, Accountancy, Safeguards and Control (NMAS)
Key words	Nuclear; Safeguards; Control; Materials