Department for Energy Security & Net Zero

Office for Nuclear Regulation

Importing and exporting nuclear-related items and the role of Nuclear Cooperation Agreements between the United Kingdom and international partners

Guidance

February 2024

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1. Introduction to guidance

1.1 Purpose and scope

This guidance aims to provide nuclear UK entities with an understanding of Nuclear Cooperation Agreements (NCAs) and their responsibilities.

HM Government may decide to make the import or export of nuclear-related items subject to one of the NCAs that we have. There are specific requirements associated with NCAs and this guidance details what we will ask of industry to facilitate that, so that the UK can fulfil its obligations to international partners.

This guidance also refers to the requirements of the Nuclear Safeguards (EU Exit) Regulations 2019 (NSR19). This guidance also refers to export licence requirements as set out in relevant export control legislation.

Please note this is a guidance document, and any further queries should be directed to the Department for Energy Security and Net Zero (DESNZ) and the Office for Nuclear Regulation (ONR).

1.2 Administrator roles

The UK administers NCAs using both DESNZ and the ONR. The UK also ensures that specific obligations under NCAs concluded by the Euratom Community with third countries ('obligations concerning international trade', such as the Euratom-Ukraine NCA, in NSR19) in relation to any nuclear-related items present in the UK at the end of the transition period are fulfilled.

1.2.1 The Department for Energy Security and Net Zero

Civil nuclear policy falls within the remit of the Secretary of State for DESNZ. DESNZ has overarching policy responsibility for the implementation of NCAs with international partners and provides recommendations on export licence applications with respect to relevant nuclear-related items. An overview of DESNZ's role is outlined below:

- Agreeing with NCA partners to make relevant nuclear-related items subject to a relevant NCA (via an exchange of notifications)
- In partnership with ONR, establishing and agreeing standards regarding the equivalence of qualifying nuclear material for the purposes of meeting NCA obligations (including for substitutions, obligation exchanges, and obligation pool accountancy as discussed below)

- Notifying UK entities and receiving notifications from UK entities, as appropriate, regarding the receipt, production, processing, derivation, fabrication, or transport of nuclear-related items (excluding qualifying nuclear material) that are subject to an NCA.
- Sending notifications to NCA partners confirming the export and import of non-nuclear material, tritium, equipment, software or, technology (as applicable) which has been made subject to an NCA.
- Sending annual summaries to NCA partners of nuclear-related items (ONR lead on annual summaries of qualifying nuclear material) subject to the relevant NCA.
- Placing conditions on export licences asking for relevant information that allows DESNZ to provide the necessary notifications.
- Requesting assurances from those receiving items that will be subject to an NCA to allow HMG to meet the provisions of the NCA.

For a point of contact within DESNZ, please see below:

Non-Proliferation Unit
Department for Energy Security and Net Zero
3-8 Whitehall Place
London
United Kingdom
SW1A 2AW

Email: nsg.transfers@energysecurity.gov.uk

1.2.2 The Office for Nuclear Regulation

ONR regulates nuclear safety, security, safeguards, conventional health and safety and transport in the UK. This includes having delegated responsibility as the State Regulatory Authority (SRA) administering the UK's State System of Accounting for and Control of qualifying nuclear material (SSAC), and as such the ONR are responsible for ensuring holders of qualifying nuclear material comply with the relevant requirements of the NSR19, and that they account for and control qualifying nuclear material, including that which is subject to any NCAs. An overview of the ONR's role is outlined below:

- Sending notifications to NCA partners confirming the export and import of qualifying nuclear material from/to the UK which has been made subject to an NCA.
- In partnership with DESNZ, establishing and agreeing standards regarding the equivalence of qualifying nuclear material for the purposes of meeting NCA obligations (including for substitutions, obligation exchanges, and obligation pool accountancy as discussed below).
- Sending annual summaries to NCA partners of qualifying nuclear material (DESNZ lead on annual summaries of other nuclear related items) subject to the relevant NCA.

For a point of contact within the ONR, please see below:

Civil Nuclear Security and Safeguards Division
4N.3 Redgrave Court
Merton Road
Bootle
L20 7HS

Email: UKSO@onr.gov.uk

1.3 Standard language

Nuclear-related items means equipment, tritium[1], components, qualifying nuclear material, non-nuclear material, software, or technology.

Qualifying Nuclear Material has the meaning assigned thereto in the Nuclear Safeguards Act 2018 and Nuclear Safeguards (Fissionable Material and Relevant International Agreements) (EU Exit) Regulations:

(a) fissionable material, meaning:
i. Plutonium-239
ii. Uranium-233
iii. Enriched uranium; and
iv. Any material containing one or more of the materials described above.

(b) source material in the form of—
(i) uranium metal, alloy or compound, or
(ii) thorium metal, alloy or compound, or

(c) ore containing a substance from which a source material falling within paragraph (b) is capable of being derived.

Notified Qualifying Nuclear Material means qualifying nuclear material in respect of which the Secretary of State has issued written advice to an operator or other relevant person under Part 13 of NSR19.

1.4 Relevant legislation and other reference sources

- **NSG Guidelines** – Nuclear Suppliers Group (NSG) Guidelines – INFCIRC/254/ Part 1 as amended – contains the Trigger List
- **NSR19** – Nuclear Safeguards (EU Exit) Regulations 2019
  a. In particular regulation 19, and;
  b. Part 13

[1] Only where applicable dependent on the relevant NCA, see Annex 1 for further detail

- **NS (Fissionable Material) Regulations** – The Nuclear Safeguards (Fissionable Material and Relevant International Agreements) (EU Exit) Regulations 2019
- Export Control Act 2002
- Export Control Order 2008

1.5 Additional resources

This guidance does not detail the wider obligations which are set out in NSR19 nor is it a comprehensive guide to wider import and export licensing requirements. Please refer to additional guidance on these topics posted on the Government or ONR websites.

In addition, please note that this guidance is not intended to provide information on all transactions. Please contact DESNZ and/or ONR as appropriate if further clarification is required.

2. Nuclear Cooperation Agreements

2.1 What is an NCA?

An NCA is a legally binding, bilateral Agreement negotiated between two States, or international bodies, such as the European Atomic Energy Community (Euratom), setting out their intention to, and framework for, cooperating in the civil nuclear sector.

NCAs are not a requirement for the UK to trade in civil nuclear-related items with most countries. NCAs can facilitate responsible exports, but do not negate the need for export licences.

Every NCA is different and is negotiated on a case-by-case basis. These agreements allow States or international bodies to formally recognise their willingness to cooperate with each other on civil nuclear matters and describe the terms of cooperation under the agreement.

2.2 What NCAs has the UK signed?

The UK has eleven bilateral NCAs with the following States or international bodies:

- Australia
- Canada
- China
- Euratom
- India

- Japan
- Jordan
- Republic of Korea
- Russian Federation
- United Arab Emirates
- United States of America (US)

The way each NCA has been implemented varies. Administrative Arrangements (AAs) may also be agreed with an NCA partner to provide more detail for those implementing the NCA. AAs are not published, unlike NCAs.

AAs are in place for the UK-Australia NCA, UK-Canada NCA, UK-Euratom NCA, and the UK-US NCA, for which UK entities must provide notifications. This is described in greater detail in section 2.5 of this guidance. For an overall understanding on which items apply to each NCA please see the Annex.

2.3 What provisions do NCAs contain?

Most countries do not make NCAs a requirement before cooperation can take place, but the UK may sign them with countries where it is a legal or political requirement. An NCA may also be signed between two states or international bodies for other reasons if both sides see the benefit of doing so.

NCAs typically include obligations on the signatories of the NCA such as:

- the requirement for cooperation under the NCA to be for exclusively peaceful purposes;
- the requirement for relevant nuclear-related items transferred under the NCA to be subject to nuclear safeguards, in accordance with the safeguards arrangements that each signatory to the NCA has with the International Atomic Energy Agency (IAEA);
- the requirement to account for and control relevant nuclear-related items transferred under the NCA;
- the requirement to notify transfers of relevant nuclear-related items under the NCA and to seek consent for certain retransfers of relevant nuclear-related items exchanged under the NCA to a third country; and
- ensuring appropriate levels of nuclear security, including physical protection, are applied to relevant nuclear-related items transferred under the NCA.

2.4 What items do NCAs apply to?

Typically, items specified by the Trigger List of the Nuclear Suppliers Group (NSG) which is published by the IAEA as InfCirc/254/Part 1 as amended can be made subject to an NCA.

The provisions of the NCA will apply to any items that both parties agree to make subject to an Agreement. In some instances, this will also apply to items produced, processed, derived from, or fabricated from items subject to an NCA. These obligations apply until such items are re-transferred to another party, are no longer usable for any nuclear activity, or until the signatories of the NCA agree otherwise.

Further, for qualifying nuclear material subject to an NCA, the ONR ensures the relevant provisions of NSR19 are enforced and that such material is identified appropriately, is not removed from international safeguards, and is used only for peaceful purposes.

2.5 How does the UK implement its NCA obligations?

The UK implements its NCA obligations by overseeing nuclear-related items that are subject to an NCA, ensuring holders of those items use them in accordance with the provisions of the NCA, and by submitting reports and notifications to relevant NCA partners regarding those items.

When an export licence application is received, DESNZ will determine whether there is an NCA in place that is applicable to the proposed export. If so, DESNZ may ask (the NCA partner) to make the items subject to a relevant NCA. If the NCA partner (i.e, the Government of the recipient agrees, the items will be made subject to the agreement on its recipient), and DESNZ (or ONR for qualifying nuclear material) will send shipment notifications to the receiving government that the items have been exported. The receiving government shall then send a receipt notification once the items have been received. The items will often appear on an inventory agreed between the two Governments as a result.

An export licence is still needed for the items to be exported; and the exporter may be asked for additional information so that the DESNZ (and ONR for qualifying nuclear material) can meet the obligations set out in the NCA. This might be through conditions or provisos included on the export licence.

If it is determined that a particular export will not be made subject to an NCA, then DESNZ may request a Government to Government Assurance (GTGA) to ensure that a proposed export is in line with the UK’s international commitments.

If the items are being imported into the UK, and DESNZ is asked if the items can be made subject to a relevant NCA, DESNZ may seek additional information from the importer before agreeing to the request.

3. Guidance for importing and exporting Nuclear-related items

3.1 Guidance on exporting

3.1.1 Background on exports

Section 4 of this guidance describes the relevant nuclear-related items that are included in each NCA. Nuclear-related items, which are subject to an NCA, are also subject to the additional notification and reporting requirements set out in Part 13 of NSR19. These additional requirements include providing information to DESNZ or ONR on receipt, production, and transfer of nuclear related items.

Should an entity wish to export nuclear-related items from the UK, full details (including any NCA-related obligations on those items) should be provided in the export licence application. There may, in addition, be conditions applied to the licence relating to the specific requirements of the relevant agreement. Therefore, it is important to read the licence, and all conditions, carefully.

3.1.2 Export licencing requirements

In advance of exporting any relevant nuclear-related items, exporters should ensure the necessary export licences are in place. All licence applications should be made electronically via one of Export Control Joint Unit's online licensing systems (Spire or LITE). When making a licence application for the export of relevant nuclear-related items:

- Apply as far in advance as possible, and as soon as you are aware that an export of relevant nuclear-related items may take place;
- Attach all necessary documentation, including technical specifications and End User Undertakings, to your export licence application. See the guide on end-user and consignee undertakings for Standard Individual Export Licences (SIELs) and Open Individual Export Licences (OIEL) respectively;
- Name an end user organisation (not always required for an OIEL), a point of contact in the end user organisation and give details on how to reach them (including direct telephone number and e-mail address). The details are passed to the government of the recipient as it is likely that they will need to contact them. **Please note that this information is vital as the application cannot be processed without it;**
- Include the country of origin of the items (if known);
- Include the masses and safeguard obligation codes of any qualifying nuclear material to be exported; and,
- Include details about the context of your exports, including the end use, the wider project, the reference number of any previous applications for the same export

programme in the last five years, and any similar exports that are expected to be made in the future. This can help DESNZ to consolidate requests to international partners;

- Regarding applications including technology, we don't require a specific quantity of transfers to be stated but providing an indicative amount aids understanding of the scale of the project (for example, whether it's a one-off bid or tender document, a short-term project, or a long-term collaboration). Additional information may be provided in the application to indicate a range of intended transfers that would help our consideration (especially for applications to EU Member States as we will provide a range to Euratom as part of our engagement with them) – 1-99, 100-999, 1 000-9999, 10 000-99 999, > 100000.

3.1.3 Reporting requirements for exports

Ensure the below information regarding the specific proposed export is supplied to HMG (DESNZ and ONR), DESNZ as far in advance as possible. This should be at least 30 days prior to the proposed export taking place as per the and will be a condition on the export licence.

In the case of qualifying nuclear material, this information may be provided to ONR in the form of an Advance Notification outlined in part 5 and part 6 of Schedule 1 of NSR19. ONR will share this notification with DESNZ, allowing them to ensure that all international obligations prior to the export of the items are complied with.

Please note that the list above is accurate as of August 2023, but the exact requirements should be checked always against NSR19 to ensure there have been no changes.

- The reference number of this export licence;
- The name and address of the end-user;
- A description of the nature and quantity of the Category 0 material to be transferred;
- The intended end-use of the material;
- The country of origin of the material;
- The date of transfer;
- The name, role, and contact details of a representative of the licensee;
- The gross mass of the material;
- The net mass of the material;
- The masses of the elements, as appropriate;
- The masses of the isotopes, as appropriate;
- The physical form of the material;
- The chemical form of the material;
- The shipment route and estimated dates of arrival and departure at ports and transhipment points; and

- Any other useful remarks.

If any of these details are not known 30 days before transfer, then please provide the best estimates available and update those estimates as the details become known.

Additional information may be requested.

In the case of **equipment and components** the notification to DESNZ should contain the following information:

- The reference number of this export licence;
- The name and address of the end-user;
- A description of the nature and quantity of the Category 0[2] equipment or components to be transferred;
- The intended end-use of the equipment or components;
- The country of origin of the equipment or components;
- The date of transfer;
- The name, role, and contact details of a representative of the licensee; and
- Any other useful remarks.

If any of these details are not known 30 days before transfer, then please provide the best estimates available and update those estimates as the details become known.

Additional information may be requested.

In the case of **technology and software** a notification should be sent to DESNZ in advance of the first such transfer only. The notification will include:

- Reference number of this export licence;
- Name and address of the end-user;
- Description of the Category 0 technology or software transferred in the preceding month;
- An indication of the quantity of Category 0 technology or software transferred (exact quantity not required);
- Intended end-use of the Category 0 technology or software;
- Country of origin of the Category 0 technology or software transferred, which can be summarised;
- Date of first transfer of the Category 0 technology or software if it occurred during the preceding month;

[2] As defined in Trigger List of the NSG Guidelines

- Date of the final intended transfer of Category 0 technology or software if it occurred during the preceding month;
- Name, role, and contact details of a representative of the licensee; and
- Any other useful remarks.

Additional information may be requested.

3.1.4 Requirements after exporting

Qualifying nuclear material

UK entities must complete an Inventory Change Report under Regulation 14 of NSR19 for all inventory changes. This Inventory Change Report will identify, separately for each obligation, any qualifying nuclear material that is subject to a relevant code published by the ONR, found in section 5 of this guidance. In most cases, this will allow the UK to comply with obligations to international partners without the requirement for additional information.

In the case of exports of qualifying nuclear material subject to the UK-Australia NCA, UK entities must provide ONR with the correct and final information described in section 3.1.3 above as soon as possible after the shipment has occurred and, in any case, no later than **five days** after that time. This requirement will be stipulated in the conditions of the relevant export license.

Nuclear-related items (excluding qualifying nuclear material)

For any shipments of relevant nuclear-related items (excluding qualifying nuclear material) under an NCA (as described in Part 13 of NSR19), UK entities should comply with any conditions included in the export licence for these items. This is likely to include a requirement for companies to provide a shipment notification to DESNZ which contains the following information:

- Name and address of shipping facility;
- Name and address of receiving facility;
- End user (if known);
- Date(s) of shipment;
- Description of item(s) to be transferred;
- Third country obligation (if applicable);
- Shipment route (including estimated date(s) of arrival and departure from ports, transhipment points and the destination (including ports of entry)).

A record should be kept of transfers of nuclear-related technology or software made using an export licence, and a notification sent to DESNZ, per export licence, within five working days of the end of any calendar month in which an item of nuclear-related technology or software is transferred.

For the first transfer only, the notification will include the same information needed for the advance notification, detailed in the section above, unless otherwise specified/ requested. Notifications for subsequent transfers are not usually required.

3.2 Guidance on importing

3.2.1 Background on imports

An import licence will be needed to import the following nuclear material:

- uranium ore concentrates
- plutonium, uranium 233, uranium enriched in the isotopes 233 or 235, natural uranium and mixtures, compounds and alloys containing any of the above, including spent or irradiated nuclear reactor fuel elements (cartridges)

Should a UK entity import nuclear-related items to the UK, DESNZ intends to inform the entity of their obligations in advance of the shipment(s) taking place. DESNZ will write to the UK entity asking them to provide a declaration as to the use of the items and notifying them of any conditions specific to the NCA, or any related to Part 13 (for other nuclear-related items) of NSR19.

Relevant nuclear-related items may become subject to an NCA upon receipt in the UK. It is intended that UK entities will be informed that relevant nuclear-related items that they are due to receive is subject to an NCA when DESNZ request an inward assurance.

If a company in the UK receives technology from the US that are subject to Part 810 regulations, DESNZ would appreciate being informed of the details of the import.

3.2.2 Import licencing requirements

In advance of importing any nuclear-related items or qualifying nuclear material, importers should ensure that the required licences are in place. All import licence applications should be made electronically via the form available for download on the ONR website. Completed application forms should then be signed and scanned and submitted by email to ONR-CNS.Transport@onr.gov.uk. Allow 2 months for the applications to be processed.

3.2.3 Reporting requirements for imports

Qualifying nuclear material

UK entities must complete an Inventory Change Report under Regulation 14 of NSR19 for all inventory changes. This Inventory Change Report will identify, separately for each obligation, any qualifying nuclear material that is subject to a relevant code published by the ONR in section 5 of this guidance. This will allow the UK to comply with obligations to international partners without the requirement for additional information.

Nuclear-related items

Upon receipt of nuclear related items which are or will become subject to an NCA, companies should submit a receipt notification to DESNZ (under Regulation 45 (a)(i) of NSR19) within 5 days of receipt, unless the items are technology and software. In the case of technology and software the notification will be sent within 5 days of receipt of the first item only, then for each subsequent transfer of technology and software from the same shipper the notification will be sent within five working days of the end of any calendar month in which the item is received, as a consolidated monthly notification. This receipt notification should contain the following information:

- Name and address of shipping facility;
- Name and address of receiving facility;
- End user (if known);
- Date(s) of receipt;
- Description of item(s) received;
- Third country obligation (if applicable);
- For technology and software only, the means of transfer of each item in the notification, whether electronic, such as e-mail, storage device, and cloud server, or non-electronic, such as shipment, postage, and spoken word;
- Any other useful remarks.

Additional guidance on import licensing restrictions including Notices to Importers are available on the Government website.

3.3 Requirements relating to production, processing, derivation or fabrication

In addition to the relevant nuclear-related items that may be covered, please be aware that the obligations contained in an NCA sometimes extend to relevant nuclear-related items that have been produced, processed, derived, or fabricated from another obligated item or from qualifying nuclear material that is subject to an Agreement. The extension of these obligations is addressed differently in each agreement due to differing international requirements.

- If you believe that your operations will entail the production, processing, derivation, or fabrication of relevant nuclear-related items from qualifying nuclear material or another relevant item that you have been made aware has been made subject to an NCA, please contact DESNZ and ONR.
- In the case of items (excluding qualifying nuclear material) produced, processed, derived, or fabricated from relevant nuclear-related items subject to an NCA, UK entities are required to report on these activities to DESNZ under Regulation 45(b) of NSR19. This information should be provided to DESNZ within a period of 5 days beginning with

the day on which the event takes place, and should include details on the production, processing, derivation or fabrication and the name and address of the facility.

4. Pool accounting and obligation code accounting

4.1 Pool accounting

4.1.1 Background on obligations pool accounting

“Obligation” is a term used to describe safeguards commitments entered into by the UK in a NCA concluded with another State or international body. Whilst there are other obligations referred to in this guidance, this section relates to safeguards obligations specifically.

Obligation accounting is the means of monitoring compliance with these commitments for qualifying nuclear material. The signatories of the NCAs may agree that the necessary accounting control does not require full obligation accounting at the individual item level and that some or all material of equivalent quality within one or more Material Balance Areas (MBAs) may be grouped together for the purposes of obligation accountancy. Obligation accountancy for such MBA groupings is termed pool accountancy.

Pool accountancy may be agreed for different cases (e.g., all material types in the MBA or only certain material types in certain MBAs). The basic unit for pool accountancy is the material category (e.g., natural uranium pool, plutonium pool, etc.) and its state (e.g., irradiated or unirradiated, direct use or indirect use). However, NCAs can provide for exceptions to this, for example, in the case of an enrichment plant. NCAs may also specify that pool accountancy arrangements are limited to other stages of the fuel cycle or material states (e.g., a pool for unirradiated direct use material).

Where a pool has been agreed, ONR may stipulate conditions as to its operation and reporting, e.g., submission to ONR of a book inventory summary at month end for the whole pool separately by category. When an operator receives qualifying nuclear material, it does so with a particular obligation which is then removed when it enters the pool. This removal must be reported using the appropriate inventory change code in Schedule 1 of NSR19. When it leaves the pool, the obligation is again recorded and reported. This ensures that there is continuous knowledge of the exact amounts of qualifying nuclear material per obligation entering, leaving, or held in the pool.

The decision on whether and how pool accountancy arrangements may be used will be taken by ONR, DESNZ, and (where necessary) relevant NCA partners on a case-by-case basis. This decision will be informed by proposals from UK entities justifying the need for an obligation pool, explaining its extent and nature, and describing pool accountancy arrangements that will deliver the principles outlined below (equivalence, proportionality and fungibility). UK entities should contact ONR for further information.

4.1.2 Fungibility principle

The Fungibility Principle provides that uranium, in common with several other commodities, is ‘fungible’ in that, during processing, uranium from any source is identical to uranium from any other and it is not possible to differentiate, physically, the origin of the uranium. This fungibility has led to the establishment and use of the principles of equivalence and proportionality.

4.1.3 Principle of equivalence

Pool accountancy arrangements must respect the principles of equivalence. The principle of equivalence is based on the understanding that atoms and molecules of any substance are indistinguishable from one another and are therefore interchangeable.

The principle of equivalence may be used to substitute qualifying nuclear material subject to the Agreement with an equal quantity of qualifying nuclear material of an equal quality which previously was not subject to the Agreement. Any proposal to substitute qualifying nuclear material should be made to DESNZ and ONR. DESNZ and ONR will then consider this jointly and, if appropriate, refer the proposal to relevant NCA partners for their consideration.

When, for operational reasons, qualifying nuclear material subject to a NCA loses its separate identity, or is deemed to have lost it, an equivalent quantity of qualifying nuclear material will be regarded as qualifying nuclear material subject to the NCA. The principle of equivalence cannot be used to reduce the quality of a quantity of qualifying nuclear material subject to the NCA, except where the parties so decide. Material quality is a function of factors such as isotopic composition and its state or form (e.g., irradiated or unirradiated) and NCA parties may establish and agree standards regarding the equivalence of qualifying nuclear material for the purposes of substitutions, obligation exchanges, and pool accounting.

The principle of equivalence does not however constrain the process of enrichment, where the overall quality of input material is maintained. Nor does it reduce the rights of the holder of qualifying nuclear material to perform other normal commercial operations involving natural, depleted, or low enriched uranium (e.g., blending or irradiation), which may have the effect of reducing the quality of qualifying nuclear material.

The system of accounting will not need to keep track of the qualifying nuclear material originally subject to the NCA, but it will at all times account for an equivalent quantity (i.e., the physical balance for a process or area must always reconcile with the sum of all the obligation codes for the material involved).

It is understood that according to the principle of equivalence, qualifying nuclear material subject to the NCA need not be physically identified at any given facility.

For the purposes of nuclear safeguards, it is only total uranium content and that of uranium 235 that of significance to equivalence.

4.1.4 Proportionality principle

Pool accountancy arrangements must respect the principles of proportionality. The proportionality principle provides that where obligated qualifying nuclear material is mixed with other qualifying nuclear material, and is processed or irradiated, a proportion of the resulting material will be regarded as obligated qualifying nuclear material corresponding to the same proportion as it was initially.

The appropriate method of calculating the amount of qualifying nuclear material subject to the NCA which is produced or consumed in accordance with the proportionality principle will depend on the circumstances (e.g., the process concerned):

- for plutonium, thorium, depleted and natural uranium the proportion is calculated by using the element mass; and
- for enriched uranium the proportion is based upon the mass of uranium 235 and/or uranium 233;

Process discards, other operating losses, and material unaccounted for (MUF) are allocated in the same way. The accounting (i.e., the allocation to each obligation) should be based upon safeguards data.

4.2 Obligation code accounting

A table published by the ONR below displays the relevant qualifying nuclear materials which are subject to an NCA associated with that obligation code.

At present obligation codes fall into three main groups:

Code	Obligations
	Nuclear Cooperation Agreements
A	All material subject to the UK-US NCA
C	All material subject to the UK-Canada NCA
D	All material subject to the UK-US NCA and UK-Canada NCA (Specifically Canadian material enriched in the US)
S	All material subject to the UK-Australia NCA
T	All material subject to the UK-US NCA and UK-Australia NCA (Specifically Australian material enriched in the US)
	Peaceful Use

P	All material (other than that described by the codes above) supplied subject to a peaceful use clause, including those obligations resulting from international trade.
	Not subject to defined safeguarding obligations
N	All material which does not fall into one of the above groups, but which are nevertheless subject to Safeguards under NSR19.

In accordance with Regulation 19 of NSR19, the operator must provide ONR the information listed below. In parallel, the operator must identify, separately for each obligation in each of the reports and notifications listed in the relevant NCA, unless otherwise stipulated by that agreement, any qualifying nuclear material which is subject to a relevant safeguards obligation and must use the appropriate obligation code if one has been published here.

- An inventory change report, including an ending book inventory, provided for in regulation 14 of NSR19;
- A material balance report and a physical inventory listing provided for in regulation 15 of NSR19; or
- Advance notification of intended imports and exports provided for in regulations 21 and 22 of NSR19;

Please note that holders of relevant qualifying nuclear material should also reference any other relevant NCAs to which the material is subject, or any peaceful use obligations arising from international trade that apply to the material, when applying for export licences (see section 3.1.2 of this guidance), if known. If further information becomes available (e.g., relating to obligations) this should be provided when known.

4.2.1 Obligation accounting when mixing qualifying nuclear material

When relevant qualifying nuclear material subject to an NCA or an obligation arising from international trade are mixed, processed, or irradiated together with other materials, the materials produced should be allocated to an agreement or obligation in accordance with the proportionality principle.

When qualifying nuclear material subject to an agreement or an obligation arising from international trade loses its separate identity, an equivalent quantity of qualifying nuclear material will be regarded as qualifying nuclear material subject to the agreement or obligation. The principle of equivalence is used in obligation exchanges or substitutions or obligation pool accounting.

4.2.2 Obligation exchanges and substitutions

The exchange of obligations between two batches of qualifying nuclear material or the temporary substitution of a batch of qualifying nuclear material may be approved on a case-by-case basis. During the approval process due consideration will be given to:

a. the justification for the request, e.g., to avoid a physical transport;

b. the equivalence between the batches involved.

The equivalence is based on the quality of the qualifying nuclear material, which includes the element mass for depleted uranium, natural uranium and plutonium, or on the mass of uranium 235 for low and high enriched uranium. For plutonium the energetic ratio is also considered, therefore the isotopic composition of plutonium batches must be declared.

Applications should be submitted to DESNZ and ONR DESNZ as far in advance as possible before the proposed date of obligation exchange. DESNZ and ONR will consider applications and make a joint decision, consulting relevant NCA partners as appropriate. As well as a full background and justification for the code exchange, the following information on qualifying nuclear material located in the United Kingdom and, if applicable, another country, will be required:

- Owner of nuclear material;
- Facility's name where nuclear material is located;
- Material Balance Area (MBA);
- Intended date of obligation exchange;
- Material category;
- Element weight (and isotope weight, if applicable);
- Physical form;
- Chemical form;
- Assay/Enrichment (min, max);
- Isotopic composition (where relevant);
- Batch ID;
- Number of items (where relevant);
- End Use;
- Third country obligations, (if applicable); and
- State (Fresh/Irradiated/Waste).

Annex 1 - UK's international Nuclear Cooperation Agreements

The UK has NCAs with the following States or international bodies listed in 2.2 of this guidance.

The coverage of the eleven NCAs are set out below for reference. **Please note that they are illustrative table and the relevant NCA must be reviewed separately.**

UK-Australia NCA

The Agreement, done on **21 August 2018**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Australia on Cooperation in the Peaceful Uses of Nuclear Energy (the UK-Australia NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means any "source material" or "special fissionable material" as those terms are defined in Article XX of the Statute of the IAEA done on 26 October 1956.
Non-Nuclear Material	Means deuterium and heavy water and nuclear grade graphite listed in Annex B of IAEA document INFCIRC/254/Part 1.
Equipment	Means those items listed in Annex B of IAEA document INFCIRC/254/Part 1, (except Non-Nuclear Material).
Components	Means a component part of equipment or other item, so determined by the Parties in writing through diplomatic channels.
Technology	Has the meaning provided in the Agency document INFCIRC/254/ Rev.13/Part 1.

UK-Canada NCA

The Agreement, done on **2 November 2018**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Canada for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-Canada NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means any “source material” or “special fissionable material” as those terms are defined in Article XX of the Statute of the IAEA done on 26 October 1956
Non-Nuclear Material	Means deuterium and heavy water and nuclear grade graphite listed in Annex B of IAEA document INFCIRC/254/Part 1.
Tritium	Means compounds and mixtures which contain tritium in which the ratio of tritium to hydrogen by atoms is greater than 1 part per 1000.
Equipment	Means those items listed in Annex B of IAEA document INFCIRC/254/Part 1 (except Non-Nuclear Material).
Tritium Related Equipment	Means equipment, plants or facilities for the production, recovery, extraction, concentration, handling or storage of tritium.
Technology	Means technical data, software, or technical assistance that the supplier Party has designated, prior to transfer, as being relevant in terms of non-proliferation and important for the design, production, operation or maintenance of equipment or tritium related equipment for the processing of nuclear material, non-nuclear material, or tritium.

UK-China NCA

The Agreement, done on **3 June 1985**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the People's Republic of China for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-China NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear & Non-Nuclear Material[3]	Means nuclear material (i.e., source material and special fissionable material), fuel, moderators and other substances so designated by the agreement of the two Governments.
Equipment	Means major items of machinery, instrumentation, plant, or major components thereof, especially suitable for use in a nuclear energy programme.
Fuel	Means any substance, or combination of substances, which is pre-pared for use in a reactor for the purpose of initiating and maintaining a self-supporting fission chain reaction.
Facilities	Means reactors, critical facilities, conversion plants, fabrications plans, reprocessing plants, isotopes separation plants or separate storage installation.

UK-Euratom NCA

The Agreement, done on 24 December 2020, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Euratom for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-Euratom NCA).

The Agreement may apply to the items specified below:

[3] The UK-China NCA defines both Nuclear and Non-Nuclear material within one definition under 'Material'. Please refer to NCA for further guidance.

Items	Definition
Nuclear Material	Means any “source material” or “special fissionable material” as those terms are defined in Article XX of the Statute of the IAEA done at the Headquarters of the United Nations on 23 October 1956.
Non-Nuclear Material	Has the meaning set out in NSG Annex B.
Equipment	Means those items listed in sections 1, 3, 4, 5, 6 and 7 of NSG Annex B.
Technology	Has the meaning set out in Annex A of the Guidelines for Nuclear Transfers.

UK-India NCA

The Agreement, done on **13 November 2015**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of India for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-India NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means any "source material" or "special fissionable material" as those terms are defined in Article XX of the Statute of the IAEA.
Non-Nuclear Material	Means heavy water, nuclear grade graphite for use in a nuclear reactor, or any other material suitable for use in a reactor to slow down high velocity neutrons and increase the likelihood of further fission, as may be jointly designated by the appropriate authorities of the Parties.
Equipment	Means any equipment in nuclear operation including reactor, reactor pressure vessel, reactor fuel charging and discharging equipment, reactor control rods, reactor pressure tubes, reactor primary coolant pumps, zirconium

	tubing, heat exchangers, equipment for fuel fabrication, neutron detectors, external thermal shields, and any other item so designated by agreement of the Parties through an exchange of diplomatic notes.
Components	Means a constituent part of equipment, or any other item, as designated by agreement of the Parties through an exchange of diplomatic notes.
Technology	Means specific information necessary for the development, production or use of nuclear material, non-nuclear material, equipment, or components except for basic scientific research and of information that is lawfully in the public domain.

UK-Japan NCA

The Agreement, done on **25 February 1998**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of Japan for Cooperation in the peaceful uses of nuclear energy (the UK-Japan NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means (i) Source Material and (ii) Special Fissionable Material as defined in the UK-Japan NCA
Non-Nuclear Material[4]	Means substances listed in Part B of Annex A of the UK-Japan NCA but does not include nuclear material.
Equipment	Means major parts of machinery, plant or instrumentation or major components thereof, specified in Annex A of the agreement.

[4] Please note this is defined as ‘Material’ in the UK-Japan NCA. Please refer to the NCA for further guidance.

UK-Jordan NCA

The Agreement, done on **22 June 2009**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Hashemite Kingdom of Jordan for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-Jordan NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means any “source material” or “special fissionable material” as those terms are defined in Article XX of the Statute of the IAEA.
Non-Nuclear Material	Means any non-nuclear material listed in Annex B Paragraph 2 of IAEA document INFCIRC/254/Part 1.
Derived Items	Means material, equipment and technology derived or obtained from transferred nuclear material, material, equipment, and technology.
Derived Nuclear Material	means all successive generations of nuclear material recovered or obtained as products or as by-products from nuclear material transferred under this Agreement.
Equipment	Means those items which are not material for the purposes of this Agreement, listed in Annex B of IAEA document INFCIRC/254/Part 1.
Components	Means a component part of equipment or other item, so determined by the Parties in writing through diplomatic channels.
Technology	Has the meaning provided in Annex A of IAEA document INFCIRC/254/Part 1.

UK-Republic of Korea NCA

The Agreement, done on **27 November 1991**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Republic of Korea for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-ROK NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Please refer to NSG guidelines (See 1.1 & 1.2 of Annex A).
Non-Nuclear Material[5]	Please refer to the NSG guidelines (See 2.1 & 2.2 of Annex A).
Equipment	Please refer to NSG guidelines (See 1.1 to 1.7 of Annex B).
Technology	Not defined in NCA.

UK-Russia NCA

The Agreement, done on **3 September 1996**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Russian Federation on Cooperation in the Peaceful Uses of Nuclear Energy (the UK-Russia NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Not defined in NCA.

[5] Please note this is defined as 'Material' in the UK-Republic of Korea NCA. Please refer to the NCA for further guidance.

Non-Nuclear Material	Not defined in NCA.
Equipment	Not defined in NCA.
Technology	Not defined in NCA.

UK-UAE NCA

The Agreement, done on **25 November 2010**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the United Arab Emirates for Cooperation in the Peaceful Uses of Nuclear Energy (the UK-UAE NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means any “source material” or “special fissionable material” as defined in Article XX of the Statute of the IAEA.
Non-Nuclear Material[6]	Means any non-nuclear material listed in Annex B Paragraph 2 of IAEA document INFCIRC/254/Rev.9/Part1.
Derived Nuclear Material	Means all successive generations of nuclear material recovered or obtained as products or as by-products from nuclear material transferred under this Agreement.
Equipment	Means those items listed in Annex B of IAEA document INFCIRC/254/Rev.9/Part 1, excluding material as defined in sub-paragraph (1)(h) of this Article.

[6] Please note this is defined as ‘Material’ in the UK-UAE NCA. Please refer to the NCA for further guidance.

Derived Items	Means material, equipment and technology derived or obtained from nuclear material, material, equipment, and technology, transferred under this Agreement.
Technology	Has the meaning provided in Annex A of IAEA document INFCIRC/254/Rev.9/Part 1.

UK-US NCA

The Agreement, done on **4 May 2018**, between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the United States of America for Cooperation in Peaceful Uses of Nuclear Energy (the UK-US NCA).

The Agreement may apply to the items specified below:

Items	Definition
Nuclear Material	Means any “source material” or “special fissionable material” as defined in Article XX of the Statute of the IAEA done on 26 October 1956.
Non-Nuclear Material	Means heavy water or nuclear-grade graphite for nuclear use, or any other such material so designated.
By-Product Material	Means any radioactive material (except special fissionable material) yielded in or made radioactive by exposure to the radiation incident to the process of producing or utilizing special fissionable material. (Designed to cover Tritium derived from nuclear material subject to the agreement).
Equipment	Means any reactor as a complete unit (other than one designed or used primarily to produce plutonium or uranium-233), reactor pressure vessel, reactor calandria, complete reactor control rod drive system, reactor primary coolant pump, on-line reactor fuel charging and discharging machine or any other item so designated.
Components	Means a component part of equipment or another item so designated.

Sensitive Nuclear Facilities	Means any facility designed or used primarily for uranium enrichment, reprocessing of irradiated nuclear material, heavy water production, or fabrication of nuclear fuel containing plutonium.
Major Critical Components	Means any part or group of parts essential in the operation of a sensitive nuclear facility.
Sensitive Nuclear Technology	Means any information, including information incorporated in equipment or a key component, which is not in the public domain and is important to the design, construction, fabrication, operation, or maintenance of any sensitive nuclear facility, or any other such information that may be so designated.

Annex II – Material / Items subject to the UK's Nuclear Cooperation Agreements

*This is an illustrative table, please refer to the relevant NCA separately

Nuclear-related Items	UK's Nuclear Cooperation Agreements										
	Australia	Canada	China	Euratom	India	Japan	Jordan	RoK	Russia	UAE	US
Nuclear material[7]	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Non-nuclear material	✓	✓	✓	✓	✓	✓	✓	✓			✓
Facilities			✓								
Equipment	✓	✓	✓	✓	✓	✓		✓		✓	✓
Fuel			✓								
Sensitive Nuclear Technology											✓
Derived items							✓			✓	
Derived nuclear material							✓			✓	
Components	✓				✓		✓				✓
Technology	✓	✓		✓	✓		✓			✓	
Sensitive Nuclear Facilities											✓
Major Critical Components											✓
Tritium related equipment		✓									✓
Tritium		✓									

[7] Please note this can also be defined as 'Material' in certain NCAs. Please refer to specific NCA for further guidance.

Annex III – Glossary

DESNZ – The Department for Energy Security and Net Zero

Euratom – European Atomic Energy Community

GTGA – Government to Government Assurance

HMG – Her Majesty's Government

IAEA – International Atomic Energy Agency

MBA – Material Balance Area

NCA – Nuclear Cooperation Agreement

ONR –Office for Nuclear Regulation

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