



OFFICIAL

ONR GUIDE			
<b>SAFEGUARDS TECHNICAL ASSESSMENT GUIDANCE</b>			
<b>Document Type:</b>	Technical Assessment Guide		
<b>Unique Document ID and Revision No:</b>	SG-TAST-GD-001 Revision 3		
<b>Date Issued:</b>	January 2021	<b>Review Date:</b>	January 2023
<b>Prepared by:</b>	A. Cross H. Chalmers	Safeguards Inspector	
<b>Approved by:</b>	M. Beaman	Safeguards Professional Lead	
<b>Record Reference:</b>	CM9 Folder 1.1.3.940 (2020/321658)		
<b>Revision commentary:</b>	<p>a) Incorporates comments from operator community following sharing of draft versions in March 2020 (Revision 1) and September 2020 (Revision 2)</p> <p>b) Incorporates comments from ONR Safeguards inspector use of the draft version in trial assessment activities throughout the UK SSAC Project</p>		

**TABLE OF CONTENTS**

1. INTRODUCTION .....	2
2. PURPOSE AND SCOPE .....	2
3. RELATIONSHIP TO RELEVANT LEGISLATION.....	3
4. RELATIONSHIP TO ONMACS AND INTERNATIONAL OBLIGATIONS AND STANDARDS.....	4
5. ADVICE TO INSPECTORS .....	4
6. REFERENCES .....	7
7. GLOSSARY AND ABBREVIATIONS .....	7
APPENDICES .....	9
APPENDIX 1: BASIC TECHNICAL CHARACTERISTICS (BTC) ASSESSMENT .....	9
APPENDIX 2: ASSESSMENT OF NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL PLANS (ACP'S).....	15

## OFFICIAL

### 1. INTRODUCTION

- 1.1 The Office for Nuclear Regulation (ONR) is the independent regulator of nuclear safety and conventional health and safety on nuclear sites, civil nuclear security in civil nuclear premises, civil radioactive material transport and nuclear safeguards across the United Kingdom.
- 1.2 Guidance in the form of Technical Assessment Guides (TAG) is derived from ONR's role as the regulator to guide regulatory judgements and recommendations when undertaking safeguards assessments of particular operator submissions; these include nuclear material Accountancy and Control Plans (ACPs) and Basic Technical Characteristics (BTC) submissions.
- 1.3 Underpinning the requirement for these submissions, and ONR's role in their regulation, are the legal duties placed on organisations subject to the Nuclear Safeguards (EU Exit) Regulations 2019 (hereafter referred to as NSR19) [Ref. I].

### 2. PURPOSE AND SCOPE

- 2.1 This TAG contains guidance to advise and inform ONR safeguards inspectors in the exercise of their regulatory judgement during general assessment activities. Additional detail in relation to specific submissions can be found in the appendices of this document.
- 2.2 Assessment of submissions is a fundamental and major component of ONR's work. It is appropriate therefore to consider how this should be undertaken, in order to:
  - ensure assessment work is appropriately comprehensive and proportionate;
  - maximise the effectiveness of available effort; and
  - promote consistency in the standard of assessment.
- 2.3 TAGs are not a prescriptive set of legal requirements or operator guidance and should not be referred to as such. However, as they are based on openly available national and international advice, they may be used as a source of guidance or good practice when advising operators.

OFFICIAL

**OFFICIAL****3. RELATIONSHIP TO RELEVANT LEGISLATION**

- 3.1 Operators are required under NSR19 to make a number of submissions to the ONR. These are listed below:

<b>Regulation</b>	<b>Submission</b>
3	Declaration of Basic Technical Characteristics of a qualifying nuclear facility, using the relevant questionnaire in Part 1 of Schedule 1
4	Annual Outline Programme of Activities using the information described in Part 8 of Schedule 1
7, 8	Accountancy and Control Plan
12	Accounting Reports
13	Initial Book inventory using format in Part 4 of Schedule 1
14	Inventory Change report format set out in Part 2 of Schedule 1.
15	MBR and PIL using Part 3 of Schedule 1
16	Special report if Reg 17 or Reg 23 events occur
21	Notification of Export
22	Notification of Import
24	Change of dates related to Reg 21 and 22
30	Transfers of conditioned waste using form set out in Part 9 or part 10 of Schedule 1
31	Application to become Qualifying nuclear facility with limited operation
32	Exemption from NSR19
33	Withdrawal of materials from civil activities

- 3.2 This guidance specifically covers Regulations 3, 4, 7 and 8 (those highlighted) as the submissions from these have substantial written components that require an inspector's judgement to determine if (a) they are compliant with NSR19 and (b) that, where applicable, they are adequate for submission to the IAEA in line with the timelines in the Subsidiary Arrangements to the VOA.
- 3.3 Assessment against Regulations 7 and 8 for SHNM whilst of a wide variation are anticipated to be of lower complexity and reduced size than for the major holders of qualifying nuclear material thus this is covered by a standard HOW2 process (SHNM inspection & assessment of ACP's & BTC's).
- 3.4 Regulation 16 may fall under this guidance if the specific cause of the special report relates to a relevant assessable submission.
- 3.5 This guidance does not cover Regulations 31 and 32. The submissions from Regulation 31 also have written components that require an inspector's judgement and decision to determine that (a) they are compliant with NSR19 and (b) that the operator is in sufficient compliance for the request to be agreed to. The assessment and decision making is more straightforward and captured in a specific HOW2 process (SHNM Reg. 31 Reduced Regulation).

**OFFICIAL**

**OFFICIAL**

- 3.6 Regulations 12-15, 21 and 22 are covered by ONR safeguards accountancy activities which, being data focussed, have an independent approach from the written submissions.
- 3.7 The submissions covered by this guidance contain both prescriptive and outcome focussed components and whilst NSR19 does not call directly for assessment ONR may choose to determine via assessment if they meet the expectations related to that submission in terms of correctness, completeness and adequacy.

**4. RELATIONSHIP TO ONMACS AND INTERNATIONAL OBLIGATIONS AND STANDARDS**

- 4.1 The ONR Guidance for Nuclear Material Accountancy Control & Safeguards (ONMACS) [Ref. II] sets out the ONR expectations pertaining to operators' Nuclear Material Accountancy, Control and Safeguards (NMACS) systems and provides the essential foundation for outcome focussed regulation.

This guidance aligns those expectations with the details of the operator submissions and, where necessary, provides the inspector with additional guidance regarding the completeness and adequacy of responses to prescriptive requirements of NSR19, e.g. the responses to a Schedule 1 questionnaire.

- 4.2 Under the Subsidiary Arrangements to the UK / IAEA Safeguards Agreement (known as the Voluntary Offer Agreement (VOA)) [Ref. III], ONR is obliged<sup>1</sup> to send to the IAEA (Agency) all submissions against Regulation 3, 4, 12-16, 21, 22, 24 and 33 for those facilities subject to the VOA and in line with the timescales set out in those subsidiary arrangements..
- 4.3 With particular relevance to this guidance, submission to the IAEA of the BTC required under Regulation 3 is an obligation for facilities subject to the VOA and assists the IAEA in defining their safeguards approach with respect to that facility and thus it is important to ensure that it is complete, correct and adequate.<sup>2</sup>

**5. ADVICE TO INSPECTORS**

- 5.1 Assessment is the act of making a judgment by the consideration of relevant evidence. The purpose of assessment is to allow ONR to reach an independent and informed judgment on the adequacy of an operator's submission. Assessment is used to inform ONR whether the operator is, or will be, compliant with relevant legislation.
- 5.2 The scope of an assessment can vary considerably, from a full formal technical assessment (detailed and deep dive) to a strategic level light assessment (shallow cross-cutting review). The scope of the assessment, any sampling strategy and the resulting regulatory judgements are determined by the inspector and decisions should be recorded, typically in an assessment report. An ONR assessment report can take many forms, proportionate to the assessment scope. Details on the types and selection of Assessment Report (AR) can be found in ONR guidance on the production of reports [Ref. IV].

---

<sup>1</sup> The duty on ONR to do this is also specified in Reg 42 of NSR19.

<sup>2</sup> Schedule 4 of NSR19 sets out transitional provisions, including that operators can confirm extant BTCs are up-to-date at commencement rather than resubmit wholesale. Submissions of BTCs to the IAEA in lieu of design information is a function of the Subsidiary Arrangements to the VOA and how they will be implemented.

**OFFICIAL**

**OFFICIAL**

- 5.3 When performing an assessment, the Safeguards Inspector should refer to the ONR guidance on assessment for inspectors the Mechanics of Assessment [Ref. V]. This guidance details the approach to the assessment, which is simplified here:
- a. Adequacy of Information supplied by the Operator - consider the presentation of this information and the quality of the submission prior to commencing assessment. Factors to consider include is it comprehensive, coherent, accurate, adequately structured and consistent?
  - b. Sampling - Judgement is necessary both in deciding whether to assess a particular submission at all and in the degree of sampling that should be allocated if it is assessed. However, whatever submissions and samples are assessed, it is important always to apply sufficient rigour to arrive at defensible judgements. It is seldom possible or necessary to assess a submission in its entirety. In general, the inspector should undertake a broad review of the highest level claims and arguments and then undertake the majority of sampling in areas of high significance, since weaknesses in these areas are potentially serious.
  - c. Undertaking Assessment - When carrying out assessment of operator's submissions ONR inspectors should avoid passive reading of the submission. To provide independence and active assessment of the submission the inspector should initially consider their expectations, without reading (much of) the documentation to identify relevant good practice and expectations for topics that should be considered and addressed by the submission.
  - d. Queries during the Assessment Process - During the assessment queries will arise which will require clarification from the operator. How this additional assurance is recorded is important for the traceability and reference within the assessment report.
  - e. Interfaces with other assessments - The inspector should, where relevant, ensure that interfaces between different specialist assessments do not lead to gaps. This is particularly the case where specialists in other ONR purposes are also using similar information for assessment.
  - f. Areas of Regulatory Concern - Where areas of regulatory concern are identified, it may be necessary to raise regulatory issues so that the operator develops and delivers a suitable action plan. Further information on the management of regulatory issues is provided in [Ref. VI].
  - g. Actual plant condition compared to documented claims - It should be borne in mind that there may be a difference between the implied claims in the submission paperwork and the actual plant configuration or condition. As the relationship between the plant and the associated submission is not always as rigid as might be assumed, the justification, sometimes representing a claimed state or expectation, may not be fully attained in practice. Appropriate measures should be taken to verify or otherwise test the claims made, preferably by inspection. Inspection in support of assessment should be against specific rather than general plant features.
  - h. Judging adequacy - It is the responsibility of the inspector carrying out the assessment to judge when and if a submission is adequate. Although it can be assumed that the operator believes a submission to be adequate, the inspector must have in mind a clear and independent image of what adequacy means, must be able to recognise when it has been achieved and be able to defend that judgement if challenged by the operator.

**OFFICIAL**

**OFFICIAL**

- 5.4 For guidance on the assessment of BTC submissions refer to Appendix 1.
- 5.5 For guidance on assessment of ACP submissions refer to Appendix 2.

**OFFICIAL**

**OFFICIAL****6. REFERENCES**

- I. [THE NUCLEAR SAFEGUARDS \(EU EXIT\) REGULATIONS 2019](#)
- II. ONR GUIDANCE OF NUCLEAR MATERIAL ACCOUNTANCY, CONTROL & SAFEGUARDS (ONMACS)
- III. [SUBSIDIARY ARRANGEMENTS MADE UNDER THE UK-IAEA VOLUNTARY OFFER AGREEMENT](#)
- IV. ONR GUIDANCE ON THE PRODUCTION OF REPORTS - NS-PER-GD-015
- V. ONR GUIDANCE ON THE MECHANICS OF ASSESSMENT - NS-TAST-GD-096
- VI. ONR GUIDANCE ON MANAGEMENT OF REGULATORY ISSUES - ONR-RI-GD-003
- VII. ONR GUIDANCE ON NUCLEAR SAFEGUARDS INSPECTION
- VIII. DEPARTMENT OF TRADE AND INDUSTRY - DEFINITION OF ESSENTIAL EQUIPMENT FOR FACILITY OPERATION - AN OPERATOR'S PERSPECTIVE
- IX. [IAEA INTERNATIONAL TARGET VALUES 2010 FOR MEASUREMENT UNCERTAINTIES IN SAFEGUARDING NUCLEAR MATERIALS](#)
- X. [THE NATIONAL OCCUPATIONAL STANDARDS FOR NUCLEAR MATERIAL ACCOUNTANCY AND SAFEGUARDS](#)
- XI. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) STANDARDS - ISO17025 and ISO10012 – Specific to internationally recognised measurement control arrangements.
- XII. [INTERNATIONAL ORGANISATION OF LEGAL METROLOGY \(OIML\) RECOMMENDATIONS](#)

**7. GLOSSARY AND ABBREVIATIONS**

ACP	Accountancy and Control Plan
AR	Assessment Report
BTC	Basic Technical Characteristics
CNSS	Civil Nuclear Security & Safeguards (Office for Nuclear Regulation)
FA	Facility Attachment
IAEA	International Atomic Energy Agency
NCA	Nuclear Co-operation Agreements
NMAC	Nuclear Material Accountancy & Control
NSR19	The Nuclear Safeguards (EU Exit) Regulations 2019
OIML	International Organisation of Legal Metrology
ONMACS	ONR Guidance on Nuclear Material Accountancy, Control & Safeguards
ONR	Office for Nuclear Regulation
PSP	Particular Safeguards Provisions

**OFFICIAL**

**OFFICIAL**

QNF	Qualifying Nuclear Facility
QNM	Qualifying Nuclear Material
RAACP	Regulatory Assessment of ACPs
SHNM	Small Holders of Nuclear Material
SQEP	Suitably Qualified and Experienced Person
TAG	Technical Assessment Guide
VOA	Voluntary Offer Agreement

**OFFICIAL**

**OFFICIAL****APPENDIX 1: BASIC TECHNICAL CHARACTERISTICS (BTC) ASSESSMENT****1. PURPOSE AND SCOPE**

1. This annex provides guidance for safeguards inspectors in the assessment of an operator's declared Basic Technical Characteristics (BTC) for a particular qualifying nuclear facility (QNF). The purpose of that assessment is to establish the completeness, correctness and adequacy of that declaration to comply with NSR19 [Ref. I] and meet, where necessary, international obligations. A BTC should provide the inspector with enough information to design a proportionate and targeted intervention approach for the facility in question.
2. This guidance facilitates a consistent approach to the assessment of BTCs submitted under NSR19 against the ONR's expectations based on relevant good practice. Operators must declare a BTC, or a change to a BTC, using the form provided<sup>3</sup> and within that form declare certain prescriptive information. There are areas where the operator is free to use their own methodologies to supply the required information. These areas require the inspector to make a judgement whether the information is clear, complete, correct and adequate to meet the requirements of NSR19 and international obligations.
3. The scope and purpose of activities to be performed by ONR inspectors during assessment of BTC are described including defining the scope of any BTC assessment and the expectations against which the inspector should assess the declaration.

**2. RELATIONSHIP TO RELEVANT LEGISLATION**

4. The term 'operator' in this guidance is defined in NSR19 as "a person or undertaking setting up, operating, closing down or decommissioning a qualifying nuclear facility for the production, processing, storage, handling, disposal or other use of qualifying nuclear material".
5. NSR19 requires the operator to produce a BTC document for each QNF using the relevant questionnaire in Part 1 of schedule 1 of NSR19. Relevant regulations include regs 3 (1-5), 5(1), 5(4).
6. BTCs are used to describe safeguards-relevant design information on nuclear installations.
7. There are eight classes of facility:
  - Reactors
  - Critical and zero energy installations
  - Qualifying nuclear facilities where conversion, fabrication and reprocessing are carried out
  - QNF that are used for storage
  - QNF where isotopes are separated
  - QNF using qualifying material in quantities in excess of 1 effective kilogram
  - QNF for the treatment and storage of waste
  - Other QNF or a QNF with limited operation

---

<sup>3</sup> NSR19 SCHEDULE 1, PART 1 'Questionnaire for the declaration of the Basic Technical Characteristics of a Qualifying Nuclear Facility'.

**OFFICIAL**

**OFFICIAL**

8. Each type of facility has a BTC questionnaire requiring information at proportionate levels of detail to:
  - Identify the date of issue/revision.
  - Identify the facility - including the operator and location of the facility and types of material the operator manages there and generally the description of the installation, the form, quantity, location and flow of nuclear material being used, the layout of the installation, containment features.
  - Describe the Accountancy and Control - in terms of the procedures for Nuclear Material Accountancy, Control & Safeguards (NMAC&S) including procedures for physical inventory taking and organisational arrangements for accountancy and control of qualifying nuclear material.
9. ONR uses the information to ensure that operators comply adequately with NSR19 and, where identified on the designated facilities list and selected by the IAEA, allow the IAEA to develop and prepare the safeguards approach for the installation.
10. Under Regulation 3 (3) an Operator must inform ONR of the changes to a BTC and although there is no requirement to resubmit that BTC it is an ONR expectation that the operator will submit the revised BTC with that change highlighted.
11. Regulation 3 (5) allows the ONR to request in writing any further details, explanations, amplifications or clarifications of any information required for regulatory purposes which the operator must then supply.
12. For new QNFs under Regulation 3(4) the Operator must declare BTCs at a number of design and construction stages:
  - Preliminary - as soon as the decision to construct has been taken;
  - Final design – not later than 200 days prior to the commencement of construction;
  - As built - not later than 200 days prior to receipt of the first qualifying nuclear material.
13. Submissions of these declarations and those supplied throughout the lifecycle of the facility should be considered for assessment on the same basis for the BTCs of operating facilities.
14. Additional advice related to assessment and inspection of the BTCs supplied throughout the lifecycle of the facility may be found in the related appendix of the Nuclear Safeguards Technical Inspection Guide. (Ref. VII)

**3. ADVICE TO INSPECTORS**

15. Inspectors should assess compliance by comparing the BTC declaration against the prescriptive requirements in NSR19 and then assess the adequacy of the declaration information for the non-prescriptive aspects against the expectations set down in ONMACS, e.g. description of use, description of accountancy system.
16. Where the inspector considers the assessed BTC declaration adequately complies with NSR19, including meeting the expectations and the legal timescales on which we must submit BTCs on behalf of the UK to the IAEA, the inspector should, where appropriate, arrange submission to the IAEA via the agreed route.

**OFFICIAL**

**OFFICIAL**

17. All activities related to the assessment of a BTC should be captured by the inspector in an appropriate document as guided by reference IV. That document should include their justification as to why the submitted BTC meets the requirements.
18. Where non-compliance is identified from the assessment the AR should state the inspector's judgment on the degree of non-compliance and proposed regulatory action which may include advice to the operator on how to achieve compliance.
19. The assessment of a BTC involves activities carried out by ONR to determine that the operator has provided all relevant descriptive and technical information required by NSR19 and that this information is kept up to date and supplied to the ONR at the intervals required by NSR19.
20. Inspectors may wish to use the document review dates and intelligence from other NMACS information available to ONR concerning the relevant facility to judge whether this information is up to date.
21. Inspectors should consider other relevant documents available to ONR to inform the assessment such as the Facility Attachment (FA), ACP's or any Particular Safeguards Provisions (PSPs) made under regulation 5 when amendments are made to the BTC. As well as the requirements within Nuclear Co-operation Agreements (NCAs) in relation to those aspects of the operator accountancy and control system required by NSR19 Reg 6 that concern NCA obligations.
22. BTC assessment is an evaluation of the content and adequacy of design and operating information contained in the BTC. Assessment of the information included in a BTC should support the development of preparations for BTC inspection activities (where confirmation of the information within the BTC would take place), as well as the wider safeguards regulatory approach.
23. The inspector should establish any pre-existing ONR regulatory approaches at a particular facility, and should utilise an integrated approach that aligns the needs of all ONR purposes.
24. Inspectors may, as part of the BTC review, consider whether an ONR Particular Safeguards Provision (PSP) may be necessary for the facility as described in Regulation 5.
25. ONR inspectors should utilise their assessment of the BTC to inform the production of a list of 'Essential Equipment' for the facility (important items of equipment, systems and structures necessary for the declared operation of a facility, Ref. VIII). This can be used to help inform ONR's approach to regulating compliance with NSR19, which will include confirming that a facility has been decommissioned for safeguards purposes.

**BTC assessment**

26. The breadth and depth of BTC assessment shall be established by the inspector and proportionate to the degree of prescriptive review required to meet NSR19. The following scoping factors may be taken into account in determining whether the BTC for a facility subject to the VOA meets the requirements and must be sent onto the IAEA within the defined timescales:
  - the level of confidence ONR has in the operator's system which includes the arrangements to produce and keep BTCs up to date;
  - the quality and completeness of the information presented;
  - the type of QNF and its operational status;
  - the category, quantity, and use of Qualifying Nuclear Material (QNM);

**OFFICIAL**

## OFFICIAL

- the degree of change since the previous review; and
  - recent events, incidents or operating experience, safeguards-specific and otherwise at the QNF, or similar facilities.
27. BTC submissions should consist of a correct (for the facility type) and completed questionnaire which contains information that is proportionate and appropriate for the facility.
28. Prior to the commencement of the assessment the Safeguards Inspector should set out, around the defined questionnaire for that facility class, proportionate expectations for the information required to support:
- assurance that the operator understands and manages the NMACS challenge;
  - the ONR or, where appropriate, the Agency to plan a compliance / safeguards Inspection.
29. These expectations should be derived from the information below and the ONMACS.

### **Regulatory Expectations - Prescriptive Requirements**

30. The inspector should determine the following during assessment:
- a) The correct questionnaire from Schedule 1 of NSR19 has been utilised, as described in Regulation 3(1).
  - b) The information is complete with regards to the Questionnaire in Schedule 1 of NSR19.
  - c) All specific legal information has been correctly and adequately provided e.g. owner, Operator, location.
  - d) Any BTC submissions or changes to BTC that have been made are in line with the timeliness requirements of Regulation (3) of NSR19, as well as those of any FA, PSPs, or relevant international agreements.
  - e) That, in compliance with Regulation 8, amendments of a BTC that relate to the Accountancy and Control Plan (ACP) are captured in the subsequent amendment of the ACP and vice-versa.
  - f) Whether any further details, explanations, amplifications or clarifications of any information are required from what is declared in the Schedule 1 questionnaire.
  - g) Whether all of the requirements within a PSP and / or FA have been complied with (as identified in this appendix).

### **Regulatory Expectations - Non-Prescriptive / Free text**

31. The BTC should:
- a) Be structured logically (in line with the requirements of the class within the questionnaires in Schedule 1 of NSR19).
  - b) Meet the needs of those who will use it (e.g. operators, maintenance staff, technical staff, managers accountable for safeguards, ONR and the Agency).
  - c) Use terms and descriptions that are understandable to the key users, where possible utilising standard safeguards terminology and otherwise clarify/explain novel terminology.
  - d) Be clearly owned by both those who are accountable for compliance with NSR19 and those who rely on the BTC for accurate and objective information on accountancy and control measures to make informed decisions.

## OFFICIAL

**OFFICIAL**

- e) Define the envelope of the facility's BTC including, where reasonable and necessary:
- the expected nuclear material routes and their locations within the facility including where nuclear material can be held and declared;
  - the accountancy points at which transfer of nuclear material custody occurs including those that will be the basis for recording the location and transfers of material;
  - methods for determining the quantity of nuclear material transferred including where possible relevant evidence for the definition of these methods.
- f) Provide sufficient proportionate information on the facility to demonstrate that the operator understands and manages the NMACS challenge and enable the ONR to determine its approach to regulating compliance with NSR19 including planning for inspections. This includes:
- geographical location
  - numbers of buildings
  - design intent and current purpose or use<sup>4</sup>
  - current lifecycle stage and status of operation
  - managerial structure including responsibilities
  - quantities and state of Qualifying Nuclear Material (QNM), i.e. amounts, physical state, containers types and numbers
  - inventory locations
  - other containment requirements
  - reference to supporting information and its location.
- g) Present the Operator accountancy arrangements to be used for both Operator and ONR reporting purposes which should proportionately and where appropriate include:
- QNM flow and inventory measurement points
  - Attainment of the accurate and precise accountancy and control of QNM as set down in the IAEA International Target Values 2010 for Measurement Uncertainties in Safeguarding Nuclear Materials [Ref. IX]
  - operator safeguards equipment & measures used to ensure the completeness of flow measurements appropriate for the QNF.

32. The BTC does not have to hold all of this information in one document. However, it should have adequate linkage to direct the user to that information in a reasonable timescale that demonstrates the BTC is a live document. Additional guidance in this respect is included in ONMACS (e.g. FSE9).

**Re-review of BTC**


---

<sup>4</sup> In common with other areas of regulation surrounding the management of radioactive materials the term 'use' includes storage as storage is both an activity and particularly for radioactive materials requires actions to deliver it

**OFFICIAL**

**OFFICIAL**

33. BTCs should be re-assessed throughout the lifetime of a facility (according to the lifecycle phases defined in ONMACS) in order to maintain assurance.

**OFFICIAL**

**OFFICIAL****APPENDIX 2: ASSESSMENT OF NUCLEAR MATERIAL ACCOUNTANCY AND CONTROL PLANS (ACP'S)****1. PURPOSE AND SCOPE**

1. The Nuclear Safeguards (EU Exit) Regulations 2019 (hereafter 'NSR19') [Ref. I] requires operators of qualifying nuclear facilities to maintain a system of accountancy and control of the relevant qualifying nuclear material (QNM) in each qualifying nuclear facility (QNF). The components of that system are set out in NSR19, Schedule 2 and operators will be required to implement the relevant components in a manner which is proportionate to and appropriate for the QNF.
2. NSR19 requires operators to produce an accountancy and control plan (ACP), which sets out their system of accountancy and control. This ACP shall describe in writing the arrangements and procedures adopted or to be adopted by the operator to establish and maintain that system. The purpose of an ACP is to signpost, underpin and explain how NMACS is being implemented in a manner that is proportionate and appropriate for the QNF. A functional ACP helps relevant stakeholders understand the arrangements and procedures that deliver Nuclear Material Accountancy, Control and Safeguards (NMACS) at a QNF.
3. ONR Safeguards Inspectors may assess ACPs to reach an independent and informed regulatory judgement on whether the ACP adequately describes an NMACS system in compliance with the requirements of NSR19 and ONR's expectations in this regard. This appendix provides guidance for safeguards inspectors on ONR's regulatory expectations for an adequate ACP and provides a framework for inspectors to draw proportionate, targeted, and consistent regulatory judgements regarding the adequacy of an ACP.
4. This appendix also provides a transparent explanation of ONR's regulatory expectations for an ACP that may inform engagement between operators and ONR during the production of an ACP and prior to any assessment of that ACP.
5. This appendix does not provide prescriptive requirements for the content and structure of an ACP but describes the function of an ACP, and outcomes an ACP should deliver in order to achieve that function. It is expected that operators will understand their NMACS arrangements and procedures sufficiently well to describe them in whichever way best delivers a functional ACP in a proportionate and targeted manner.
6. This appendix does not provide guidance for safeguards inspectors in the assessment of the NMACS arrangements and procedures ("NMACS assessment") described in an ACP. The ONR Guidance for Nuclear Material Accountancy Control & Safeguards (ONMACS) [Ref. II] sets out the ONR expectations pertaining to operators' NMACS systems, and is the foundation for drawing judgements regarding the adequacy of NMACS arrangements and procedures described in an ACP.

**2. RELATIONSHIP TO RELEVANT LEGISLATION**

7. Regulation 6 of the NSR19 requires an operator to "maintain a system of accountancy and control of the relevant qualifying nuclear material in each qualifying nuclear facility". The operator is also required to implement the components of that system (set out in Schedule 2 of NSR19) "in a manner which is proportionate to and appropriate for" the QNF. This document does not provide guidance on making judgements against these regulatory requirements. Guidance on this topic is provided for in ONMACS.

**OFFICIAL**

**OFFICIAL**

8. Regulation 7 requires an operator to “produce an accountancy and control plan which sets out the accounting and control system for the qualifying nuclear material in that facility”. It also requires that an ACP “describe in writing the arrangements and procedures adopted or to be adopted by an operator to establish and maintain the system of accountancy and control of qualifying nuclear material as required by regulation 6” (above). Regulation 9 requires that “an operator must implement and comply with the arrangements and procedures described in the accountancy and control plan.” This document provides guidance on making judgements against these regulatory requirements.
9. Regulations 7, 8, and 9 make further requirements regarding the timely submission of ACPs, the replacement and amendment of ACPs, and the timely submission of any replacement or amended ACPs. In particular, operators of existing qualifying nuclear facilities shall submit ACPs to ONR by 31<sup>st</sup> January 2021.<sup>5</sup> Operators of QNFs that come into existence after 31<sup>st</sup> January 2021 shall submit ACPs to ONR as soon as possible, and not later than 200 days prior to the first receipt of QNM at the facility. These requirements do not require any further explanation and this document does not provide guidance on making judgements against these requirements.
10. Regulation 7 allows ONR to approve an ACP or parts thereof. Where ONR has approved an ACP or parts thereof, regulation 8 requires operators to receive prior written consent before amending any parts of an approved ACP. ACPs or parts thereof shall only be approved where an assessment of the arrangements and procedures in question indicate that approval is a necessary and proportionate step to assuring adequate NMACS is maintained. Such circumstances are expected to be rare. In such circumstances, approval shall be recommended by the safeguards inspector in their Assessment Report and agreed by the safeguards Professional Lead.

**3. RELATIONSHIP TO ONMACS AND OTHER GUIDANCE**

11. As stated above, the purpose of an ACP is to signpost, underpin and explain how NMACS is being implemented in a manner that is proportionate and appropriate for the QNF. While ONR’s expectations pertaining to NMACS are set out in the ONMACS, an ACP does not have to mirror or match the structure of ONMACS to fulfil its purpose.
12. The assessment of an ACP shall be targeted, and any judgements made through assessment shall be proportionate to the QNF in question, in alignment with the ONR Safeguards Sub-Division Inspection and Assessment Strategy. ONR shall take a sampling approach to ACP assessment, and may or may not assess all submitted ACPs or parts thereof. The targeting of any assessment sample may be guided by the ONMACS.
13. The assessment of an ACP may inform the targeting of other regulatory activities carried out by ONR (such as ONR inspection efforts or BTC assessment) and be included in planning future safeguards interventions. For example, where assessment of a submitted ACP identifies arrangements and procedures that are inadequately signposted or described, further assessment or inspection effort may be targeted to determine that those arrangements and procedures in use by the operator are meeting NMACS expectations adequately.

---

<sup>5</sup> ONR has determined that it will align its approach to the submission of ACPs for SHNMs with the intent of the transitional provisions for NSR19. SHNMs will be required to submit an ACP to ONR by 31 January 2022 or earlier if they apply for the reduced reporting as provided for in Regulation 31 of NSR19.

**OFFICIAL**

**OFFICIAL****4. ADVICE TO INSPECTORS**

14. The NSR19 do not place prescriptive requirements on operators regarding the structure, format, and content of an ACP. Inspectors shall judge the adequacy of an ACP against the following **Unifying Purpose Statement**:

‘The purpose of an ACP is to signpost, underpin and explain how NMACS is being implemented in a manner that is proportionate and appropriate for the QNF. A functional ACP should ensure relevant stakeholders capture and understand the arrangements and procedures that deliver Nuclear Material Accountancy, Control and Safeguards (NMACS) at a QNF.’

15. An ACP may be a single document or a collation of a series of documents, as long as it fulfils this Unifying Purpose Statement. This statement can be expanded into six interrelated expectations on the Regulatory Assessment of ACPs (RAACPs) that collectively represent ONR’s view on an adequate ACP. These expectations are:

- RAACP 1: Scope
- RAACP 2: Functionality
- RAACP 3: Content
- RAACP 4: Ownership
- RAACP 5: Expertise
- RAACP 6: Maintenance

16. These expectations should be applied in a proportionate and targeted manner. It is seldom proportionate or necessary to assess an ACP in its entirety, and sampling should be used to target the areas that need to be scrutinised and manage the total effort to be applied. Those areas of an ACP not assessed through sampling may be inspected during routine inspection activity or through other assessment activities (including such as BTC or NMACS arrangements). Assessing a well-targeted sample to suitable depth can be expected to reveal any broader or generic weaknesses in the ACP as a whole.

17. ACP assessment should be targeted to those aspects of the RAACP expectations that reflect defined regulatory requirements, and are most significant in the delivery of the Unifying Purpose Statement. Where ACP assessment reveals shortfalls against the RAACP expectations, the ONR’s Safeguards Inspector response should be proportionate to the impact that shortfall has on the delivery of the Unifying Purpose Statement.

18. To record and manage identified shortfalls, the ONR Safeguards Inspector should look to influence operators primarily within the timescales of the assessment and record the finding and resolution in the assessment report. For shortfalls that do not prevent the delivery of the Unifying Purpose Statement and cannot be closed out prior to the completion of the assessment, the Inspector should record any recommendations for follow-up assessment or inspection in the assessment report. For shortfalls which prevent the delivery of the Unifying Purpose Statement and cannot be closed out prior to the completion of the assessment, the Inspector should use the Management of Regulatory Issues [Ref. VI] guidance. The regulatory issue should be managed appropriately by the Inspector raising it and within the sub-division governance expectations.

**OFFICIAL**

**OFFICIAL**

19. The Inspector should approach ACP assessment with a clear understanding of the QNF and its use of QNM, informed, in part, by assessment of the relevant BTC. This understanding should not be used to create prescriptive expectations for the form or structure of the ACP, but should inform a proportionate interpretation of the expectations below.
20. The inspector may not find all the information required to assess an ACP or part thereof in the ACP submission itself. Where an inspector cannot draw judgements regarding the adequacy of an ACP against an RAACP expectation, the inspector should identify that gap to the operator and provide the operator with the opportunity to address it. The inspector should draw on all objective, impartial, and relevant information submitted by the operator for assessment, including any information referenced by those submissions. Where an operator fails to address any gaps in information, an inspector should draw an impartial judgement on the adequacy of the ACP through objective information identified by or incorporated into the ACP submission, rather than by assumption or prior knowledge. Generic guidance for assessment is available in the Mechanics of Assessment [Ref. V], which is summarised in Section 5.3 of the main body of the Technical Assessment Guide.
21. The process of assessment, including the assessment of ACPs and the NMACS arrangements described therein, is captured in How2. This process provides references to other relevant guidance including the production and peer review of Assessment Reports.

**RAACP 1: Scope**

22. The operator shall maintain a system of accountancy and control of all relevant QNM in each QNF. The scope of an ACP shall therefore describe arrangements and procedures for NMACS of all relevant QNM, including retained waste, conditioned waste, and ores. The ACP may be a single document or a collation of a series of documents as long as its scope incorporates all relevant QNM in all relevant qualifying nuclear facilities.
23. An operator's system of accountancy and control shall include the additional obligations set out in regulation 19 of the NSR19. The scope of an ACP shall therefore reflect arrangements and procedures for accounting for obligations placed on QNM by Nuclear Cooperation Agreements (NCAs), including arrangements and procedures for tracking NCA obligations when obligated QNM is physically mixed with other QNM.
24. The scope of an ACP shall reflect all relevant components of an accountancy and control system set out in Schedule 2 of the NSR19. The structure of the ACP does not have to align with Schedule 2 of the NSR19 or ONR's expectations for these components (in ONMACS, ref. II). However, an operator and an inspector should be able to use the ACP to understand how all relevant components are being implemented, and why any components that are not implemented are not relevant to the QNF.
25. The scope of an ACP should recognise and reflect all arrangements and procedures that are necessary to implement the relevant components of Schedule 2 of the NSR19 in a proportionate and appropriate manner, including those that are not primarily or predominantly implemented to deliver NMACS. For example, an operator may recognise and reflect any relevant license condition compliance arrangements or security arrangements that contribute to or underpin NMACS.
26. An operator shall amend an ACP in response to a relevant change in the Basic Technical Characteristics (BTCs) of the facility. The scope of an ACP should therefore recognise and reflect facility life-cycle stages, including any recent or impending transitions from

**OFFICIAL**

**OFFICIAL**

one stage to another. The ACP for any lifecycle stage should build on the ACP for previous stages.

**RAACP 2: Functionality**

27. The ACP should present a coherent and well-structured explanation of how NMACS is carried out, that is accessible and understandable to both the operator and to ONR.
28. The ACP should take into account the needs of those that will use the ACP to deliver appropriate and proportionate NMACS at a QNF. This includes operational technicians, nuclear material custodians, nuclear material accountants, technical personnel, managers, and all other staff who hold responsibilities for maintaining NMACS.
29. The ACP should be integrated into an operator's existing arrangements and document management systems such that the ACP and any written arrangements described therein can be accessed appropriately. The ACP should be recognised by broader operator strategies and policies as a functional document that supports the delivery of NMACS. The terminology and structure of the ACP should be recognisable and understandable to those that will use it.
30. The ACP should present clear and robust arguments regarding the implementation of NMACS, supported with reference to information that is relevant, objective, and accessible. All arguments and supporting information should be presented in a logical structure, using terminology that is understandable and facilitates independent, informed, and impartial judgements regarding the implementation of NMACS (including through NMACS assessment)

**RAACP 3: Content**

31. The ACP should identify all information that is necessary and sufficient to support its explanation of NMACS and facilitate independent, informed, and impartial judgements regarding the implementation of NMACS. The breadth and depth of supporting information should be proportionate to the quantity and use of QNM in question.
32. The ACP should present supporting information to a proportionate level of detail that clearly and efficiently signposts ONR Safeguards Inspectors towards accessible evidence to inform their judgement. For example, where one aspect of a broader package of information demonstrates the implementation of NMACS, that aspect should be identified and accessible to ONR. The ACP should support and guide the resolution of questions or queries regarding the implementation of NMACS that may arise during inspection or assessment.
33. The ACP should not identify supporting information to a disproportionate level of detail that obscures the information that is sufficient to support the explanation of NMACS and that makes the production, use and on-going maintenance of the ACP unmanageable.
34. The ACP should recognise appropriate benchmarks, standards, and relevant good practice for NMACS including, for example, the International Target Values 2010 for Measurement Uncertainties in Safeguarding Nuclear Materials [Ref. IX]; the National Occupational Standards for Nuclear Material Accountancy and Safeguards [Ref. X] ; International Organization for Standardization (ISO) standards [Ref.XI]; and International Organization of Legal Metrology (OIML) Recommendations [Ref. XII].
35. The ACP should recognise uncertainties and limitations in nuclear material accountancy and control that are inherent in the QNM or QNF in question. The ACP should present

**OFFICIAL**

**OFFICIAL**

supporting information that demonstrates that appropriate caution and mitigations have been put in place to manage these uncertainties and limitations.

**RAACP 4: Ownership**

36. The ACP should be owned by those accountable for complying with NSR19 and ONR's expectations for NMACS. The ownership of the ACP should contribute to fulfilling its purpose by providing suitable visibility, awareness, and understanding of NMACS to those that are responsible for compliance with the NSR19 and those that make decisions impacting NMACS.
37. The ownership of the ACP should also contribute to fulfilling its purpose by integrating the ACP into relevant management arrangements at an appropriate level, providing access to suitable expertise and facilitating its maintenance (as described below).
38. The ownership of the ACP, and the responsibilities that come with ownership, should be recognised by the operator and clearly demonstrated through the ACP submission and the management arrangements it is integrated into. Any amendment to the ownership of the ACP should be recognised within the operator's organisation and its processes.

**RAACP 5: Expertise**

39. The operator should draw on suitably qualified and experienced personnel (SQEP) to develop and maintain an ACP that reflects the range of QNM at the QNF and its various uses. The ACP should draw on the expertise of those that will use the ACP, including those that implement NMACS on a daily basis and those that may draw on the ACP for more strategic or managerial purposes.
40. The ACP should recognise expertise outside the operator, including industry groups, professional organisations, and relevant good practice.
41. The ACP should be subject to appropriate Quality Management Systems, including by any internal independent assurance functions that may exist, reflecting its ownership (above).

**RAACP 6: Maintenance**

42. An operator shall amend their ACP in response to a relevant change in the BTCs of the facility in question. Relevant changes may include those relating to:
  - The capacity, throughput, category, form, and use of QNM;
  - The lifecycle stage or status of the QNF;
  - The flow of QNM through a QNF;
  - The description of the accountancy and control system (including methods for operator's physical inventory taking); and
  - The description of measurement, measurement quality control, and analytical methods for accounting the flow of QNM through a QNF;
43. Other factors that should inform the review of an ACP include:
  - Changes to the quantity, category, and use of QNM;
  - Changes arising from accountancy, control, safeguards, safety or security events, operating experience, and examination or testing results
  - Changes to relevant good practice, relevant international standards (including International Target Values), or other new information arising from external sources;

**OFFICIAL**

## OFFICIAL

- The outcome of periodic reviews of NMACS arrangements and procedures;
  - Changes due to plant or facility ageing.
44. The operator shall implement and comply with the arrangements and procedures described in the ACP, and shall amend the ACP where necessary to properly reflect the arrangements and procedures being implemented. Where ONR has approved an ACP or parts thereof, and operator shall maintain those arrangements and procedures and shall seek written consent from the ONR to alter those arrangements and procedures.
45. The ACP is a dynamic document (or set of documents) and should be reviewed periodically on a defined basis to maintain its validity, quality, and correctness. These reviews should be overseen by the appropriate owner, informed by the appropriate expertise and any operational experience gained since the previous review.

OFFICIAL