



North Sea
Transition
Authority

Guidance for Carbon Storage Commissioning Plans

Contents

Introduction	3
Scope and purpose of guidance	4
Requirement for the content of Commissioning Plans	5
Further requirements for the content of Commissioning Plans	7
Retention of information	9

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Introduction

The Oil and Gas Authority ('OGA') is now operating as the North Sea Transition Authority ('NSTA') and will be referred to as the NSTA in this document. The OGA remains the legal name of the company, and all licences and other legal documentation will continue to refer to the OGA.

The NSTA is the licensing authority for carbon dioxide storage in an offshore UK controlled place or English controlled place (as set out in the Energy Act 2008¹), granting Carbon Dioxide Appraisal and Storage Licences ('CS Licence') and storage permits.

Anyone who wishes to explore for or use a geological feature for the long-term storage of carbon dioxide in a UK offshore area must hold a CS Licence, pursuant to section 18 of the Energy Act 2008, issued by the NSTA. A storage permit may be applied for and is required for the storage of carbon dioxide in a storage site with a view to its permanent containment during the operational phase of the CS Licence. A CS Licence is required to apply for a storage permit.

A storage permit may require that the Operator submits a Commissioning Plan to the NSTA for review prior to the injection of carbon dioxide into the storage site. 'Commissioning' in this document is taken to describe activities undertaken during the "Execute Phase"² of the Operational Term³ of the CS Licence following the completion of most of the construction of the overall project, to ensure that all relevant systems are functioning as expected and that, under the proposed conditions of use, there is no significant risk of leakage of carbon dioxide.

¹ Energy Act 2008 (legislation.gov.uk)

² Figure 1, [Guidance on the Application for a Carbon Dioxide Appraisal and Storage Licence](#)

³ Defined in the CS Licence

Scope and purpose of guidance

This document ('guidance') describes the expectations of the NSTA regarding the content of Commissioning Plans and suggests ways that any related specific requirements given in a storage permit might be addressed. The NSTA considers that a Commissioning Plan provides a useful tool for its stewardship during the development of a carbon storage project and the content of a Plan will be examined with that objective in mind.

The Storage of Carbon Dioxide (Licensing etc.) Regulations 2010 (SI 2010/2221) (the "2010 Regulations") contains provisions relating, amongst other things, to the application and grant of a storage permit. The 2010 Regulations define a storage site by reference to Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 (the "Directive") and includes the associated surface and injection facilities⁴ in addition to the defined part of a geological formation. The NSTA considers that the associated surface and injection facilities are local to the storage site and do not include the transport network as defined in the Directive, which may for example treat or compress the carbon dioxide onshore and transport it from shore to the storage site. Nonetheless the NSTA expects that the commissioning of the transport network would be covered by the Commissioning Plan to the extent that it influences the

commissioning of the storage site. Interface arrangements should be described in 'unbundled' situations where, for example, the storage site and the transport network are being developed separately.

A storage permit may also require the submission of other plans to the NSTA for review prior to the injection of carbon dioxide into the storage site, including a Storage Site Management Plan and a Metering and Measurement Plan (as required under and defined in the storage permit). The contents of a Commissioning Plan should be consistent with the contents of other plans where relevant.

This guidance sets out the NSTA's expectations for a Commissioning Plan and is not intended as a prescriptive list of requirements. This guidance is not a substitute for any regulation or law and is not legal advice. It does not have binding legal effect. Where the NSTA departs from the approach set out in this guidance, the NSTA will endeavour to explain this in writing to the person seeking a decision from the NSTA.

The guidance will be kept under review and amended as appropriate. If the NSTA changes its guidance in a material way, it will publish a revised document.

⁴ Paragraph 3 of Article 3 of Directive 2009/31/EC

Requirement for the content of Commissioning Plans

Any specific requirements for a Commissioning Plan set out in a storage permit should be addressed in the relevant Commissioning Plan, regardless of whether any guidance on related expectations is given in this document.

A Commissioning Plan should set out the procedure(s) and schedule for commissioning the carbon dioxide storage operations in an efficient and timely manner. The storage permit will set out specific requirements but the Operator should consider including the following:

- a. details of the sources of carbon dioxide;
- b. procedures for the commencement of operations;
- c. carbon dioxide Equation of State and system design, each as set out in the Carbon Storage Development Plan ('CSDP').

The following sections give guidance about how requirements (a) to (c) can be addressed in the Commissioning Plan.

Various documents connected with commissioning activities will also be prepared in support of the Carbon Dioxide Transport and Storage Licence granted under the Energy Act 2023 ('Economic Licence'). Re-use of, or reference to, material from these documents may be utilised in the Commissioning Plan submitted to the NSTA, in the interests of avoiding duplication,

provided that any referenced documents can be supplied to the NSTA on request.

Details of the sources of carbon dioxide

The sources of carbon dioxide that are to be used for commissioning should be described, including any sequencing and build-up of available supplies from emitter facilities and uncertainties about when such supplies will be available. It is expected that these supplies will be consistent with those described in the CSDP that will have been submitted as part of the storage permit application and referred to in the storage permit.

Where other supplies of carbon dioxide are to be used for commissioning, these should be described in detail including sufficient information to confirm that the gas composition will meet the specification required by the permit.

Procedures for the commencement of operations

The objective of this requirement is to give an overview of the various stages of commissioning, covering the key steps in the process and the dependencies between the stages, e.g. what conditions need to be met before the next stage can commence including the degree of physical completion. This should describe the fluids within relevant parts of the system before carbon dioxide is introduced. This should also include confirmation of the metering and

measurement⁵ arrangements that need to be in place before carbon dioxide can be first introduced into the storage site.

In support of this objective, the procedure for the commissioning of each system and sub-system should be summarised, including a reference to document(s) describing the detailed process which will need to be provided to the NSTA on request. The summaries should include the criteria for successful completion and the means of verifying that success. The summaries should also describe any contingency arrangements that have been put in place to deal with unexpected events or outcomes.

The stage at which commissioning is considered to formally commence may vary across different projects. Where significant commissioning activities have already started or been completed before submission of the Commissioning Plan, these activities should be referenced and any major issues encountered should be described.

The summaries of the commissioning procedure of each system and sub-system described above should also include any significant differences in practices to those normally adopted for petroleum developments and the reasons for such differences. It is acknowledged that different practices may be appropriate for new-build projects compared to those that involve the re-use of existing infrastructure.

Schedule for the commencement of operations

A bar chart schedule should be provided showing the planned process for all systems

and sub-systems, consistent with the summaries and dependencies described in the previous section.

The timescale for the submission of a Commissioning Plan to the NSTA is likely to be described in the storage permit as a set period (e.g. no later than 6 months) prior to the commencement of injection of carbon dioxide into the storage site. Noting that the storage site is taken to include associated surface and injection facilities, commencement of injection is therefore likely to occur when carbon dioxide first enters those facilities. The Commissioning Plan can be submitted earlier than the minimum set period.

Commencement of injection is different to the Commercial Operation Date (often referred to as “COD”) described in the Economic Licence; the latter will occur after the commencement of injection and after a period of ‘end-to-end’ operation of the overall system.

Carbon Dioxide Equation of State and system design

This information should be summarised in line with that given in the CSDP, including any refinement or improved understanding that has been developed subsequently during detailed design and construction. This should include a description of any changes in gas phase that are expected to occur within the system as commissioning progresses.

The information should also be consistent with the input and assumptions used in any Storage Site Management Plan.

⁵ See Metering and Measurement Guidance

Further requirements for the content of Commissioning Plans

Unless otherwise set out in the storage permit, the guidance in the following sections should be used when drawing up a Commissioning Plan.

Management arrangements

The Commissioning Plan should give a summary of the management and governance arrangements associated with the commissioning activities. It is expected that these would include:

- The main parties (including external contractors) involved;
- How contractors are supervised and managed;
- Arrangements for monitoring and audit of commissioning;
- Assessing readiness to start commissioning and handover once complete, and;
- Management of change when issues do arise.

Well commissioning

The Commissioning Plan should cover the activities that operators will follow to safely bring a carbon storage injection well into service. Commissioning should begin only

after mechanical completion of the well and receipt of all regulatory approvals. The process should focus on verifying well integrity and barrier performance, establishing baseline conditions, confirming injectivity and pressure limits, and safely introducing carbon dioxide into the storage formation.

Successful commissioning should demonstrate that the well can operate within approved limits with continuous monitoring and effective shut-in capability before handover to routine operations.

Emissions during commissioning

The Commissioning Plan should summarise the measures that have been identified and assessed for minimising emissions and explain which of these measures have been/ will be implemented.

The Operator must not (and must not permit any other person to) extract (which includes release) carbon dioxide into the atmosphere from the transport network (as defined in the relevant Pipeline Works Authorisation(s)), or from the storage site except with the prior written consent of the OGA and in accordance with any conditions subject to which consent is given⁶.

⁶ Included in the CS Licence pursuant to Paragraph 5 of Schedule 1 to The Storage of Carbon Dioxide (Licensing etc.) Regulations 2010

Reporting

It is expected that the Commissioning Plan will include a commitment to provide commissioning progress reports to the NSTA on a monthly basis until the commencement of injection. The reports should describe the activities that have been started and/or completed during each period, any significant unplanned events that have occurred, and any implications for the remaining schedule. This expectation is in addition to reporting requirements in the CS Licence, storage permit or in statute. Changes to the reporting frequency may be agreed with the NSTA.

The regular reports may adopt the same format and frequency as those required during commissioning under the Economic Licence.

Retention of information

Any relevant information gathered during commissioning should be retained in accordance with The Oil and Gas Authority (Carbon Storage) (Retention of Information and Samples) Regulations 2025.

