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Guidance on Practice for Pipeline Commissioning and Handover to Operations

GP 43-47

**BP GROUP
ENGINEERING TECHNICAL PRACTICES**

Foreword

This is the first issue of Engineering Technical Practice (ETP) BP GP 43-47. This Guidance on Practice (GP) is not derived from any heritage documents.

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Introduction

Commissioning of a pipeline system follows the same general principles applied to any other process plant. However, with the geographically dispersed nature of a pipeline and its associated facilities, the diverse range of potential interfaces and interested third parties introduces a number of additional factors that shall be addressed to ensure safe commissioning.



1. Scope

This GP provides guidance on practice for the commissioning of pipelines and their subsequent handover to the operator for ongoing operations.

2. Normative references

The following normative documents contain requirements that, through reference in this text, constitute requirements of this technical practice. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this technical practice are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

BP

GP 32-20	Guidance on Practice for Site Inspection, Testing, and Precommissioning of New Plant.
GP 43-04	Guidance on Practice for QA/QC for Pipeline Projects.
GP 43-06	Guidance on Practice for Responsibilities of a Pipeline Operator.
GP 43-24	Guidance on Practice for GIS and Mapping.
GP 43-46	Guidance on Practice for Pipeline Pressure Testing and Pre-commissioning.
GP 43-49	Guidance on Practice for Pipeline Integrity Management Systems.
GP 43-53	Guidance on Practice for Pipeline Intervention and Repair.
GP 48-01	Guidance on Practice for HSSE Review of Projects.

3. Terms and definitions

For the purposes of this GP, the following terms and definitions apply:

Commissioning

The range of activities after pre-commissioning to allow introduction of hydrocarbon or process fluid and electrical power to prime movers to prepare the pipeline for handover to the pipeline operator to assume normal operations

Commissioning Authority

The single point of authority responsible for managing the commissioning process and handover of the pipeline system to the Operator

Handover

The processes enabling the transfer of responsibility for the pipeline asset from the project team to the pipeline operator to assume ongoing operations

Mechanical Completion

The status of the pipeline system and associated mechanical, electrical, control, and instrumentation systems at completion of pre-commissioning activities

Operator

The organisation assigned the role described in GP 43-06 that is normally responsible for leading the management of pipeline commissioning



Pre-commissioning

The range of activities (as described in GP 43-46) carried out by the project team to demonstrate the completion status and structural integrity of the pipeline before introduction of hydrocarbon or process fluid

Project

The organisation tasked with constructing and delivering the pre-commissioned pipeline asset ready for commissioning

4. Symbols and abbreviations

For the purpose of this GP, the following symbols and abbreviations apply:

CVP	Capital Value Process
ESIA	Environmental and Social Impact Assessment
gHSSer	Getting Health, Safety, Security, and Environment Right
ILI	In line inspection
ROV	Remotely operated vehicle
SCADA	Supervisory control and data acquisition
QA	Quality Assurance
QC	Quality Control

5. Commissioning scope

- a. The commissioning and handover process addressed by this document shall only commence on successful completion of the range of activities described in GP 43-46 and successful completion of a pre-commissioning PHSSER review in accordance with GP 48-01.
- b. Pipeline pre-commissioning and commissioning activities shall be carried out and documented in accordance with GP 32-20.

This confirms the pipeline and associated systems can be operated as defined in the overall operations and maintenance philosophy and in accordance with gHSSer and Process safety and integrity management (PSIM) functional standard.

- c. Commissioning and handover of a pipeline system shall include, but not be limited to the following:
 1. Filling of the pipeline with hydrocarbon or process fluid.
 2. Verifying the integrity and correct functioning of mechanical components including, valves, valve actuators, flanges, pumps, pig trap end closures, etc.
 3. Verifying the integrity and correct functioning of electrical components and power supplies including motors, switchgear, transformers, etc.
 4. Verifying the integrity and correct functioning of offshore and subsea components of the pipeline system.
 5. Calibration and functional verification of instrumentation.



6. Verification of the correct functioning of control systems and instrumentation including the SCADA system, data communications system, local control facilities, plant protective devices, and shutdown systems, etc.
7. Verification of flow measurement system accuracy.
8. Testing of hydraulic performance to verify pipeline design capacity and throughput requirements can be achieved.
9. Verification through reliability runs that downtime and availability requirements can be achieved.
10. Verification of compliance with environmental discharge targets including but not limited to noise levels, interceptor outfall water quality, CO₂ emissions, erosion control measures, etc.
11. Verification of compliance with ESIA commitments.
12. Functional testing of leak detection systems to confirm that sensitivity targets are achieved.
13. Assumption of responsibility by the Operator for management of the pipeline corridor (e.g. bio-restoration, outstanding reinstatement, administration of landowner/occupier agreements, liaison with fishing authorities, government, and local authorities etc.).

6. Commissioning planning

6.1. General

- a. Planning for commissioning shall be considered throughout a pipeline project lifecycle from early conceptual work (CVP Appraise/Select phases) through detailed design (CVP Define/Execute phases) to ensure that necessary permanent and temporary facilities are incorporated to facilitate safe and efficient commissioning.

Key areas to address during the design phase are:

- *Temporary connections for product fill and inert gas venting at above ground facilities.*
- *Facilities and approved plans for disposal of residual hydro test water or product water interface.*
- *Availability of vents and drains for first fill.*
- *Availability of temporary sample points.*
- *Facilities for collection and disposal of cleaning run debris.*
- *Facilities for treatment or disposal of contaminated fluid.*
- *Temporary pigging facilities and equipment as may be necessary.*

- b. The commissioning planning process shall be carried out in close cooperation with and involvement of the pipeline operator.
- c. The planning process shall deliver a comprehensive commissioning and handover plan covering as a minimum the following key areas.
 1. Overall management plan, procedures, and schedule for commissioning activities.
 2. Detailed man-power plan including definitions of roles and responsibilities.
 3. Regulatory and Permit to Operate (PTO) considerations.
 4. Detailed procedures for functional verification of the various parts of the facilities.
 5. Detailed procedures for filling the pipeline with fluid.

