

Table of Contents

1.	Purpose	1
2.	Scope	1
3.	References	1
4.	Definitions	1
4.1.	Mechanical Completion	1
5.	Punch Listing Process	2
5.1.	Mechanical Completion Punch list	2
5.2.	Certification by the Designer	3
5.3.	Cold Commissioning Verification	3
5.4.	Hot Commissioning Verification	3
5.5.	Punch list Categories	4
5.6.	Additional Employer Requirements	5
5.7.	Punch List Register Attributes	6
5.8.	Punch Listing Documentation	6
5.9.	Finalisation of Punch List Items	7
6.	Roles and Responsibilities	8
6.1.	Construction	8
6.2.	Supervisors	8
6.3.	Resident Design Engineers	8
6.4.	Contractors	8
6.5.	Equipment Vendor Representatives	8
6.6.	QA/QC Team	9
6.7.	Transnet Port Terminals Commissioning Manager	9
6.8.	Transnet Port Terminals Commissioning Engineers	9
7.	Records	9
8.	Annexure	10

1. Purpose

The purpose of this standard is to establish the requirements for verification and documentation of completed Construction work and to establish the methods for:

1. Preparing a list of open work items on units/modules/systems that have been handed over to Cold Commissioning,
2. Disseminating this information to responsible parties and closing out completed items on the list.

The intent is to have only one integrated Punch List Process for Construction Completion and Commissioning that interfaces with the Client, nominated EPCM Team and Contractor. This master punch list will be held in an electronic database so that punch lists can be generated for any module/system in the plant as required.

2. Scope

This standard is applicable to the process of construction completion leading to handover for Cold Commissioning and Hot Commissioning.

3. References

- NEC 3 Engineering and Construction Contract
- EEAM-Q- 009 - Quality Management
- Occupational Health and Safety Act, Act 85 of 1993 as amended

4. Definitions

4.1. Mechanical Completion

Mechanical Completion is that point where a system or sub-system has been installed, erected and tested in accordance with the job specification and drawings to the extent that Cold Commissioning activities on that particular system can productively and safely begin. This is the demarcation point where ownership of the sub-system/system changes hands from the construction staff to the commissioning team.

5. Punch Listing Process

Prior to Mechanical Completion the *Supervisors* assigned to the various Contracts will work with the Contractor to identify items of work that is deficient and/or incomplete to ensure that the formal Punch List Process is streamlined. The items identified in this manner will not form part of the Punch List but advised to Contractor during the normal Construction Management Processes. The nature of defects during this Punch List Items are likely to be of a physical nature e.g. incomplete work, incorrect work, etc.

During Cold Commissioning, punch items can be added to the Punch List by the Commissioning Team. The Punch List Items during this process is likely to be of a functional nature e.g. belts not running fast enough, pressure not correct, etc.

During Hot Commissioning, further Punch List items could be added. The Punch List Items at this stage should be of a performance nature e.g. not enough tonnage, quality of product not correct, etc.

Defects/Deficiencies identified during the Punch List Process shall be recorded.

5.1. Mechanical Completion Punch list

When in the opinion of the Contractor, the Works or part of the *works* is sufficiently complete to warrant the commencement of Cold Commissioning of such *works*, the Contractor will submit a request for a joint Mechanical Completion Punch list inspection, after having punched the works himself and cleared all Category 'A' Punch list Items. Any additional Category 'A' Punch list items identified by the Transnet Port Terminals team must be rectified before proceeding to the next stage.

Once all Category A Punch List Items have been rectified a Mechanical Completion Certificate will be issued to the Contractor.

For Civil and simple building contracts, the Project Manager will certify Completion at this point and issue a Completion Certificate. The works shall also be taken over by the Employer within 2 weeks of completion and the Project Manager shall certify Take Over.

Note: Mechanical Completion also means Electrical and instrumentation Completion where relevant

5.2. Certification by the Designer

In accordance with the requirements of the Construction Regulation 9.(2)(f), the Designer is required to carry out sufficient inspections at appropriate times to ensure that the works is constructed in accordance with the design. The Designer shall record such inspections. Designers Inspection Record. The Priority for Completion on the Designers Inspection Record must be tailored to suit the structure being inspected. Where the Resident Design Engineer (RDE), represents the design he shall use the same form.

Once the structure being constructed reached the stage of Mechanical Completion, the Designer shall carry out a final inspection and issue a Certificate of Compliance certifying that the structure is safe to commission, (Construction Regulation 9.(2).(h).

5.3. Cold Commissioning Verification

For process type plants such as Bulk Materials Handling Plants, any functional effects/deficiencies identified during Cold Commissioning will be registered in the Deficiency Management Database for rectification and closeout. For simple projects such as Rail Tie-ins, a manual tracking system shall be implemented by the *Supervisor*.

When the Works has been Cold Commissioned, the *Contractor* will submit a request for a joint Cold Commissioning Punch list inspection to verify that all Category 'A' and 'B' punch items are completed and to ensure that damaged plant and equipment are repaired prior to the issue of a Cold Commissioning Certificate.

For all contracts, a Cold Commissioning Completion Certificate must be issued at this point.

5.4. Hot Commissioning Verification

Any functional defects/deficiencies observed during Hot Commissioning will be recorded in the Deficiency Management Database and added to the project punch list for rectification and close out.

As soon as the Contract Works have successfully passed all applicable performance tests in accordance with the conditions of the relevant contract and upon completion of Hot Commissioning, Transnet Port Terminals and the Client verify that all functional defects/deficiencies recorded in the Deficiency Management Database have been investigated, resolved, closed out and have been signed off.

For design, supply and install contracts a Hot Commissioning Completion Certificate will be prepared by Transnet Port Terminals for signature by the Client.

5.5. Punch list Categories

Punch list items will be categorised into Category 'A', 'B' or 'C' punch items using the following criteria:

Category 'A' Punch Items:

Punch Items that affect the health of persons and safety of the Works that must be rectified before equipment can be Safety Cleared prior to the end of Stage 1.

Listed below are examples of items that should be classed as Category 'A' Punch list items.

- Absence of Red Lined As Built" Drawings
- Safety valves/Pressure relief valves not operational
- Open Trenches
- Uncovered / Open Slots
- Floor grating missing
- Grouting outstanding
- Hand railing and Kick Plates missing
- Structural items loose / missing
- Missing or incomplete equipment
- Machine guards missing/Not fitted correctly
- Safety covers missing on Electrical equipment
- Emergency stops/Trip systems not operational
- Safe working procedures not in place
- Safety Warning Signs missing
- Lighting
- Audible warning systems not operational
- Labelling outstanding
- Colour coding outstanding
- Pipe Supports, Gaskets, Bolts, etc. on piping missing or defective
- O&M Manuals

Category 'B' Punch Items:

Punch Items that may be rectified during the Cold Commissioning phase but must be cleared before the issuing of a Cold Commissioning Certificate prior to the end of Stage 2.

Listed below are examples of items that should be classed as category B: Punch list items.

- Red Lined As Built' Drawings
- Permanent labeling not fitted
- Protection and interlocking systems not operational
- Missing/incomplete field instrumentation that supports protection and interlocking systems
- Colour coding not done
- Safe work procedures not in place

Category 'C' Punch Items:

Minor Punch Items that may be rectified during the maintenance / warranty period.

Listed below are examples of items that should be classed as Category C Punch list items.

- Cosmetic items
- Painting (other than colour coding)
- Non-critical documentation

Any Health and Safety requirements identified during Punch listing must be rectified before the issue of a Safety Clearance Certificate.

5.6. Additional Employer Requirements

Additional Employer requirements must be listed and handed to the *Project Manager* for a decision to implement. These items could be logged in the Punch List as Category C items for follow-up and close-out

5.7. Punch List Register Attributes

The Punch list Register will, as a minimum, contain the following information:

- Transnet Port Terminals Management Area
- Description of Equipment
- Drawing Number
- Punch list ref. no.
- Punch list Originator
- Punch item number
- Punch list Date and revision

Plant number where applicable

- Description of defect
- Category 'A', 'B', 'C'
- Defect Type outstanding item, construction defect, design, wish list
- Scheduled date of completion
- Actual completion date
- Responsible Party e.g. Contractor/Transnet Port Terminals

5.8. Punch Listing Documentation

All Punch lists must be registered with the Transnet Port Terminals Quality Manager.

The Quality Manager will log the punch list items into Commissioning Database and issue the compiled list to the Contractor and relevant Transnet Port Terminals Construction Supervisors.

The following requirements are compulsory during commissioning and handover:

Cold Commissioning

1. Punch list (rev 1)
2. Initial Data pack
3. Operating manuals and procedures (rev 1)
4. Data pack
 - 4.1. Test certificates for ropes/twist locks/ spreader
 - 4.2. Operation and maintenance manuals
 - 4.3. Design/drawings
 - 4.4. Quality Control records.
5. Cold Commissioning certificate with punch list items category 1 and 2 complete (signed off by the project manager, maintenance manager, contractor)

Hot Commissioning

6. Certificate of electrical compliance
7. Functional data pack data pack (functional) sppeds/brakes
8. Load test certificates
9. Punch List (rev 2)
10. Signed off operational Handover (signed off by the Project manager,

maintenance manager, and contractor)

Endurance Testing

11. Endurance test report
12. Performance test report
13. Punch list (rev 3) to include planned completion date of all items at this point
14. Provisional Handover (signed off by the project manager, maintenance manager and contractor, operations manager).

Final Handover

(to occur within 30 days after provisional handover)

Final handover will occur 30 days after the provisional handover to operations. At this point, the project manager will ensure that the defects as recorded on the punch list have been completed by the contractor with the provision that operations can provide for the work to be completed. If the equipment has not been handed over to the project team within this period to close off all items then the equipment will be deemed fully handed over to the operations team.

5.9. Finalization of Punch List Items

The Contractor will be responsible to ensure that all Punch list Items are cleared by the agreed date.

Each day, an updated punch list report shall be generated by the Contractor and given to the Supervisors for distribution. Weekly punch list status reports and graphs shall be generated to facilitate the management and completion of the punch effort.

A completion punch report shall be inserted into the Data Pack. This report will indicate any outstanding punch items that shall remain to be completed after handover. No category "A" items will be allowed to carry-over to the commissioning phase of the project.

When items on the punch lists are cleared, the Contractor will ensure that the punch list register is updated to reflect the status of punch list completion. Functional and performance defects and deficiencies identified during the Commissioning and Maintenance phases will be recorded by the Supervisor and handed over to the responsible Contractor for clearance.

All Punch list items, functional defects and deficiencies must be cleared before the issue of a Defects Certificate.

6. Roles and Responsibilities

6.1. Construction

Construction is responsible for the following:

- Identification of Punch List items
- Manage punch list progress on a daily basis to support the construction completion activities
- Issue system walk down notice based on Contractor reported status
- Ensuring that Construction personnel complete assigned Punch List items in a timely manner
- Providing the Commissioning Group with input on any open work items identified by Construction on units/modules/systems turned over to Commissioning

6.2. Supervisors

Construction Supervisors are responsible for the following:

- Facilitate Contractor change and understanding of shift from work package to system completion
- Manage punch list progress on a daily basis to support the construction completion activities
- Issue System Walk-down Notices
- Work with Resident Design Engineers to complete checklist and test reports that support Commissioning activities
- Coordinate Contractor personnel for commissioning activities.

6.3. Resident Design Engineers

Resident Design Engineers represent the "Designer" on Site and with respect to Punch Listing are responsible for the following:

- Participate in construction walk-downs and punch list process
- Assist in establishing system package contents, including drawings, test results, check sheets, supplier information, and other Client required documentation
- Resolve design and material issues caused by punch lists and functional deficiencies
- Resolve non-conformance reports associated with the system
- Participate in the finalization of the Data Packs
- Assume the role of commissioning engineer where no specific commissioning engineer has been appointed.

6.4. Contractors

Contractors are responsible for the following:

- Completion of the works according to the drawings and job specifications and within the time constraints of the project schedules and milestones
- Handing over documentation according to the procedures.
- This includes but is not limited to quality verifying documents, marked up as-built drawings, punch list status, etc.
- Co-operating closely with Transnet Port Terminals to permit an orderly and timely completion of the entire facility
- Co-operating with the Others to facilitate the commissioning effort, especially when system / module boundaries overlap the scope of more than one Contractor

6.5. Equipment Vendor Representatives

Each Vendor Representative is responsible for providing the Commissioning Group with input on

- any open work items identified on Units/Modules/systems handed over to Commissioning.

6.6. QA/QC Team

QA/QC is responsible for the following:

- Ensure Commissioning QCP's are prepared
- Ensure Commissioning Files are prepared and complete and forms part of the Data Packs
- Participate in Punch Listing process
- Coordinate the collection of quality records with Contractor and ensure Data Books are compiled as construction and commissioning work progresses
- Manage the Punch List System
- At approximately the 60% point in construction, pro-actively facilitate the change of project focus from an area approach to a systems approach for completing and handing over the facility

6.7. Transnet Port Terminals Commissioning Manager

The Transnet Port Terminals Commissioning Manager/assigned Commissioning Engineer is responsible for the following:

- Preparing, reviewing, and issuing individual system Punch Lists and Functional Deficiency Lists to the appropriate parties for rectification/resolution
- Maintaining and updating the Deficiency Management Database for process type plants
- Distributing new and updated Module Punch Lists

6.8. Transnet Port Terminals Commissioning Engineers

Each Transnet Port Terminals Commissioning Engineer is responsible for the following on their assigned systems:

- Ensuring that deficiencies and defects identified during Cold and Hot Commissioning are recorded in the Deficiency Management Database
- Expediting completion of all open Punch List and Functional Deficiency Items
- Verifying item completion
- Where no specific Commissioning Engineer has been identified, the Resident Design Engineer assumes that responsibility

7. Records

All records generated are in accordance with the requirements of this procedure and retained in accordance with the requirements of the Procedure Archiving and Retention of Documents and signed over to the Client in accordance with the requirements of procedure. Document Handover to Client.

8. Annexure

Annexure 1 – EEAM - Q - 009 – Quality Management