



Safeguards Annual Report 2023

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# Introduction

ONR is the State Regulatory Authority (SRA) for safeguards. This means that we are responsible for domestic regulation of UK operators and ensuring that UK meets its international safeguards obligations. Our regulation of safeguards, and facilitation of the safeguards activities of the International Atomic Energy Agency (IAEA), are delivered by our Safeguards Subdivision, part of our Civil Nuclear Security and Safeguards (CNSS) division.

This report provides an overview of our implementation of the safeguards regime in 2023, as required under Regulation 41(2) of the Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19).

# Regulatory activities

NSR19 places duties on all holders of civil nuclear material in the UK to establish, implement and maintain a system of accounting for, and control of, qualifying nuclear material in each qualifying nuclear facility. Holders of qualifying nuclear material encompass a diverse range of organisations, from operators of major nuclear facilities (such as reactors, reprocessing plants, and fuel enrichment and fabrication plants) down to qualifying nuclear facilities with limited operation (QNFLOs), such as universities, research centres and small businesses.

Our enforcement policy statement and The Regulators’ Code require us to enforce these duties in a manner that is:

* proportionate to risks arising from any breach;
* targeted on activities that give rise to the most serious risks;
* consistent across similar circumstances to achieve similar outcomes;
* transparent to the dutyholders in question; and
* accountable to the public.

To achieve this, we have established an effective and robust regulatory framework to ensure compliance with NSR19 and to enable the UK to meet its international safeguards obligations. This framework provides safeguards inspectors with a regulatory toolkit from which they can make targeted and proportionate interventions to ensure operators are adequately complying with NSR19. This toolkit includes a combination of regulatory activities that can be broadly categorised into on-site inspection and the regulatory assessment of operator submissions.

We have developed detailed training and guidance for our inspectors to ensure that our regulatory approach remains proportionate, targeted and transparent to the operators. All of our guidance is available to the operators through ONR’s website.

## Inspection

During the reporting period we conducted 32 on-site inspections. These inspections included:

* **Compliance inspections** covering:

**Nuclear Material Accountancy** to confirm whether operators’ nuclear material accounting and operating records, required by Regulations 10 and 11 of NSR19, align with the accounting reports submitted to us under Regulations 12-15 of NSR19;

**Physical Inventory Take (PIT) Evaluation** to confirm that operators are undertaking regular PITs as required, and that this component of their accountancy and control system is proportionate to and appropriate for the facility in question, as required by Regulation 6 and Schedule 2 of NSR19;

**Basic Technical Characteristics** to confirm whether design information declared by operators under Regulation 3 of NSR19 is accurate and matches physical reality. Design information is information concerning qualifying nuclear material subject to safeguards and the features of facilities relevant to safeguarding such material. It includes information on the form, quantity, location and flow of qualifying nuclear material and the facility layout and containment features.

**Accountancy and Control Plans** to confirm whether operators are adequately implementing aspects of their nuclear material Accountancy and Control Plans (ACPs), as required by regulations 6, 7, and 9 of NSR19;

* **Safeguards System-Based Inspections**, which take a cross-cutting approach by focusing on key nuclear material accountancy and control systems (such as measurement systems, nuclear material tracking and data processing systems) and confirm whether these systems are being implemented in a manner which is proportionate to and appropriate for the facilities in question, as required by Regulation 6 and Schedule 2 of NSR19.

We have also undertaken several joint compliance inspections with our nuclear safety and security inspector colleagues. This has enabled us to identify areas of mutual regulatory interest and overlap between safeguards regulatory requirements and regulatory requirements set out in nuclear site Licence Conditions.

Undertaking joint inspections allows us to be more efficient and effective through sharing of regulatory intelligence and where possible, avoid the undue burden of separate interventions driven by each regulatory function. We will continue to develop and mature this area of innovation in our regulatory approach across ONR to include all relevant regulatory purposes.

Of these on-site inspections, 29 received a ‘green’ rating, indicating broad compliance with the requirements of NSR19 across the UK’s civil nuclear estate, with few (or no) minor shortfalls identified.

Two are still in progress (both have provisional rating of green), one inspection received an amber rating, which requires action from the operator to address gaps in compliance. Generally, these compliance gaps were identified in the areas of adequacy of safeguards arrangements and procedures and their implementation, reliability and sustainability of safeguards systems, and capability and capacity of operator staff. We have worked constructively with operators to address these gaps in a timely manner.

## Assessment

NSR19 requires operators to make submissions to us. These submissions include safeguards-relevant design information of facilities (Basic Technical Characteristics, as required by Regulation 3 of NSR19), descriptions of arrangements and procedures for nuclear material accountancy and control (Accountancy and Control Plans, or ACPs, as required by regulation 7 of NSR19), and accounting reports on nuclear material inventories and movements (as required by regulations 12-15 of NSR19).

We perform assessments of these submissions to judge their compliance with regulatory requirements and to inform our on-site inspection activities. Where we have considered it necessary, our assessments have been supported by on-site visits to confirm the accuracy of the information contained in the submissions.

We assessed all nuclear material accounting reports submitted during the reporting period and carried out six other assessments. These included:

**Basic Technical Characteristics (BTC) assessments** to confirm whether these submissions were correct, complete, and adequate in line with the requirements of Regulation 3 of NSR19 and, where necessary, met international obligations. The four BTC assessments completed received green ratings, indicating broad compliance with regulatory requirements and relatively minor, if any, deficiencies in the submissions.

**Accountancy and Control Plan (ACP) assessments** to confirm whether the arrangements and procedures for nuclear material described in ACP submissions were proportionate to and appropriate for the facility in question, and are being implemented adequately, as required by Regulations 6, 7, and 9 of NSR19. One assessment received a ‘green’ rating, indicating broad compliance with the requirements of NSR19, with few minor shortfalls identified. In the reporting period, one ACP assessment received an ‘amber’ rating indicating gaps in the operator’s arrangements and procedures requiring improvements. We have raised regulatory issues to track and support the relevant operator in addressing these shortfalls.

## Facilitation

As set out in Section 72 of The Energy Act (2013), one of our safeguards purposes is to enable and facilitate compliance by the UK with its international safeguards obligations. Under the UK’s Voluntary Offer Agreement (VOA), INFCIRC/951, with the International Atomic Energy Agency (IAEA), the UK is obliged to facilitate IAEA safeguards inspections and site visits at facilities in the UK that have been designated for that purpose.

The IAEA has designated four facilities across two sites for their inspection of the implementation of UK safeguards.

We facilitate IAEA safeguards inspection activities by liaising with them and the relevant operators, overseeing facility preparations for inspection, and where necessary accompanying inspectors on-site. IAEA have now started utilising the safeguards equipment installed at one of the selected facilities reported in the previous report. This has allowed the IAEA to adopt a random inspection approach which has resulted in a significant reduction in the number of inspections it carries out.

The IAEA carried out 26 safeguards inspections at designated facilities during the reporting period. We successfully facilitated all the IAEA inspections enabling the IAEA to fulfil their objectives. No significant issues have been raised by the IAEA regarding the facilitation of IAEA safeguards inspections in the UK.

During the Annual Review of Safeguards Implementation in the UK, the IAEA provided positive feedback on ONR’s work and confirmed that UK had met its safeguards obligations during the reporting period.

The IAEA have requested ONR support in helping them to better understand the differences between the records held at Capenhurst site and the nuclear material accounting reports submitted to the IAEA by ONR. These differences are due to the different reporting requirements in NSR19 and the VOA causing a deviation when domestic reports are translated into the required format for the IAEA.

## Reporting

NSR19 requires operators of qualifying nuclear facilities to provide us with accounting reports for each material balance area. A material balance area is an area in or outside of a facility where the physical inventory of qualifying nuclear material can be determined when necessary and the quantity of qualifying nuclear material in each transfer into or out of the area can be determined.

There are currently 67 material balance areas across the UK (excluding qualifying nuclear facilities with limited operation – see below).

Regulations 13 to 18 of NSR19 prescribe the various types of reports and frequency of reporting required. These reports include monthly Inventory Change Reports (regulation 14), and Material Balance Reports and Physical Inventory Listings each calendar year (Regulation 15).

We have successfully assessed these reports to ensure that they are correct and complete and have submitted them to the IAEA in the required format under the UK/IAEA VOA, enabling the UK to meet its safeguards obligations. Within the reporting period, this amounts to more than 1,000 reports with approximately two hundred thousand lines of accounting data.

Where our assessment has highlighted errors or anomalies, we have worked with the relevant operators for these to be resolved in a timely manner.

Regulation 19 of NSR19 requires operators to submit additional reports arising from international agreements and to fulfil obligations resulting from international trade. These include bilateral Nuclear Cooperation Agreements (NCAs) with the United States of America, Australia, Canada, Japan, and with Euratom. During the reporting period we have received, analysed and facilitated the submission of these reports to the relevant states through the Department for Energy Security and Net Zero in accordance with the administrative arrangements underpinning each of these agreements.

There are several reports in addition to those mentioned above arising from several state level agreements with the IAEA (see table below). We have met all these reporting requirements. This includes substantial reporting commitments under the protocol additional to the voluntary offer safeguards agreement (INFCIRC/951 Add. 1) with the IAEA known as the ‘Additional Protocol’ (AP).

|  |  |
| --- | --- |
| **Report** | **Frequency** |
| Qualifying Nuclear Facilities. ‘Facilities List ‘ | Annual |
| Application of Safeguards on material transferred to the UK pursuant of INFCIRC/175 | Quarterly |
| Minimisation and elimination of Highly Enriched Uranium (HEU) pursuant to INFCIRC/912 | Annual |
| Neptunium (Np) and Americium (Am) Report | Annual |
| Annual Additional Protocol (AP) submission pursuant to the UK/IAEA - AP agreement | Annual |
| UK Export report pursuant to the UK/IAEA Additional Protocol (AP) agreement | Quarterly |
| IAEA Inspector designation | Periodic |
| Withdrawals of nuclear material from safeguards | Annual |
| Programme of Activities pursuant to the UK Voluntary Offer Agreement | Annual |
| INFCIRC/549 – UK Pu and HEU Figures | Annual |

## Qualifying Nuclear Facilities with Limited Operation

We regulate more than 130 qualifying nuclear facilities with limited operation (QNFLOs), this number fluctuating over time due to the changing nature of these organisations’ activities. They primarily comprise universities, research centres, and small businesses. For these organisations, we employ the same regulatory framework to achieve compliance with NSR19 as with the larger facilities, adopting a targeted approach.

NSR19 provides for these operators to apply for a reduced safeguards reporting regime, which we have implemented following applications from eligible QNFLOs. The reduced reporting regime is working effectively and we continue to support QNFLOs in meeting their obligations under NSR19.

## International Peer Review

In 2022, the French authorities completed an international peer review of the UK State System of Accounting for and Control of Nuclear Material (UK SSAC) and the report following this review was received this year. The authorities included The Euratom Technical Committee (CTE), the Institute for Radiological Protection and Nuclear safety (IRSN), and the Alternative Energies and Atomic Energy Commission (CEA).The international peer review was a commitment made during the development of the UK SSAC, to provide assurance regarding our approach and suggestions for improvement, that was delayed due the COVID-19 pandemic. The review team commended us on our openness and transparency throughout the process. The report found that the UK safeguards legal and regulatory frameworks are structured, comprehensive and coherent, and that our ‘evidence-based approach’ is implemented effectively.

The report noted several areas of good practice and made two recommendations. The first recommendation was for us to acquire enhanced licence rights to the Safeguards Information Management and Reporting System (SIMRS) source code, which is a critical element to the UK Safeguards system. We now have an agreement in principle with the SIMRS developer to acquire the enhanced rights which will enable ONR to enhance the resilience of the system whilst delivering value for money. The other recommendation was for us to review the framework again after a number of years to track progress and gain feedback as the Safeguards function matures further. This review will be performed under the next statutory Post Implementation Review of NSR19 scheduled for five years from now.

## AUKUS

For the trilateral partnership between Australia, the UK and the US (AUKUS) regarding collaboration on future nuclear-powered submarines for the Royal Australian Navy, non-proliferation and international safeguards need to be considered.

As part of the implementation work for this collaboration, DESNZ continue to draw on ONR’s safeguards technical expertise in developing the safeguards and verification approach for AUKUS and for providing capacity-building support to the Australian Safeguards and Non-Proliferation Office (ASNO).

ONR are represented at AUKUS cross-Governmental safeguards meetings with trilateral partners and with the IAEA where applicable.

## Post Implementation Review of NSR19

We provided significant input to the Post Implementation Review of NSR19 and the Nuclear Safeguards (Fissionable Material and Relevant International Agreements) (EU Exit) Regulations undertaken by DESNZ this year. This entailed a period of sustained proactive engagement to provide our views regarding the regulations and discuss proposed amendments. Our input is based on evidence and regulatory intelligence gained through the three years of regulation since going live.

DESNZ overall conclusion of the report was that the 2019 regulations were broadly successful in meeting their four key policy objectives;

* meeting international safeguards obligations;
* providing coverage and effectiveness equivalent to that previously provided by Euratom;
* retaining public, industry and international trading partner confidence to engage in civil nuclear trade with the UK: and
* aligned with best practice in UK regulation making.

We are broadly in agreement with the review findings, however, our work over the past three years has highlighted several common areas across the industry where improvements are required. These include appropriate maintenance and resilience of safeguards systems and long-term capability and capacity issues associated with staff at these sites. NSR19 requires further minor modifications (in addition to those suggested) to ensure that ONR is able to influence improvements in this area.

We continue to engage with our DESNZ colleagues regarding a number of proposals for amendments to the regulations, with the PIR due to conclude in 2024.

# Conclusion

Through our implementation of the NSR19 in 2023, we have enabled the UK to meet all its international safeguards’ obligations and delivered the required IAEA safeguards reporting on time. We have also effectively facilitated IAEA safeguards activities in the UK. We have engaged closely with operators throughout, providing regular advice and guidance to assist them in meeting their obligations under NSR19. The DESNZ PIR of NSR19 concluded that the regulations have been broadly successful in meeting the required policy outcomes, and the success of our Safeguards function was further endorsed by the French international peer review.

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