



PROJECT COMPLETION GUIDELINES

© ENERMEX: Information contained in this document is ENERMEX property and shall be used exclusively for its purpose. The information cannot be either partially or entirely submitted to third parties without prior written approval from the ENERMEX Op Management.

| | | | | |
|-----------|-------------------|---------------|--------------------------------|-----------------|
| Signature | | | | |
| Date | | | | |
| Name | | | | |
| Function | Projects Director | HSEQ Director | Offshore Construction Director | Project Manager |
| | Issued | Checked | Revised | Approved |

1.0 Introduction

The purpose of this document is to provide guidelines for the preparation of documentation and procedures as required for the project, specifically:

- **Mechanical Completion and Commissioning Strategy** **EMEX-XXX-XXX-XXX-XXX**
- **Mechanical Completion Manual** **EMEX-XXX-XXX-XXX-XXX**
- **Commissioning Manual** **EMEX-XXX-XXX-XXX-XXX**
- **Commissioning Procedures** **EMEX-XXX-XXX-XXX-XXX**

All documentation and procedures will be subject to Client Operator approval prior to issue.

Reference Review Matrix Section 7.0

Guidelines for the preparation of Start up Manuals will be issued under a separate procedure.

The following examples provide the minimum required content in the proposed formats. It is recognized that where existing systems and documents exist actual nomenclatures may vary e.g. Mechanical Completion Record (MCR) and Commissioning Completion Record (CCR) are frequently identified in some systems as Inspection Test Record (ITR) and Commissioning Test Record (CTR).

2.0 Project Completion Strategy

2.1 General

An over-view of overall project strategy with regards to Mechanical Completion and Commissioning. This shall define the management process of Completions, such as:

- **Structure and function of the Completion group**
- **Control methods of interfaces (management of Sub Contractors and Suppliers)**
- **Integration of project procedures documentation and scheduling**
- **Quality Assurance of Vendors and Suppliers (Factory Inspection and Acceptance Testing, Site Acceptance)**
- **Co-ordination of activities at different sites**
- **Maximisation of onshore completion**
- **Co-ordination of certification requirements**
- **Hierarchy of Control documents**

3.0 Mechanical Completion Manual

3.1 General

The purpose of this document is to define and organize Mechanical Completion work responsibilities and instructions for execution, administration, monitoring and recording of data throughout the implementation and certification of Mechanical Completion activities up to and including handover to Commissioning.

3.2 Contents

The following describes the minimum content and suggested format of the document.

Introduction

A brief introduction defining the purpose and scope of the document

Abbreviations

A list of abbreviations used.

Reference Documents

A list of applicable reference documents

Definition Of Mechanical Completion

A narrative describing the definition of Mechanical Completion

The Mechanical Completion Process

A narrative providing an overview of the process flow of Mechanical Completion, this should define the application of the Electronic Completion and Tracking system and include the methodology employed from the completion of construction, throughout the testing phase, up to handover to Commissioning.

All interfaces, procedures and responsibilities should be defined and controlling documents identified.

A flow diagram depicting the Mechanical Completion process shall be included in document.

The Mechanical Completion Record (MCR)

A narrative describing the purpose and application of the Mechanical Completion Record, this shall include instructions for completion, signatory authorisation and exception procedures.



Copies of all MCRs shall be included in document (preferably in each discipline section)

A pro-forma of the proposed Authorised Signature Matrix Ref Doc EMEX-235-PP-003 shall be included in document

DRAFT

Sub System / System Handover

A narrative describing the handover process from Nominated Construction Contractor to ENERMEX Mechanical Completion Team and from ENERMEX Mechanical Completion Team to ENERMEX Commissioning Team. This shall include a definition of acceptance criteria (punch lists, as built etc.) and custodianship.

Copies of Handover Certification shall be included in document.

Preservation / De-preservation

A definition of Mechanical Completion responsibilities with regard to preservation and de-preservation methods and procedures.

Punch Lists

A narrative description of the Punch List process and responsibilities, including a definition of Punch List categorisation. This shall include pro-forma of Punch List documentation.

Vendors Representatives and Equipment Suppliers

A narrative description of the process for Vendor call outs and controls including scheduling of vendor visits within the integrated plan. Definition of the process for managing Vendor Factory Acceptance Testing, and inspection, Site inspection and acceptance and identification of carryover work and punch lists.

Safety

A definition of Mechanical Completion specific safety responsibilities and practices, this shall include details of the application of the Safety Management System and Permit to Work system, with regards to Mechanical Completion activities.

Quality Control

A definition of Mechanical Completion responsibilities and interfaces with Quality Control procedures, this shall include a detailed process for complying with Certifying Authority requirements.

Planning and Reporting

Definition of planned Mechanical Completion milestones by system.

A description of computer generated real time reports including pro-forma of status indices such as:

Sub System / System summary reports, Discipline summary reports, Handover/Acceptance reports.

Discipline Specific Processes

A general narrative by each discipline defining specific requirements, responsibilities and test procedures. This section shall normally include MCRs by discipline.

4.0 Commissioning Manual

4.1 General

The purpose of this document is to define and organized Commissioning work responsibilities and instructions for execution, administration, monitoring and recording of data throughout the implementation and certification of Pre-Commissioning and Commissioning activities up to final handover to Operations.

4.2 Contents

The following describes the minimum content and suggested format of the document.

Introduction

A brief introduction defining the purpose and scope of the document

Abbreviations

A list of abbreviations used.

Reference Documents

A list of applicable reference documents

Definition Of Commissioning

A narrative describing the definition of pre-commissioning and commissioning

The Commissioning Process

A narrative providing an overview of the process flow of pre-commissioning and commissioning, this should define the application of the Electronic Completions and Tracking system and describe the methodology from the initial identification of sub systems and the population of the database following on through implementation up to handover.

All interfaces, procedures and responsibilities should be defined and controlling documents identified.

A flow diagram depicting the Commissioning process shall be included in document.

The Commissioning Completion Record (CCR)

A narrative describing the purpose and application of the Commissioning Completion Record, this shall include instructions for completion, signatory authorisation and exception procedures.

Copies of all CCRs shall be included in document (preferably in each discipline section)

A pro-forma of the proposed Authorised Signature Matrix shall be included in document.

The Commissioning Procedure

A narrative describing the function, development and application of the Commissioning Procedure.

The detailed format of procedures shall be defined and / or a typical procedure included

Sub System /System Handover

A narrative describing the handover process from Mechanical Completion to Commissioning and Commissioning to Operations, this shall include a definition of acceptance criteria (performance standards etc) and custodianship.

Copies of Handover Certification shall be included in document.

Preservation

A definition of commissioning responsibilities with regard to preservation

Punch Lists

A narrative description of the Punch List process and responsibilities, including a definition of Punch-List categorisation. This section shall include pro-forma of Punch List documentation.

Vendors Representatives

A narrative description of the process for Vendor call outs and controls including scheduling of vendor visits within the integrated plan. Definition of the process for managing Vendor Factory Acceptance Testing, and inspection, Site inspection and acceptance and identification of

carryover work and punch lists. This section shall include pro-forma of Punch List documentation.

Safety

A definition of commissioning specific safety responsibilities and practices, this shall include details of the application of the Safety Management System Permit to Work system, and Living Up procedures with regards to commissioning activities.

Quality Control

A definition of commissioning responsibilities and interfaces with Quality Control procedures, this shall include a detailed process for complying with Certifying Authority requirements

Planning and Reporting

Definition of Commissioning Plan and System Completion Network Logic

A description of computer generated real time reports including pro-forma of status indices such as:

Sub System / System summary reports, Discipline summary reports, Handover/Acceptance reports.

Discipline Specific Processes

A general narrative by each discipline defining specific requirements, responsibilities and test procedures. This section shall normally include CCRs by discipline.

5.0 The Commissioning Procedure

5.1 General

The objective of the Commissioning Procedure is to set out a pattern of work to allow systems to be commissioned safely in a controlled manner. It provides a method of documenting the extent of testing undertaken (and that which remains outstanding), whilst demonstrating system operability to the Operations group at point of handover.

The purpose of the Commissioning Procedure is to define describe and record all multi-disciplined preparations and activities to be progressed, endorsed and recorded in a logical step by step manner. Procedures shall be written and implemented for each individual system.

Commissioning procedures shall define agreed elements within each system for which specific tests and activities shall be approved, witnessed signed and endorsed by the appointed Certifying Authority on satisfactory completion.

Commissioning procedures shall be developed in a standard format, which will be subject to Client approval prior to issue.

5.2 Contents

The following describes the minimum content and suggested format of the document

Revision Record

Revision status and abbreviations list

Introduction

Brief introduction

Safety

Descriptive narrative on Safety

Purpose

Brief narrative.

Responsibility

Narrative defining document and implementation responsibilities

System Description

Detailed narrative describing the design intent and operating parameters of the system

System Limits

Definition of system limits (marked up P&ID/ Single Line Diagram shall be attached as an appendix)

Scope of Operating Tests

Narrative defining workscope where necessary by phase e.g. Onshore / Offshore

Systems Requirements

Details of system pre-requisites and utility requirements

Test Facilities

Details of:

Temporary facilities – Lubricants/ Process medium – Vendor information – Commissioning Spares

De-Preservation

Definition of De-preservation requirements

System Preparation

This section covers the work required to prepare equipment items, systems and sub-systems for operating tests. It shall contain a two parts:

a) A narrative instruction on completion of this section.

b) A four-column table consisting of:

- Item number
- Description of activity
- Completed by signature
- Date of completion

The section is divided by discipline and phase such that each may extract their sub-section and complete the activities independent of other disciplines. As each item in the section is completed it shall be checked then signed and dated as accepted by the commissioning discipline engineer.

System Operating Tests

This section defines and records the dynamic operation of the system. It shall contain two parts:

a) A narrative instruction on completion of this section.

b) A four-column table as described above.

The operational commissioning of the system will be defined in a step-by-step procedure with each step signed and dated when complete. Witness points for Certifying authority will be clearly identified for signing off by the witnessing representative on completion

System Handover and Test Completion

A narrative instruction on Handover procedure

Quality Assurance / Quality Control

A narrative instruction defining QA/QC requirements

References

A list of associated reference documents

Project Document List

A list of associated project documents and drawings

Sellers Document List

A list of associated Vendor documents and drawings.

Appendices

The following documents shall be included in the appendices.

- Appendix I System Status Indices - Mechanical Completion
- Appendix II System Status Indices - Commissioning Certification
- Appendix III Commissioning Spares
- Appendix IV Reference Drawings- including as-built P&ID's, Loop Drawings etc.
- Appendix V Vendor Reports



PROJECT COMPLETION GUIDELINES

Revision: 00 | Date : 21.02.2018

Page 13 / 13

6.0 Project Completions Group Document Review Matrix

| Document Title | Project Completions Manager | Client Discipline Engineers | Safety | QA/QC | Constructor | Client | Client Operations | Client Site Manager | Facilities Project Engineer |
|---------------------------------------|-----------------------------|-----------------------------|------------------|------------------|------------------|------------------|-------------------|---------------------|-----------------------------|
| Site issued documentation | Issue /Incorporate Comments | Review / Comment | Info | Info | Review / Comment | Info | Review / Comment | Review / Comment | Approve |
| Mechanical Completion Manual | Issue /Incorporate Comments | Review / Comment | Info | Review / Comment | Review / Comment | Review / Comment | Review / Comment | Review / Comment | Approve |
| Commissioning Manual | Issue /Incorporate Comments | Review / Comment | Info | Review / Comment | Review / Comment | Review / Comment | Review / Comment | Review / Comment | Approve |
| System Commissioning Procedures | Issue /Incorporate Comments | Review / Comment | Info | Info | Info | Info | Review / Comment | Info | Approve |
| Task Risk Analysis Procedure | Issue /Incorporate Comments | Info | Review / Comment | Info | Info | Info | Review / Comment | Review / Comment | Approve |
| Control of Temporary Links Procedure | Issue /Incorporate Comments | Review / Comment | Info | Info | Review / Comment | Info | Review / Comment | Info | Approve |
| System Commissioning Risk Assessments | Issue /Incorporate Comments | N/A | Review / Comment | N/A | N/A | N/A | Review / Comment | Review / Comment | Approve |