

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 1/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

1.0 PURPOSE

This guideline describes the best practices for commissioning. Prior to commissioning, the scale and complexity of the project should be considered. This will determine how detailed the commissioning documentation must be, and which documents will best serve those needs.

2.0 REFERENCE DOCUMENTATION

The following documents were used in the development of this document or are related to it. The most recent revision shall be used.

NAV-TP-0306	Commissioning & Handover – Planning Checklist
NAV-TP-0033	Commissioning Checklist
NAV-TP-0187	Commissioning Plan Template
NAV-TP-0067	Commissioning Manual Template
NAV-TP-0019	Process Hazards Review (PHR) Template
NAV-TP-0072	PHR Guideline – FEL / Construction / Commissioning
NAV-GP-0064	Customer Verification & Acceptance Guideline
NAV-TP-0064	Customer Verification & Acceptance Template
NAV-GP-0070	Project Navigator RACI (Functional Role Desc tab)
NAV-TP-0011	Project Closeout Checklist
NAV-TP-0185	Deficiency List Template

Please also refer to any applicable OEM Manuals, Engineering Design documents, and other information applicable to the specific commissioning activities being done.

3.0 APPLICATION

Commissioning activities are required for most projects, along with formal commissioning documentation. The extent of that documentation is at the Project Manager's discretion.

In most cases, a Commissioning Checklist and Commissioning PHR will be required at a minimum. A Commissioning Plan or Manual may also be required.

<h1>Project Navigator</h1>				Guideline			
COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 2/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

3.1 EXCEPTIONS:

Formal commissioning and documentation is not required if the project includes only:

- Purchase of Capital Spares with no installation work
- Low-risk civil / structural construction with no mechanical / electrical installation, and no process material containment (e.g. access platforms, landscaping, etc...)

4.0 CONTEXT

There are several distinct steps to ensure effective commissioning and handover of equipment / systems to Plant personnel. Preparations for these activities must begin well before the completion of fieldwork, in most cases.

This usually includes the following steps:

- Planning for Commissioning and Handover
- Pre-commissioning
- Commissioning
- Equipment / System Handover
- Start-up

Commissioning and Handover **Planning** involves preparatory work by the Project Team to ensure appropriate resources will be available for subsequent steps. This is typically required well before engineering or construction is completed.

Pre-commissioning involves confirming that individual pieces of equipment or system components function as intended.

Commissioning includes confirming that all equipment / systems related to the project operate as designed and that all interfaces with other operating systems / equipment function as intended.

Upon **Handover**, the Project Team officially transfers “care, custody and control” of the equipment / systems to Plant personnel. This includes providing all Plant stakeholders with the required information for ongoing operation and maintenance of the equipment / systems. Refer to the “Customer Verification and Acceptance Guideline” (NAV-GP-0064) for further details.

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 3/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

Start – up involves introducing process materials to the equipment / systems and verifying that all process design parameters have been met and that planned production can be achieved.

5.0 COMMISSIONING TEAM

The Commissioning Team must include representatives from the Project Team, Operations, Maintenance, and Maintenance Systems. The team may also require input from other stakeholder groups such as IT, Process Technology, Learning & Development, etc...

The team may be led by a representative from any of the groups involved, or (more rarely) by a third-party consultant. All team members must actively participate in the planning and execution of commissioning activities to ensure safe and effective startup of the equipment / systems and ensure the long-term operation of those items.

5.1 COMMISSIONING TEAM LEADER

- Organizes and schedules commissioning activities.
- Confirms that the commissioning strategy is appropriate for the work, and that the appropriate personnel are involved.
- Ensures that the Commissioning PHR effectively identifies hazards and the appropriate controls for commissioning activities, and that all PHR Action Items are completed.
- Ensures that all commissioning activities are completed and signed off.
- Ensures that all commissioning documentation is provided to the appropriate parties.

5.2 OPERATIONS REPRESENTATIVE:

- Participates actively in Commissioning & Handover planning and execution.
- Attends the Commissioning PHR.
- Provides personnel from the Operations Dept to support commissioning activities, as needed.

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 4/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

- Confirms that process parameters are met.
- Ensures that relevant Operational Readiness requirements are met, such as preparing Operating Procedures, etc...
- Signs the Customer Verification and Acceptance form(s) on behalf of the Plant, after auditing the work sites and documentation.

5.3 MAINTENANCE REPRESENTATIVE:

- Participates actively in Commissioning & Handover planning and execution.
- Attends the Commissioning PHR.
- Provides personnel from the Maintenance Dept to support commissioning activities, as needed.
- Ensures that relevant Operational Readiness requirements are met, such as preparing Maintenance Procedures, etc...
- Signs the Customer Verification and Acceptance form(s) on behalf of the Plant after auditing the work sites and documentation.

5.4 MAINTENANCE SYSTEMS REPRESENTATIVE:

- Participates actively in Commissioning & Handover planning and execution.
- Attends the Commissioning PHR, as needed.
- Provides personnel from the Maintenance Systems Group to support commissioning activities, as needed.
- Ensures that relevant Operational Readiness requirements are met, such as preparing Maintenance Plans, registering Parts Lists from the project team, etc...

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 5/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

6.0 COMMISSIONING DOCUMENTS

6.1 COMMISSIONING & HANDOVER - PLANNING CHECKLIST

A review of the Classification questions within the Commissioning & Handover Planning Checklist (NAV-TP-0306) will help determine the documentation required.

7.0 PROJECT CHARTER & EXECUTION PLAN (COMMISSIONING SECTION)

At a minimum, all Project Charter and Execution Plan documents must include a brief summary of Commissioning and Handover activities. If that portion of the document is more than a page, consider developing a standalone Commissioning Plan (NAV-TP-0187) document.

7.1 COMMISSIONING CHECKLIST

One or more Commissioning Checklist(s) (NAV-TP-0033) will be required if the project includes:

- Installation / modification of powered equipment (e.g. pump, loading station, conveyor, mobile equipment, etc...)
- Installation / modification of new instrumentation, control system(s), process monitoring system(s), or similar items
- Installation / modification of “pressure boundary” systems or equipment (e.g. pressurized piping, valves, vessels, etc...)
- Other similar changes to Operating Plant equipment / systems that may require testing to confirm that they suit the needs of the Operations.

While planning commissioning and startup activities consider whether one checklist will cover all commissioning items for the equipment / systems involved or whether individual detailed checklists will be required for each. The Navigator template for the Commissioning Checklist should be used for the overall Commissioning Team activities. Individual detailed equipment commissioning tasks may also be included on that document or they may be listed on other documents. Prepare using the OEM Manuals and other documentation as appropriate.

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 6/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

Commissioning may include the following Testing Activities:

- Construction Testing: equipment inspections, piping system pressure testing / leak checks, alignment checks, continuity checks, etc...
- Pre-Operational Equipment Testing: equipment vibration tests, directional rotation checks, instrument calibrations, etc...
- Pre-Operational Systems Testing: pressure / flow testing with fluids, control system tests, set point verification and other checks required while still isolated from the process, where applicable.
- Process Commissioning: all final checks / tests after the process isolations are removed. This may include product testing, impacts on upstream and downstream processes, etc...

The Commissioning Checklist template also includes tabs for the following templates:

- Commissioning Team Contact List
- Schedule of Activities/Responsibility Matrix

7.2 COMMISSIONING PLAN

The purpose of a Commissioning Plan is to outline the strategy, personnel, schedule, responsibilities and risk management for commissioning activities.

7.3 COMMISSIONING MANUAL

A Commissioning Manual (NAV-TP-0067) is also required if procedural documents are needed to complete the commissioning activities (e.g. if the instructions for any given commissioning activity require more than a short conversation).

The Commissioning Team Leader should determine what details are required within the Commissioning Manual in conjunction with the Project Manager. The purpose is to define the detailed equipment-specific / process-specific procedure(s) to commission and start up the equipment / system.

The Commissioning Manual should also describe what Hold Points and/or Abort Conditions that apply to each commissioning task, if any. It is especially important to identify who has the authority to start commissioning tasks, who is authorized to stop the tasks, and under what circumstances.

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 7/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

The Manual should include detailed equipment-specific or process-specific instructions for testing.

This may include:

- Pre-operational equipment/process testing
- Dry/Wet equipment testing
- Point-to-point verification
- Construction testing
- Performance testing

The Commissioning Manual may include or refer to Vale, OEM and other Testing / Start up instructions / procedures.

7.4 START-UP

Start-up can begin once all equipment tests / checks are complete. This is the beginning of the equipment / process coming on-line and interacting with other plant processes. This may involve process commissioning as a final tune-up step to ensure that the equipment functions as intended within the existing environment.

At this point, deficiency list items should be in the process of correction or already complete. Refer to Project Closeout Checklist (NAV-TP-0011) for handover guidelines.

Upon start-up the Operating, Maintenance and Maintenance Systems departments are responsible for the equipment / systems / processes. The Customer Verification and Acceptance form must be completed by this point. The Project Team is responsible to complete all deficiency list items and project handover requirements. The Project Team may also be requested to assist in achieving full functionality of the equipment / systems / processes.

<h1>Project Navigator</h1>				Guideline			
TITLE COMMISSIONING GUIDELINE				VALE # NAV-GP-0033		PAGE 8/8	
				DM # 675331		REV. 2	
Effective Date:	July 16/15	Revisit Date:	July 20	Prepared By:	T.Hirschfeld, G. Mumford, D. Fearn	Approved By:	T.Hirschfeld

8.0 COMMISSIONING PHR

A separate PHR must be done for Commissioning activities.

In most cases, commissioning activities entail the same risks as the construction work completed for the project, in addition to the ongoing operational risks of the equipment / processes, and the additional risks due to specific commissioning tasks being done. For example, verifying that equipment rotation is correct may require operation with the drive system guards removed – this would require special mitigation such as temporary barricading, etc... Accordingly, as per Engineering Standard SPEC-02001, a Commissioning PHR is required whenever commissioning activities are being done.

9.0 APPENDICES

Appendix A: Revision and Transition Notes

Appendix A: Revision and Transition Notes

Revision notes describe: what was changed, why it was changed, and the plan to implement the change, including whether changes are retroactive)

Revision Control Information

Rev #	Date	Nature of Change	Page inserted, replaced, revised or cancelled	Approved by document owner
1	Nov 5/13	Development for Project Navigator		T. Hirschfeld
2	July 16/15	Yearly Review	New Commissioning & Handover Planning Checklist developed. Updated verbiage for clarity.	T.Hirschfeld