



Exploration & Production

GENERAL SPECIFICATION

Field Operations

GS EP EXP 105

Pre-commissioning Execution

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03	09/2005	New test sheets (ELEC,INST,TEL,PIP)
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1. Scope

1.1 Purpose of the specification

The present **GS EP EXP 105** provides all the information, procedures and support documents required to execute Pre-commissioning activities in a planned, safe, and efficient manner.

1.2 Applicability

This specification applies to all projects managed by Total E&P and its affiliates and to Companies of which Total is a shareholder and which have decided to apply the Total E&P General Specifications.

This specification does not cover the design and functional requirements of the plant or equipment, which are covered by other General Specifications.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

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External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the effective date of this document.

Reference	Title
IEC 60034	Rotating Electrical machines
IEC 60060	High-voltage test techniques
IEC 60071	Insulation co-ordination
IEC 60076	Power Transformers
IEC 60092	Electrical installations in ships
IEC 60146-4	Method of Specifying the Performance and Test Requirements of Uninterruptible Power Systems First Edition
IEC 60156	Insulating liquids – Determination of the break down voltage at power frequency. Test method
IEC 60364-4-41	Electrical installation of building - Protection for safety - Protection against electric shock
IEC 60364-6	Low voltage electrical installation - Verification
IEC 60502-2	Power cables with extruded insulation for rated voltage from 1 kV up to 30 kV
IEC 60599	Mineral oil – impregnated electrical equipment in service. Guide to the interpretation of dissolved and free gases
IEC 60694	Common specification For HV switchgears and controlgears standards
IEC 61000-5-2	Installation and Mitigation Guidelines - Section 2: Earthing and Cabling - First Edition
IEC 61936-1	Power installations exceeding 1kV AC Part 1: Common rules
IEC 62040-3	Uninterruptible power systems (UPS) – Part 3: Method of specifying the performance and test requirements
IEC 62271	High voltage switchgear and controlgear
CISPR 22	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
ASTM A380	Cleaning, Descaling, and Passivation of Stainless Steel Parts, Equipment and Systems
ASTM A967	Chemical Passivation Treatments of Stainless Steel Parts
API STD 598	Valve Inspection and Testing
API STD 527	Seat Tightness of Pressure Relief Valves
API STD 614	Lubrication, Shaft-sealing and Oil-control Systems and Auxiliaries

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Reference	Title
API STD 620	Recommended Rules for Design and Construction of Large, Welded, Low-pressure Storage Tanks
NFPA 13	Standard for the Installation of Sprinkler Systems
NFPA 15	Standard for Water Spray Fixed Systems for Fire Protection
NFPA 16	Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
NFPA 25	Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published in the applicable yearly collection.

Reference	Title
GS EP COR 110	Design of cathodic protection of offshore structures
GS EP COR 111	External cathodic protection of onshore facilities
GS EP COR 112	External cathodic protection of Onshore deep well casing
GS EP COR 353	Design and application of passive fire protection coatings
GS EP ELE 013	Electrical requirements for generating units
GS EP ELE 031	Design of earthing and bonding systems
GS EP ELE 051	Design and installation of lightning protection
GS EP ELE 081	Lighting
GS EP ELE 113	AC generators
GS EP ELE 131	High voltage switchgear
GS EP ELE 133	G.I.S High voltage switchgear and controlgear
GS EP ELE 151	DC Uninterruptible Power Systems (UPS)
GS EP ELE 152	AC Uninterruptible Power Systems (UPS)
GS EP ELE 311	Cable trays/ladders
GS EP ELE 321	Navigation Aids System
GS EP ELE 331	Tape trace heating
GS EP ELE 364	Electrical installation
GS EP ELE 451	THIRD PARTY inspection - Independent verification of electrical facilities
GS EP EXP 101	Pre-commissioning and Commissioning Specification
GS EP EXP 103	Pre-commissioning and Commissioning Engineering

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Reference	Title
GS EP EXP 107	Commissioning Execution
GS EP INS 101	Instrumentation engineering, supply and construction general requirements
GS EP INS 107	Design and installation of instrumentation links
GS EP INS 110	Instrumentation for package units
GS EP INS 120	Control Valves
GS EP INS 125	Safety Relief Valves and Rupture Discs
GS EP INS 137	On/off valve control panels and actuators functional and construction requirements
GS EP MEC 050	Fire and Gas System and Fire Suppression System for Package Rotating Machinery Enclosures
GS EP PLR 100	Submarine pipeline systems
GS EP PLR 109	Design, fabrication and testing of submarine unbonded flexible pipes and risers
GS EP PLR 160	Design, fabrication and testing of Subsea Umbilicals
GS EP PLR 401	Installation of submarine pipelines
GS EP PLR 501	Hydrostatic testing of pipelines
GS EP PLR 502	Pre-commissioning of gas pipelines
GS EP PVV 142	Valves
GS EP PVV 171	Steel piping fabrication
GS EP PVV 175	Cleaning of piping and vessels
GS EP PVV 178	Design and erection of Glass Reinforced Plastic (GRP) piping system
GS EP SAF 312	Fire and Gas detection systems
GS EP SAF 322	Fixed fire water systems
GS EP SAF 331	Carbon dioxide fixed fire extinguishing systems
GS EP SAF 332	Water mist and gaseous fixed fire extinguishing systems
GS EP SAF 334	Foam fire extinguishing systems
GS EP SAF 351	Escape, evacuation and rescue from fixed installations
GS EP SPS 001	Design philosophy and requirements for subsea stations
GS EP SPS 011	Mechanical completion of subsea stations
GS EP SPS 012	Documentation requirements for subsea stations
GS EP TEL 191	Telecom Fibre Optic System Design

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3. Terms and definitions

For the purpose of this specification, the terms and definitions applying are defined in [GS EP EXP 101](#).

Company	TOTAL affiliate (for installations extensions) or Project team.
Contractor	Entity in charge of Pre-commissioning activities.
Manufacturer/Vendor	Entity that provides goods to Contractor or Sub-Contractor

4. Pre-commissioning execution activities

4.1 Preamble

The enclosed documentation is not intended to be fully comprehensive, hence it shall be used in conjunction with appropriate technical specifications, standard, code and/or Manufacturers'/Vendors' instructions.

This specification shall be read in conjunction with the:

- [GS EP EXP 101](#) Pre-commissioning and Commissioning Specification.
- [GS EP EXP 103](#) Pre-commissioning and Commissioning Engineering.
- [GS EP EXP 107](#) Commissioning Execution.

Any omission from this specification of any Item essential for the correct achievement of the Pre-commissioning shall be brought to the attention of Company.

Any deviation from this specification shall be submitted to Company for approval through the Project Derogation system.

4.2 Safety

HSE policy shall be as specified [GS EP EXP 101](#).

4.3 Scope of work

The Pre-commissioning scope of work comprises:

- Engineering activities, covered by [GS EP EXP 103](#) and Project Specifications.
- Execution activities, covered by the present Specification and the different Project Specifications.

The scope of work of the Pre-commissioning execution activities shall be carried out by Sub-system and is applicable on all Sub-systems and equipment, or pieces of equipment, either purchased as individual Items, or as part of a Manufacturer and/or Vendor's package, or as part of a Company supplied Item, of all facilities defined in the contract.

Organization, engineering, execution and reporting of Pre-commissioning activities shall be done at Sub-system level.

This scope of work consists of, but not limited to:

- Calibration of equipment Items.
- Static Tests of equipment Items.

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- Conformity Checks on equipment Items.
- Specific operations, such as the piping and vessels pressure testing and cleaning.
- Preservation tasks.
- Documentation tasks.
- Etc.

4.4 Witnessing and notification

Contractor shall follow the requirements specified in **GS EP EXP 101**.

Contractor shall give adequate notice to the Parties (i.e. Company, Commissioning, Certifying Authorities, or other Contractor) concerned in any Static Test and/or Conformity Check inspection to be witnessed.

Contractor shall issue all the relevant coordination procedures for witnessing activity as specified in **GS EP EXP 103** and Project Specifications.

4.5 Pre-commissioning execution activities

Contractor shall perform Static Tests and Conformity Checks on all equipment and/or items installed on the pant.

The Check Lists and the Test Sheets are the support documents used to record respectively the Static Tests and Conformity Checks.

The Test Sheets and the Check Lists are grouped by discipline and included in the chapter relating to the relevant discipline (refer to Appendix 01 to 12 of this specification).

The Test Sheets and the Check Lists provided in this Specification are typical and shall be adapted/reviewed and/or create in order to take into account the specificities of the project requirements.

In the event that Test Sheets or Check Lists are omitted for any Item of equipment, Contractor shall inform Company, review the requirements and issue a new Test Sheet or Check List for Company's approval.

4.5.1 Static Tests Execution

Contractor shall verify that relevant construction works are completed and/or all connections properly made and/or that the associated checks have been successfully completed according to the procedure prior starting any test.

Contractor shall issue for Company approval the dedicated testing procedure prior starting any Static Test.

Contractor shall ensure that the worksite is clean with adequate access and that all test equipment and tooling is available to properly carry out the test.

Contractor shall ensure that testing is always performed in a safe and secure manner.

For any test to be witnessed by Company, Commissioning, Certifying Authorities, or other, Contractor shall give adequate notice to the Parties concerned.

Contractor shall carry out the tests in accordance with the procedures and record result on the Test Sheets.

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Any test which is not satisfactory and/or cannot be achieved because of any defect shall be treated as follow:

- The defect shall be immediately corrected by Contractor. The Engineer who has identified the defect shall ensure that it is properly corrected.
- If Contractor cannot correct the defect immediately, Contractor shall report it to Company, include it in the Punch List, and take all necessary actions to have this Item cleared.

The test shall be repeated until successfully completed.

Once all tests of the Test Sheet have been successfully performed, the Test Sheet shall be dated and signed in the appropriate boxes by the different parties involved as per the witnessing matrix.

Contractor shall not sign the Test Sheet nor file in the Pre-commissioning dossier until all tests have been fully performed satisfactorily.

4.5.2 Conformity Checks Execution

Contractor shall verify that relevant construction works are completed and/or all connections properly made and/or that the associated tests have been successfully completed according to the procedure prior starting any checks.

Contractor shall use the Check Lists working documents to perform the checks.

Any check which is not satisfactory shall be treated as follow:

- The defect shall be immediately corrected by Contractor. The Engineer who has identified the defect shall ensure that it is properly corrected.
- If Contractor cannot correct the defect immediately, Contractor shall report it to Company, include it in the Punch List, and take all necessary actions to have this Item cleared.

Once all checks of the Check List have been successfully performed, the Check List shall be dated and signed in the appropriate boxes by the different parties involved as per the witnessing matrix.

Contractor shall not sign the Check Lists nor file in the Pre-commissioning dossier until all checks have been fully performed satisfactorily.

4.6 Punch List

While the Conformity Checks and/or Static Tests are being performed, all discrepancies, damaged or missing equipment, malfunctions, missing documents, etc., shall be recorded by Contractor as a punch item in the Punch List, if the situation was not able to be corrected immediately.

Punch List definition and organization are defined in [GS EP EXP 101](#).

4.7 Drawings up-dating

Contractor shall keep the drawings up-dated to obtain at the completion of the Pre-commissioning of each Sub-system a set of (marked-up) "as Pre-commissioned" drawings, taking into account all modifications implemented on site or deviations from construction drawings.

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Contractor shall amend any document as required by a modification carried out during the Pre-commissioning (e.g. equipment data sheets in case of set points modifications, etc...).

4.8 Pre-commissioning dossier

Contractor shall compile all documentation pertaining to the Pre-commissioning activities in a specific "Pre-commissioning Dossier" as defined in [GS EP EXP 103](#), arranged by Sub-system, which shall contain all the information required to demonstrate that the Sub-system has reached the "Ready For Commissioning" status.

4.9 Case of supplied Package/Module

4.9.1 Definition

Package/Module particular requirements are specified in [GS EP EXP 101](#).

4.9.2 Package Conformity Check sheets

Any static or calibration test on the equipment package already done in workshop shall not be performed again on worksite, except in specific cases where transportation or storage conditions might have corrupted the equipment has specified in [GS EP EXP 101](#).

In that case Contractor shall perform a full conformity check of the package immediately after package installation with all the concerned discipline to check, but not limited to, that:

- All relevant documentation (i.e. calibration certificate, tests results, FAT procedures signed) is available and up to date.
- Preservation has been performed correctly and formally recorded into ICAPS© system.
- No damage detected.
- No missing item.
- Equipment has not suffered of any disconnection/reconnection.
- All interconnection have been correctly installed and have not damage the package, etc.

4.10 Case of Subsea Pre-commissioning

4.10.1 Definition

The subsea encompasses mechanical, piping, pipeline, instrument, safety, structural and surface protection disciplines. As applicable, disciplines Conformity Check and Static Test sheets presented in this specification shall be used.

Subsea requirements are specified in [GS EP EXP 101](#).

Procedure and check list shall be prepared and implemented into ICAPS© software as specified in [GS EP EXP 103](#).

4.10.2 SURF Pre-commissioning

Contractor shall perform Pre-commissioning tests and checks using Project Specifications and [GS EP PLR 100](#), [GS EP PLR 109](#), [GS EP PLR 160](#), [GS EP PLR 401](#), [GS EP PLR 501](#) and [GS EP PLR 502](#).

The check and test list shall be prepared and implemented in as specified in [GS EP EXP 103](#).

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During subsea installation, the cleanliness of the test mediums (for the hydraulic control lines within the control umbilicals shall be the operational medium) for all lines shall be closely monitored and measured before further pressurization.

During load out, transportation, laying, post installation and hook up, monitoring and testing activities shall be executed to ensure that the integrity of the umbilical is not compromised. The monitoring operations of the umbilicals, SSIV control cables and Electric Cables shall be planned together with the laying operation, in order to ensure that pressure/electrical/optical monitoring and connections checks are performed from the installation vessel before the abandonment of the second end.

4.10.3 SPS Pre-commissioning

Contractor shall prepare and complete check lists for the verification documentation (FAT report, EFAT report, etc...) in addition of the Testing activities (FAT, EFAT, etc...) on a complete Unit (XT, Manifold, etc...) and shall include all of them in the relevant Pre-commissioning dossier as specified in **GS EP EXP 103** and detailed in **GS EP SPS 001**, **GS EP SPS 011** and **GS EP SPS 012**.

These check lists shall be a record summary of the testing activities including all raised punch items if any, and shall refer to the relevant verification documentation.

Prior to over boarding and subsea installation, Conformity Checks shall be carried out onboard the installation vessel to demonstrate that the subsea equipment has not been damaged and that the preservation measures taken, prior to marine transportation are still in place.

In the event that the preservation measures have been negated then adequate steps shall be taken to re-prepare the subsea equipment prior to over boarding.

5. Building / Civil Work / Structure Pre-commissioning

5.1 Conformity checks

Type of equipment	Check list reference
Steel Structure	C-QX-01
Painting structure	C-XX-03
Building general	C-QX-02
Building water proofing	C-QX-03
Building door/window	C-QX-04
Building metallic partition	C-QX-05
Building suspended ceiling	C-QX-06
Building sanitary and tiling equipment	C-QX-07
Building rendering paint	C-QX-08
Building water supply system	C-QX-09
Building raised floor system	C-QX-10
Sanitary fitting	C-QX-11

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Type of equipment	Check list reference
Macerator	C-QX-12
Concrete basins / sumps	C-QX-13

Contractor shall carry out inspection of all Building, Civil Work and Steel Structure installations as per Project Specifications and applicable Standards or local regulation at the completion of the installation.

6. Electrical Pre-commissioning

6.1 Conformity checks

Type of equipment	Check list reference
Power generator	C-PX-01
Power transformer	C-PX-02
HV switchboard / MCC	C-PX-04
LV switchboard / MCC	C-PX-05
Contactor panel	C-PX-06
Bus ducting	C-PX-07
HV power cable	C-PX-08
LV power cable	C-PX-09
Multi / Single-core electrical control cables	C-PX-10
HV motor	C-PX-12
LV motor	C-PX-13
DC motor	C-PX-14
LV distribution board	C-PX-15
Charger / inverter	C-PX-16
Battery	C-PX-17
Lighting circuits	C-PX-18
Power socket outlet	C-PX-19
Heater	C-PX-20
Neutral earthing resistor	C-PX-21
Heat tracing	C-PX-22
Control station	C-PX-23
Isolator	C-PX-24

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Type of equipment	Check list reference
Navigation aids	C-PX-25
Earthing system	C-PX-26
Miscellaneous equipment	C-PX-27
Lightning protection system	C-PX-28
MCT cabling	C-PX-29
Cable tray / ladder	C-PX-30
Electrical junction and marshalling box	C-PX-31
Console / control panel	C-PX-32
Cathodic protection	C-PX-33
Package	C-ZX-01E

6.1.1 Conformity Checks general requirements

Contractor shall carry out inspection of all electrical installations as per Project Specifications, [GS EP ELE 364](#) and [GS EP ELE 451](#) and applicable CENELEC Standards and International Electrotechnical Commission (IEC) publications ([IEC 60364-6](#), [IEC 60092](#) and [IEC 61936-1](#)).

6.1.2 Power generator - Check Sheets C-PX-01

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP ELE 013](#) and [GS EP ELE 113](#) when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables, boxes, probes, sensors...).

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Conformity against datasheet and project specification.
- Generator is correctly tagged.
- General mechanical arrangement against the drawings.
- Connections are completed and correct.
- Earthing and bonding are correct against the drawing.
- Boxes and cable glands are correctly mounted and tightened.
- Painting integrity.
- Certification according to hazardous area.
- Mark-up drawings are available, etc.

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6.1.3 Power transformer - Check Sheets C-PX-02

Pre-commissioning checks shall be carried out as per Project Specifications and IEC standards when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables, cooling fans, sensors...).

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Conformity against datasheet and project specification.
- Transformer is correctly tagged.
- General mechanical arrangement against the drawings.
- Dielectric levels are correct with no leak.
- Retention pan is correctly made and clean.
- Transformer access is properly protected and warning labels and safety instructions are adequately posted.
- Primary and secondary terminations are clean, undamaged and correctly identified (phase).
- All termination enclosures have correct gaskets and fixing bolts.
- Connections are completed and correct.
- Accessories according to data sheet are correctly installed and undamaged (thermometers, relay, fans etc...).
- Tap changer selector is correctly fitted and locked in the mid position.
- On load tap changer control panel to wiring diagram.
- Mechanical interlock of terminals.
- Boxes and cable glands are correctly mounted and tightened.
- Earthing and bonding are correct against the drawing.
- Painting integrity.
- Mark-up drawings are available, etc.

6.1.4 LV & HV switchboard / MCC - Check Sheets C-PX-04 & 05

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP ELE 131](#), [GS EP ELE 133](#) and IEC standards ([IEC 62271](#)) when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables, boxes, probes, sensors...).

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Conformity against datasheet and project specification.
- Panels are correctly tagged.
- All mounted equipment (switchboard, relays, panel, etc...) are correctly tagged.

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- General mechanical arrangement against the drawings.
- Connections are completed and correct.
- Boxes and cable glands are correctly mounted and tightened.
- Painting integrity.
- Certification according to hazardous area.
- Mark-up drawings are available, etc.

6.1.5 Electrical panels / control station - Check Sheets C-PX-06, 15, 23 & 32

Pre-commissioning checks shall be carried out when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables, boxes, probes, sensors...) and before energization.

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Equipment is installed in accordance with layout drawing.
- Panels are correctly tagged.
- Equipment is undamaged and correctly tagged.
- Contactor/circuit breaker and consumer rating are in accordance with datasheet.
- Control station and emergency stop pushbutton /switching devices accessibility and proper mechanical operation.
- Panel-front components, indicators, lamps, meters are securely mounted and undamaged.
- All bolts are fitted and all unused entries are suitably plugged.
- External wiring and cabling against drawings.
- Cable glands and terminals for proper size and installation.
- Cable glands are correctly mounted and tightened.
- Earthing and bonding against drawings.
- Certification according to hazardous area.
- Mark-up drawings are available, etc.

6.1.6 Bus ducting and Isolator - Check Sheets C-PX-07 & 24

Pre-commissioning checks shall be carried out when all the tests have been carried out and after final installation/connection and before energisation.

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Equipment is installed in accordance with layout drawing.
- Nameplate data are correct.
- Equipment is undamaged and correctly tagged.

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- For missing bolts.
- Bolts are torqued according to Manufacturer's requirements.
- All covers and cover bolts are correctly fitted, specified IP rating is achieved and danger labels are correctly installed.
- Operation of isolator and interlock is correct.
- Earthing and bonding against drawings.
- Mark-up drawings are available, etc.

6.1.7 LV, HV & control cables - Check Sheet C-PX-08, 09 & 10

Pre-commissioning checks shall be carried out as per IEC Standards when all the tests have been carried out and after final connection/termination of all cable and/or core cable in the cabinet or terminals block.

Contractor shall particularly check, but not limited to:

- Cable is installed in accordance with layout drawing (segregation, distance...).
- Cable is supported and fixed to rack according to project Specification.
- Bending radius is within the specified limits.
- Cable is correctly loomed and segregated in accordance with specification.
- Core marking against drawings.
- Cable labelling is in accordance with specification.
- Cable gland suit for cable type.
- Shrouds and MCTU are in accordance with specification.
- Cable glands are correctly mounted and tightened.
- Cable gland plate for single core cables is non ferrous.
- Cable earthing against drawings.
- Mark-up drawings are available, etc.

6.1.8 Electrical motors - Check Sheets C-PX-12, 13 & 14

Pre-commissioning checks shall be carried out as per Project Specifications when all the tests have been carried out and after final installation of the items (i.e. all the cables and boxes installed).

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Conformity against datasheet and project specification.
- Certification according to hazardous area.
- Motors are correctly tagged.
- General mechanical arrangement against the drawings.

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- Motor connections are completed and correct.
- Earthing and bonding are correct against the drawing.
- Boxes and cable glands are correctly mounted and tightened.
- Painting integrity.
- Shaft rotate free, etc.

6.1.9 Batteries and Charger / Inverter - Check Sheets C-PX-16 & 17

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP ELE 151](#), [GS EP ELE 152](#) and IEC standards ([IEC 60146-4](#) and [IEC 62040-3](#)) when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables, boxes, probes, sensors...).

Contractor shall particularly check, but not limited to:

- Conformity against datasheet and project specification.
- Equipment is undamaged, correctly mounted, tagged and installed in accordance with layout drawings.
- Manufacturer's nameplate data.
- Battery are installed in accordance with Manufacturer's instructions with sufficient clearance and accessibility for maintenance.
- All panel-front components, indicators, lamps, meters are securely mounted and undamaged.
- All nuts and links are fitted, tightened and greased.
- All caps for transportation have been removed.
- All electrolyte levels are correct.
- Earthing and bonding are correct against the drawing.
- Boxes and cable and cable glands are correctly mounted and tightened.
- Room is suitably ventilated (natural ventilation).
- Mark-up drawings are available, etc.

6.1.10 Lighting circuits and Power socket outlet - Check Sheet C-PX-18 & 19

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP ELE 081](#) and IEC standards when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables & boxes).

Contractor shall particularly check, but not limited to:

- Luminaires / sockets rating and tagging against datasheet and project specification.
- Luminaires / sockets are correctly mounted, accessible and don't clash with other equipment.
- Luminaires / sockets and junction boxes are installed in accordance with drawings.
- All unused entries on junction boxes are suitably plugged.

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- Circuit breaker rating.
- Mechanical interlock.
- Earthing and bonding against drawings.
- Mark-up drawings are available, etc.

6.1.11 Electrical equipments - Check Sheets C-PX-20, 21 & 27

Contractor shall carry out inspection of all electrical Equipments (e.g. Heaters, Neutral earthing resistor etc...) as per Project Specifications and **GS EP ELE 364** and applicable CENELEC Standards and International Electrotechnical Commission (IEC) publications.

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Conformity against datasheet and project specification.
- Certification according to hazardous area.
- Equipment is correctly tagged.
- General mechanical arrangement against the drawings.
- Connections are completed and correct.
- Boxes and cable glands are correctly mounted and tightened.
- Earthing and bonding are correct against the drawing.
- Painting integrity.
- Mark-up drawings are available, etc.

6.1.12 Heat Tracing - Check Sheets C-PX-22

Pre-commissioning checks shall be carried out as per Project Specifications, **GS EP ELE 331** and IEC standards before and after installation of thermal insulation and after final installation/connection of the all auxiliary devices (i.e. cables, boxes).

Contractor shall particularly check, but not limited to:

- Tapes and junctions box are installed in accordance with drawings.
- Conformity against datasheet and project specification.
- Equipment is undamaged, correctly mounted, tagged and installed in accordance with layout drawings.
- Rating of circuit breaker against drawings.
- Boxes and cable and cable glands are correctly mounted and tightened.
- Certification according to hazardous area.
- Earthing and bonding are correct against the drawing.
- Mark-up drawings are available, etc.

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6.1.13 Navigation Aids - Check Sheet C-PX-25

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP ELE 321](#) and IEC standards when all the tests have been carried out and after final installation/connection of all auxiliary devices (e.g. cables, boxes, item, etc...).

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Equipment is installed in accordance with layout drawing.
- Certification according to hazardous area.
- Panels are correctly tagged.
- Equipment is undamaged and correctly tagged.
- All bolts are fitted and all unused entries are suitably plugged.
- External wiring and cabling against drawings.
- Cable glands and terminals for proper size and installation.
- Cable glands are correctly mounted and tightened.
- Earthing and bonding against drawings.
- Mark-up drawings are available, etc.

6.1.14 Earthing / Lightning Protection - Check Sheet C-PX-26 & 28

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP ELE 031](#), [GS EP ELE 051](#) and IEC standards ([IEC 61000-5-2](#)) when all the tests have been carried out and after final installation/connection.

Contractor shall particularly check, but not limited to:

- All earth bars installation and tagging against drawings.
- Earthing cables installation, tagging and cross section against drawings.
- All connections are tight, clean and coated with an approved anti-corrosive grease.
- Interconnections between earthing circuits.
- Earthing networks segregation (IS).
- Earth rods correct installation.
- Surge protective devices position and assemblies against the drawing.
- Location and height of lightning rods against the drawing.
- Connection of stays to the earthing system.
- Mark-up drawings are available, etc.

6.1.15 MCT Cabling and Cable tray / ladder - Check Sheet C-PX-29 & 30

Pre-commissioning checks shall be carried out as per Project Specifications and [GS EP ELE 311](#) after final installation of all the items.

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Contractor shall particularly check, but not limited to:

- MCT's & Cable tray / ladder conform to project standards and specification.
- MCT's & Cable tray / ladder are undamaged and installed against drawings without clashes with pipe runs or other equipment.
- Cable tray / ladder is adequately supported against drawings (no excessive deflection).
- Cables segregation in accordance with drawings.
- The capacity of cable tray / ladder (bunching, size of cables, etc...).
- Insulation pads are adapted to stainless steel or aluminum cable tray /ladder.
- Cable tray / ladder cleanness.
- Cable tray / ladder earthed and bonded against drawings.
- Cable arrangement in MCT's is conform to the drawing.
- Mark-up drawings are available, etc.

6.1.16 Junction / marshalling box - Check Sheet C-PX-31

Pre-commissioning checks shall be carried out when all the tests have been carried out and after final installation/connection of all auxiliary devices (i.e. all the cables, boxes, probes, sensors...) and before energization.

Contractor shall particularly check, but not limited to:

- Preservation has been carried out and records available.
- Box is installed in accordance with layout drawing.
- Box is correctly tagged.
- Box is undamaged and correctly tagged.
- Flameproof joints are clean and greased with approved lubricants.
- All bolts are fitted and all unused entries are suitably plugged.
- Terminal blocks segregation barriers are fitted where necessary.
- Cable glands and terminals for proper size and installation.
- Cable glands are correctly mounted and tightened.
- Earthing and bonding against drawings.
- Certification according to hazardous area.
- Mark-up drawings are available, etc.

6.1.17 Cathodic Protection - Check Sheet C-PX-33

Pre-commissioning checks shall be carried out as per Project Specifications, **GS EP COR 110**, **GS EP COR 111** and **GS EP COR 112** when all the tests have been carried out and after final installation/connection of all the items.

Contractor shall particularly check, but not limited to:

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- All equipment and cables are clearly identified, installed and tagged in accordance with drawings.
- Probe type and size against datasheet.
- All test points are positioned correctly and labelled with all necessary information.
- All cable connections are correctly terminated, clean and secure.
- The polarization cells to ground the pipeline as specified and the Spark Gap Surge Diverter is installed at each insulation joint.
- Accessibility and maintenance are possible and safe.
- Cable glands and terminals for proper size and installation.
- Cable glands are correctly mounted and tightened.
- Earthing and bonding against drawings.
- Certification according to hazardous area.
- Mark-up drawings are available, etc.

6.2 Static tests

Type of equipment	Test Sheet reference
Power generator	T-PX-01
Power transformer	T-PX-02
LV transformer	T-PX-03
HV switchboard / MCC	T-PX-04
LV switchboard / MCC	T-PX-05
Bus ducting	T-PX-07
HV power cable	T-PX-08
LV power cable	T-PX-09
Multi / single-core electrical control cable	T-PX-10
HV motor	T-PX-12
LV motor	T-PX-13
DC motor	T-PX-14
Distribution board / control panel / console	T-PX-15
Charger / inverter	T-PX-16
Battery	T-PX-17
Lighting circuits	T-PX-18
Power socket outlet	T-PX-19

Type of equipment	Test Sheet reference
Heater	T-PX-20
Neutral earthing resistor	T-PX-21
Tape trace heating	T-PX-22
Control station	T-PX-23
Navigation aids	T-PX-25
Earthing system	T-PX-26
Miscellaneous equipment	T-PX-27
Lightning protection system	T-PX-28
Cathodic protection	T-PX-33

6.2.1 Static Test general requirements

Contractor shall carry out testing of all electrical installations as per Project Specifications and applicable CENELEC Standards and International Electrotechnical Commission (IEC) publications.

The project electrical testing procedures and Test Sheets shall take into account the project voltages and frequency.

The power frequency dielectric test voltages shall be based on the following IEC recommendations and shall be adjusted to take into account the fact that some equipment has already been subjected to factory tests.

In no case the test voltage shall exceed the value indicated in the equipment Manufacturer' maintenance manual.

- [IEC 60034.](#)
- [IEC 60060.](#)
- [IEC 60071.](#)
- [IEC 60076.](#)
- [IEC 60502-2.](#)
- [IEC 62271](#) and [IEC 60694.](#)

6.2.1.1 Insulation Resistance (IR) tests

IR testing shall be carried out by applying a D.C. voltage from an insulation tester at voltage levels given in this specification.

6.2.1.2 High voltage tests

Before high voltage tests are executed, insulation resistance tests shall be carried out.

High voltage testing shall be carried out by D.C. voltage at a level above the operating voltage.

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High-voltage testing of electrical equipment, except LV cables, shall have been carried out at the Manufacturer's workshop with A.C. at voltage levels in accordance with the IEC.

Repeated high voltage tests may introduce weak points in the insulation of windings, and therefore such tests shall **not** be applied at site to generators, motors or transformers.

The HV tests at full voltage shall not be repeated two times. If however for special reasons these tests are considered to be remade a second time, they shall be carried out only after consultation with the Manufacturer and with a test voltage of 80% of the initial full test voltage.

6.2.1.3 Polarisation Index (PI)

The polarization Index is the ratio between the insulation resistance measured after a time period of 10 minutes over the initial insulation resistance ($PI = R_{10 \text{ min}} / R_{1 \text{ min}}$).

The minimum acceptable Polarization Index shall be 2.5.

The PI obtained gives an indication of the condition of the winding insulation with regard to its dryness and cleanness. PI will be lower for a dirty, wet or chemically contaminated winding insulation.

6.2.1.4 Test procedures

Prior of any test, relevant Project Specifications and/or Manufacturer's Test Procedures shall be adhered to.

Contractor shall carry out tests if they obtained IR or PI values fall below the minimum values, then the equipment should not be energized or subjected to high voltage testing.

Appropriate action should be taken (e.g. drying) to normalize the figures.

In case of 'flash-over' during high voltage testing appropriate measures shall be taken (e.g. cleaning, drying, repair) to eliminate the cause. Re-testing shall be performed after repair.

In the event that any of the tests fails to meet the specification requirements, it will be necessary for Contractor to list any discrepancies and to present them to Company.

The Test Sheet will be completed, signed and dated, and presented to Company for approval.

Copies of the Test Sheet will be issued to the Certifying Authority if required. The original shall be inserted in the Ready For Commissioning dossier.

6.2.2 Power generator - Test Sheet T-PX-01

Contractor shall carry out the insulation resistance tests on the generator windings, the exciter windings, the generator space heater, the bearing pedestal insulation (if practical), and the data obtained shall be recorded in the test sheet.

The following Megohmmeter shall be used:

- 5000 V for HV windings.
- 1000 V for LV windings.
- 500 V for other parts of the generator (space heater, bearing, etc.).

6.2.2.1 Insulation resistance tests

The minimum acceptable insulation resistance value shall be:

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- HV generator windings - 150 Megohms.
- LV generator windings - 100 Megohms.
- Exciter windings - 10 Megohms.
- Anti-condensation heaters - 10 Megohms.
- Bearing Insulation - 1 Megohm.

If the pedestal bearings or sleeve bearing housings are completely insulated from the generator frame, the insulation may be checked with the machine coupled and running at the Commissioning stage.

In the other cases refer to Manufacturer's procedure.

6.2.2.2 Continuity tests

The following tests shall be performed:

- Bearing probe shaft DE.
- Bearing probe shaft NDE.
- Space heater circuit.
- Exciter circuit.

6.2.3 Power transformer - Test Sheet T-PX-02

Neutral earthing resistors shall be disconnected from the neutral point before starting tests. They shall be tested separately in accordance with section 6.2.20.

HV earthing transformers shall be tested in accordance with the requirements of HV Transformers Test Sheet and Neutral Earthing Resistors Test Sheet.

6.2.3.1 Insulation resistance tests

Insulation resistance shall be measured between:

- Primary windings and secondary windings connected to earth.
- Secondary windings and primary windings connected to earth.

A 5000 V Megohmmeter shall be used for testing the HV windings, and HV/LV windings insulation. A 1000 V Megohmmeter shall be used for the LV windings.

The minimum acceptable insulation resistance values shall be:

- HV windings - 150 Megohms.
- LV windings - 100 Megohms.
- Primary / secondary - 150 Megohms.

Contractor shall carry out an insulation resistance test on auxiliary wiring, if any, with a 500 V Megohmmeter. Minimum acceptable value is 10 Megohms.

6.2.3.2 Oil breakdown tests

A sample of the transformer tank insulating oil shall be drawn off from the tank and tested in accordance with the requirements of:

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- IEC 60599.
- IEC 60156.

6.2.3.3 Continuity tests

The following tests shall be performed:

- Ph1 / Ph2.
- Ph1 / Ph3.
- Ph3 / Ph2.

6.2.4 LV Transformer - Test Sheet T-PX-03

Insulation resistance shall be measured between the primary windings and earth, the secondary windings and earth and between primary and secondary windings.

6.2.4.1 Insulation resistance tests

Insulation resistance shall be measured between:

- Primary windings and secondary windings connected to earth.
- Secondary windings and primary windings connected to earth.

A 1000 V Megohmmeter shall be used for the tests.

The minimum acceptable insulation resistance values shall be 100 Megohms.

6.2.4.2 Continuity tests

The following tests shall be performed:

- Ph1 / Ph2.
- Ph1 / Ph3.
- Ph3 / Ph2.

6.2.5 HV Switchboard - Test Sheet T-PX-04

Precautions should be taken to prevent circuit breakers and selectors being operated without the knowledge of the Test Engineer.

6.2.5.1 Continuity tests

The following tests shall be performed:

- Bus bars.
- Distribution.
- Space heater circuit.
- Motor rearming wiring.

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6.2.5.2 HV tests

Before testing, the switchgear framework shall be connected to earth and control circuits, including static type protection relays shall be protected according Manufacturer instructions. Voltage transformers shall be isolated and tested separately.

On control circuits, all earth connections as shown on the wiring diagrams shall be disconnected before the application of the test voltage and reconnected when the test is completed.

All incoming and outgoing isolating switches shall be open.

High voltage test of the main circuit shall be carried out on each phase with the remaining two phases connected to earth (voltage transformers and load disconnected).

For the test, the reference pole of the testing supply is connected to the same earth as the frame of the equipment under test. Test voltage for the duration of one minute shall be as indicated in [IEC 60694](#).

6.2.5.3 Insulation resistance tests

The insulation resistance shall be measured before the HV test is carried out and measured again after the HV test is completed to ensure that the initial resistance has not been altered appreciably.

The connections used for the insulation resistance tests shall be similar to the ones used on the high voltage test.

Insulation resistance test shall be performed on bus bars alone, bus bars and circuit breakers, voltage transformers, anti-condensation heaters and signaling, control and breakers rearming motor wiring.

A 5000 V Megohmmeter shall be used for testing the HV bus bar, and a 500 V Megohmmeter shall be used for auxiliary wiring (heater, control, signaling and rearming motors).

The minimum acceptable insulation values shall be:

- HV Switchgear - 200 Megohms,
- Control and Auxiliary wiring Circuits - 10 Megohms.

6.2.5.4 Voltage Transformer (VT) and Current Transformer (CT)

Insulation resistance measurement shall be performed on each voltage transformer. A 5000 V Megohmmeter shall be used for primary wirings testing (secondary wiring earthed), and a 500 V Megohmmeter shall be used for secondary wirings (primary wiring earthed). Minimum acceptable insulation values shall be:

- Primary wirings - 150 Megohms.
- Secondary wirings - 10 Megohms.

If current transformers are installed, a polarity test with the use of battery flick test shall be performed.

6.2.6 LV Switchboard - Test Sheet T-PX-05

Precautions should be taken to prevent the circuit breakers and selectors being operated without the knowledge of the Test Engineer.

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6.2.6.1 Continuity tests

The following tests shall be performed:

- Bus bars.
- Distribution.
- Space heater circuit.
- Motor rearming wiring.

6.2.6.2 LV test

Before testing, the switchgear framework shall be connected to earth and control circuits, including static type protection relays shall be protected according Manufacturer instructions. Voltage transformers shall be isolated and tested separately.

On control circuits, all earth connections as shown on the wiring diagrams shall be disconnected before the application of the test voltage and reconnected when the test is completed.

All incoming and outgoing isolating switches shall be open.

HV test of the main power circuit shall be carried out on each phase with the remaining two phases connected to earth. For the test, the reference pole of the testing supply is connected to the same earth as the frame of the equipment under test.

Test voltage for the duration of one minute shall be as indicated in [IEC 60694](#).

6.2.6.3 Insulation resistance tests

The insulation resistance of the switchgear should be measured before the HV test is carried out and again after the HV test is completed to ensure that the initial resistance has not been altered appreciably.

The connection used for the insulation resistance tests shall be similar to the ones used on the high voltage testing. A 1000 V Megohmmeter (500 V for control circuits) shall be used for testing and the minimum insulation resistance value shall be:

- LV Switchgear - 100 Megohms.
- Signalling, Control circuits - 10 Megohms.
- Anti condensation heating circuit -10 Megohms.

6.2.6.4 Voltage Transformer (VT) (if any) and Current Transformer (CT)

Insulation resistance measurement shall be performed on each voltage transformer. A 500 V Megohmmeter shall be used. Minimum acceptable insulation value shall be 10 Megohms.

If current transformers are installed, a polarity test with the use of battery flick test shall be performed.

6.2.7 Bus ducting- Test Sheet T-PX-07

An HV test as described in 6.2.1.2 shall be performed.

Bus duct shall be disconnected at both ends (i.e. transformer and switchboard).

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The insulation resistance test shall be carried out using a 5000 V Megohmmeter for HV bus duct and 1000 V for LV. The test shall be carried out between each phase with the other two phases and frame bonded together and earthed (three tests).

Minimum acceptable value shall be 200 Megohms for HV and 100 Megohms for LV.

If space heater is installed, a 500 V Megohmmeter shall be used for testing its insulation resistance, the minimum value shall be 10 Megohms.

Bus bar and space heater continuity shall be check with ohmmeter.

6.2.8 HV power cable - Test Sheet T-PX-08

Contractor shall carry out all the tests with the cable ends glanded and terminated but not connected.

One sheet will be used for each cable (Trefoil configuration is considered as one cable).

On completion of all tests, HV terminations shall be tightened to torque setting specified by Manufacturer's documentation and recorded on the test sheet.

Note: Where cables are terminated using "Elastimold" type terminations, an "Elastimold" "dead end plug" must be fitted during IR (Insulation resistance) and HV tests.

6.2.8.1 HV tests

The HV test shall be carried out by Contractor on all HV cables. It shall be applied as follows:

- Single Core Cables: between the conductor and the armour, the armour being solidly connected to earth.
- Three Core Cables: between each conductor and the remaining conductors and armour, which shall be connected together and to earth (three tests per cable). In case of HV cable with screen, these HV tests shall be performed with the screen connected to the armour.

The test voltage shall be gradually increased to test value and maintained for fifteen minutes. The leakage current measured should not exceed one milliamp.

Voltage shall be held at each increment to allow the capacitive charging current to stabilize.

6.2.8.2 Insulation tests (before and after HV test)

The insulation resistance tests should be carried out using a 5000 V Megohmmeter, the test configuration being as for the HV test. The insulation resistance should be at least 150 Megohms.

6.2.9 LV power cable - Test Sheet T-PX-09

Contractor shall carry out all the tests with the cable ends glanded and prepared but not connected. Core and armour continuity checking shall be performed. The insulation resistance tests will be carried out using a 1000 V Megger for LV power cables.

The minimum acceptable value shall be:

- LV cables above 240 V - 50 Megohms.
- 240 V and below - 10 Megohms.
- LV lighting and trace heating cables shall not be considered in this chapter.

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6.2.10 Multi / single-core electrical control cable - Test Sheet T-PX-10

Contractor shall carry out and record all data for the insulation resistance with the cable ends glanded and prepared but not connected.

On completion of the tests the cable shall be connected.

Instrument (Control station) multicores cables shall not be considered in this chapter.

6.2.10.1 Insulation tests

Insulation resistance tests shall be carried out using a 500 V Megohmmeter.

The minimum recorded insulation resistance value shall be 10 Megohms.

Insulation tests on screened singles, pairs and triples shall be tested as follows:

- Test voltage applied between each core and all others cores.
- Test voltage applied between each core and screen.
- Test voltage applied between each core and earth/ armour.
- Test voltage applied between each screen and others screens.

6.2.10.2 Continuity tests

Continuity checks must be proved using low voltage test equipment prior to insulation resistance Megger tests.

Continuity test for core / screen / armour are achieved by using one core for return and deducting this value.

6.2.11 HV motor - Test Sheet T-PX-12

6.2.11.1 Insulation resistance tests

Contractor shall carry out the insulation resistance tests on the motor windings, motor heater, and bearing pedestal insulation and record the data obtained.

Each winding will be tested to earth using a 5000 V Megohmmeter with the remaining windings, and frame connected together and to earth.

The insulation resistance of the motor heater will be tested using a 500 V Megohmmeter.

If the pedestal bearings or sleeve bearing housings are completely insulated from the motor frame, the insulation may be checked with the machine coupled and running at the Commissioning stage.

In the other cases refer to Manufacturer's procedure.

The minimum acceptable insulation values shall be:

- Stator Windings: 150 Megohms.
- Anti-condensation Heater: 10 Megohms.
- Bearing Insulation: 1 Megohm.

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6.2.11.2 Continuity tests

The following tests shall be performed:

- Bearing probes (shaft DE & NDE).
- Space heater circuit.

6.2.12 LV motor - Test Sheet T-PX-13

Contractor shall carry out the insulation resistance tests on the motor windings, and space heater.

The windings shall be tested using a 1000 V Megohmmeter.

The heater shall be tested using a 500 V Megohmmeter.

The minimum acceptable insulation value shall be:

- Motor Winding: 100 Megohms.
- Heater: 10 Megohms.

6.2.13 DC motor - Test Sheet T-PX-14

6.2.13.1 Insulation resistance tests

Contractor shall carry out the insulation resistance tests on the motor windings, and the motor heater.

The motor field and armature windings shall be tested using a 1000 V Megohmmeter, each winding shall be tested with the remaining windings, and frame connected together and earthed (in some instances it may be impractical to test/earth each phase winding separately).

Motor heater shall be tested under 500 V only.

The minimum acceptable insulation value shall be:

- Shunt Field: 10 Megohms.
- Armature: 10 Megohms.
- Series Field / Compounding: 10 Megohms.
- Heater Winding: 10 Megohms.

6.2.13.2 Brushes

The spring tension on the DC motor commutator brushes shall be checked in accordance with the Manufacturer's recommendations.

6.2.14 Distribution board / control panel / console - Test Sheet T-PX-15

Contractor shall carry out the insulation resistance tests on all distribution board, control panel or console, main circuits and also any control wiring.

All incoming and outgoing isolating switches shall be open.

The insulation resistance test on the main circuit shall be carried out between phase and earth and phase to phase using a 1000 V Megohmmeter.

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The minimum acceptable resistance value shall be 50 Megohms.

The control wiring and apparatus (voltmeter etc...) shall be tested using a 500 V Megohmmeter.

The minimum resistance value shall be 10 Megohms.

6.2.15 Charger / inverter - Test Sheet T-PX-16

All tests required by the Manufacturer's documentation shall only be carried out by Contractor in accordance with the Manufacturer's standard test procedures.

6.2.16 Battery - Test Sheet T-PX-17

All tests required by the Manufacturer's documentation shall only be carried out by Contractor in accordance with the Manufacturer's standard test procedures.

Contractor shall check all the electrolyte level is conform to the specification.

6.2.17 Lighting circuits - Test Sheet T-PX-18

Tests on the lighting installation shall be carried out by Contractor on one circuit basis (cables and luminaires, cables and sockets).

The circuit insulation resistance test shall be carried out using a 500 V Megohmmeter, insulation resistance being measured between each phase and earth.

Important: Do not use Megohmmeter across phases

The minimum acceptable insulation resistance value for the circuit shall be 10 Megohms.

6.2.18 Power socket outlet - Test Sheet T-PX-19

For power socket outlet the individual sockets shall be tested using a 1000 V Megohmmeter and the insulation resistance recorded.

The minimum acceptable insulation resistance value shall be 100 Megohms.

6.2.19 Heater - Test Sheet T-PX-20

Contractor shall carry out the insulation resistance tests on heater using a 1000 V Megohmmeter, measuring each phase to the other ones connected to earth.

The minimum acceptable insulation resistance value shall be 100 Megohm.

6.2.20 Neutral earthing resistors - Test Sheet T-PX-21

The NER terminals shall be disconnected from the transformer or generator neutral point and from earth.

Surge diverters shall be tested in accordance with the Manufacturer's recommendations.

A 1000 V Megohmmeter should be used for testing the resistor elements.

The minimum acceptable insulation resistance values shall be:

- HV distribution - 150 Megohms.
- LV, lighting and small power distribution - 100 Megohms.

HV earthing transformers shall be tested in accordance with the requirements of HV transformers tests in 6.2.3.

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In all cases, test voltages shall be in accordance with the Manufacturer's recommendations

6.2.21 Tape trace heating - Test Sheet T-PX-22

Tests on the tape trace heating installation shall be carried out by Contractor on a circuit basis (Supply cable, tape, junction boxes) and as per Project Specification and **GS EP ELE 331**.

Before the insulation is applied to the pipe, the tape shall be tested for continuity and an insulation resistance test shall be carried out using a 500 V Megohmmeter.

The minimum acceptable insulation resistance value shall be 10 Megohms regardless of length.

After the pipe insulation has been installed, the continuity and insulation resistance test shall be repeated to ensure the tape has not been damaged.

In hazardous areas the resistance to earth in Megohms must not be less than:

$$\frac{750}{L} \text{ Megohms (Where L = Length of the Heater in meter)}$$

6.2.22 Control station - Test Sheet T-PX-23

Tests on the control stations including its multicore cable shall be carried out by Contractor.

The circuit insulation resistance test shall be carried out using a 500 V Megohmmeter, insulation resistance being measured between each phase and earth.

The minimum acceptable insulation resistance value shall be 50 Megohms.

The on/off tests of the control station shall be carried out with the continuity test from the MCC.

6.2.23 Navigation aids - Test Sheet T-PX-25

All tests required by the Manufacturer's documentation shall only be carried out by Contractor in accordance with the Manufacturer's standard test procedures, Project specification and as per **GS EP ELE 321**.

The Test Sheet shall be used as a front sheet to record tests results.

All cables in the system shall be tested in accordance with 6.2.9 and 6.2.10.

Batteries shall be tested in accordance with 6.2.16.

6.2.24 Earthing systems - Test Sheet T-PX-26

6.2.24.1 Continuity of protective conductors

A continuity test shall be made in order to check the continuity of the protective conductors, including the equipotential bonding.

For main protective conductor, test results shall be obtained from cable test sheet T-PX-09 (see section 6.2.9)

6.2.24.2 Equipment earth return path impedance test

6.2.24.2.1 Definitions

To comply with **IEC 60364-4-41**, "touch" voltages shall not exceed 50 Volts AC RMS.

The earth impedance loop shall be lower than the R_A calculated:

$$R_A \times I_d < U_L$$

R_A = The earthing resistance of all exposed conductive parts connected by a protective conductor to an earth electrode

I_d = Fault current for the first dead fault between a phase conductor

U_L = Conventional touch voltage.

Example:

Distribution system	I_d (mA)	U_L (V)	R_A (ohms)
LV	300	50	167
HV	30000	50	1.67

6.2.24.2.2 Method

All power supplies to the systems under test shall be isolated before commencing the tests.

All testing shall be carried out in accordance with the attached detail drawings using an AC current injection test set.

The injected current shall be equal to 1.5 times the design current of the circuit under test except that the current shall not exceed 25 A.

The loop impedance value measured is equal to:

$$E = \frac{\text{test set generator voltage}}{\text{test set generator current}}$$

This measurement is applicable for:

- Verification of trip condition upon 2nd fault phase to earth in IT system.
- Verification of trip condition upon earth fault in TN system (circuits without ELCB).

It shall be performed for each switchboard/MCC on the longest cable run on onshore plants.

6.2.24.2.3 Motor feed from LV motor control centre

- Connect injection test set between MCC Phase Bus bar "R" and switchboard earth, manually close contactor "B" and determine loop impedance E1 by shorting motor terminal "R" phase to motor earth conductor.
- Short across high impedance earthing resistor "F" and close circuit breaker "E" to determine loop impedance E2.
- Total earth return path impedance = E1 + E2. (This is a conservative value since the phase conductor resistances are also included).

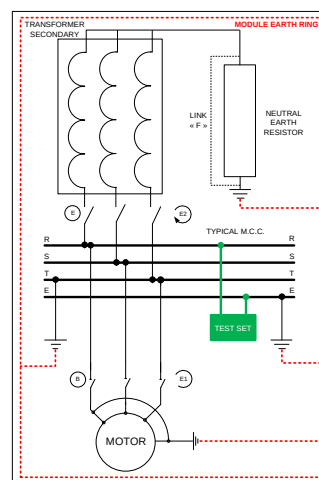


Figure 1

6.2.24.2.4 Lighting circuit feed from distribution board

- Connect injection set between Phase "T" Bus bar and Distribution Board Earth. Manually close Breaker "A" and determine loop impedance E3 by shorting the end light fitting Terminal "T" to the Earth Conductor.
- Short across high impedance earthing Resistor "F" and manually close circuit breaker "E" to determine Loop Impedance E4.
- Total Earth Return Path Impedance = E3 + E4. (This is a conservative value since the phase conductor resistances are also included).

Note: Earth return path impedance tests on small power circuits shall be at the direction and the discretion of Company Engineer.

With the level of protection provided, it is only considered necessary to test one circuit per distribution board providing results are satisfactory.

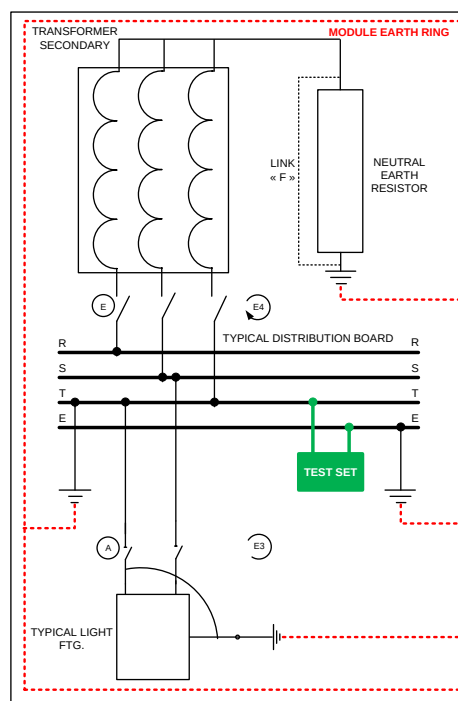


Figure 2

6.2.24.2.5 HV Motor feed from HV switchboard

- Connect injection test set between switchboard Phase Bus bar "R" and switchboard earth, close breaker/contacter A and determine loop impedance E6 by shorting motor terminal "R" phase to motor earth conductor.
- Connect injection test set between switchboard Phase Bus bar "R" and switchboard earth, close earthing transformer contactor B and determine loop impedance E5 by shorting earthing transformer terminal "R" phase to transformer earth conductor.
- Total earth return path impedance = E5 + E6.

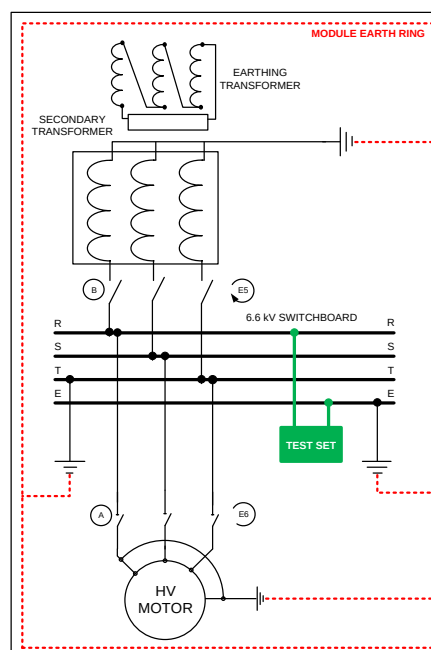


Figure 3

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6.2.25 Lightning protection systems - Test Sheet T-PX-28

6.2.25.1 Equipotentialisation

A continuity test of the element (welding together of all civil engineering steelwork elements) shall be made in order to check the continuity between the different earth electrodes as per Project Specification and **GS EP ELE 051**.

6.2.25.2 Earth electrodes

Measurement of the resistance as per Project Specification and **GS EP ELE 051** of the following:

- Air-terminations earth pits.
- Each independent earth pit.
- General earthing.

6.2.26 Cathodic protection - Test Sheet T-PX-33

All Tests shall be carried out as per Project Specifications, **GS EP COR 110**, **GS EP COR 111**, **GS EP COR 112** and Manufacturer' standard test procedures.

7. Instrument Pre-commissioning

7.1 Conformity checks

Type of equipment	Check List reference
Miscellaneous ➤ Temperature element (T/C or RTD) ➤ Rotameter ➤ Pitot element ➤ Annubar ➤ Etc...	C-JX-00
Relief valve	C-JX-03
Electrical instrument ➤ Pressure differential - pressure switch ➤ Pressure differential - pressure transmitter ➤ Temperature/Differential temperature switch ➤ Temperature/Differential temperature transmitter ➤ Flow transmitter ➤ Flow switch ➤ Level switch ➤ Level transmitter – controller ➤ Solenoid valve ➤ Limit switch ➤ Density transmitter ➤ Signal selector ➤ Hand switch ➤ Analyser ➤ I/P converter ➤ Probe/proximitior/monitor (displacement - vibration key phasor)	C-JX-08
Instrument power cable	C-JX-09
Multi / single-core instrument control cable	C-JX-10
Orifice plate	C-JX-11
Optical fiber cable	C-JX-12
Thermowell	C-JX-13

Type of equipment	Check List reference
Turbine / vortex meter	C-JX-14
Venturi	C-JX-15
Local gauge / Indicator ➤ Local temperature indicator ➤ Level indicator ➤ Level gauge (sight glass) ➤ Local pressure indicator ➤ Flow indicator	C-JX-16
Bursting disc	C-JX-20
Actuated on/off valve pneumatic type	C-JX-23
Actuated on/off valve electrical type	C-JX-24
Control valve pneumatic / hydraulic type	C-JX-27
Control valve electrical type	C-JX-28
Field instrument panel / annunciator	C-JX-30
Junction & marshalling box	C-JX-31
Gas / smoke detector	C-JX-42
Fire detector	C-JX-43
Fusible loop	C-JX-45
Frangible bulb / pneumatic detection & deluge System	C-JX-46
Indoor cabinet / panel	C-JX-48
Cabinet / panel earthing	C-JX-49
Cable tray / ladder	C-JX-50
Package	C-ZX-01I

7.1.1 Electrical instruments and sensors - Check Sheets C-JX-00 and 08

Pre-commissioning checks shall be carried out as per Project Specifications and according **GS EP INS 101** and **GS EP INS 110** when all the tests and/or calibration tests have been carried out and after final installation/connection of all auxiliary devices and tubing (i.e. all the cables, boxes, impulse lines, probes, sensors...).

The type of equipment subject to checks shall be indicated on the Check List during the preparation phase.

Checks related to various types of equipment shall not be reported on the same Check List.

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Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification.
- Installation conforms to P&ID and hook-up drawing.
- Tube fittings manufacturer is the one chosen for the plant.
- Piping connections provide required block & bleed facility.
- Insulation and heat-tracing.
- Identification (tag number, tag plates).
- Supporting and protection against vibrations.
- The continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments).
- Calibration certificate.
- Electrical connections.
- Cable conformity and identification at instrument side.
- Cable gland conformity and mounting.
- Earthing connections (cable armour and screen).
- ATEX certificate.
- Flush instrument pipework with dry air.
- Equipment is correctly preserved.
- Mark-up drawings are available, etc.

7.1.2 Relief valve - Check Sheet C-JX-03

Pre-commissioning checks shall be carried out once the calibration tests have been completed, and after final test/installation/reinstatement of the concerned piping network.

The Check Sheet will be completed after final installation/connection of all auxiliary devices (e.g. tubing).

Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification.
- Installation conforms to P&ID and hook-up drawing.
- Installation is in line with manufacturer's recommendations.
- Insulation and heat-tracing.
- Identification (tag number, tag plate with SN, setting value, setting date...etc).

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- Calibration certificate and date against tag plate values.
- Supporting and protection against vibrations.
- Accessibility conforms to specifications, with platforming where necessary.
- That calibration seal is not broken.
- That transport locking device has been removed after installation.
- Equipment is correctly preserved.
- Mark-up drawings are available, etc.

7.1.3 Multi / single-core instrument control cable - Check Sheet C-JX-09 & 10

Pre-commissioning checks shall be carried out as per IEC Standards when all the tests have been carried out and after final connection/termination of all cable and/or core cable in the cabinet or terminals block.

Contractor shall particularly check, but not limited to:

- Cable is installed in accordance with layout drawing (segregation, distance...).
- Cable is supported and fixed to rack according to project Specification.
- Bending radius is within the specified limits.
- Cable is correctly loomed and segregated in accordance with specification.
- Core marking against drawings.
- Cable labeling is in accordance with specification.
- Cable gland suit for cable type.
- Shrouds and MCTU are in accordance with specification.
- Cable glands are correctly mounted and tightened.
- Cable gland plate for single core cables is non ferrous.
- Cable earthing against drawings.
- Mark-up drawings are available, etc.

7.1.4 Orifice plate and bursting disc - Check Sheet C-JX-11 & 20

Pre-commissioning checks shall be carried out once the measurements have been completed, and after final installation of the concerned Item.

Orifice plates and bursting discs shall be inspected for conformity and damage prior to their installation.

The Check Sheet shall be completed after their final installation.

Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification.

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- Installation conforms to P&ID and hook-up drawing.
- Piping upstream and downstream straight lengths are in line with specifications.
- Flow direction is clearly identified on the tab.
- Tag number is stamped or engraved on tab.
- Accessibility conforms to specifications, with platforming where necessary,.
- Calculation certificate.
- Plate flatness and surface finish.
- Protect and store plate until ready for installation.
- Mark-up drawings are available, etc.

7.1.5 Optical fiber cable - Check Sheet C-JX-12

Pre-commissioning checks shall be carried out as per Project Specification and **GS EP TEL 191** when all the tests have been carried out and after final connection/termination of all cable and/or fiber in the panel/splice panel.

Contractor shall particularly check, but not limited to:

- Cable is installed in accordance with layout drawing (segregation, distance...).
- Cable is supported and fixed to rack according to project Specification.
- All cables connections and installation.
- Correct interconnection to peripherals.
- Fibres are terminated correctly and secured.
- That there is no mechanical damage.
- Cable gland suit for cable type.
- Check that minimum bending radius of fiber optic cables is met in cabinet/patch panel.
- Mark-up drawings are available, etc.

7.1.6 Thermowell - Check Sheets C-JX-13

Pre-commissioning checks shall be carried out after final reinstatement when all piping tests have been carried out and before installation of the sensor (i.e. TE, TT, TG, etc...).

Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification (Insertion and stem length, internal diameter...).
- Installation conforms to P&ID and hook-up drawing.
- Check identification (tag number, tag plates).
- Check accessibility conforms to specifications with platforming where necessary,

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- Check equipment is correctly preserved,
- Mark-up drawings are available, etc.

7.1.7 Turbine meter / vortex meter - Check Sheet C-JX-14

Pre-commissioning checks shall be carried out once the tests have been completed, and after final installation/connection of the concerned Item.

However, turbine meter / vortex meter will be inspected for conformity and damage prior to their installation.

The Check Sheet shall be completed after their final installation/connection of all auxiliary devices.

Contractor shall particularly check, but not limited to:

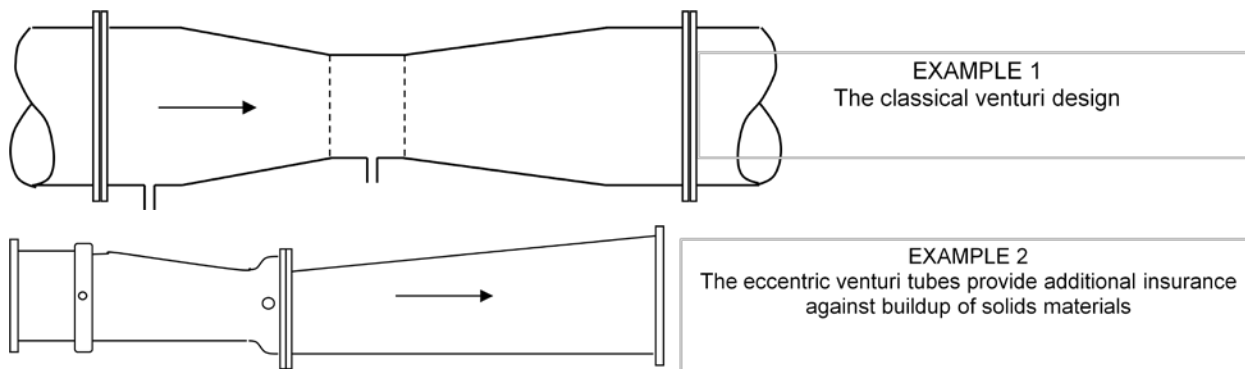
- For mechanical damage.
- Installed equipment is suitable and conforms to specification.
- Installation conforms to P&ID and hook-up drawing.
- Installation is in accordance with flow direction and manufacturer's recommendations for upstream and downstream straight lengths.
- Internal parts are clean (and check for free rotation for turbine).
- Insulation and heat-tracing.
- Identification (tag number, tag plates).
- Supporting and protection against vibrations.
- Accessibility conforms to specifications, with platforming where necessary.
- Calibration certificate.
- Electrical connections.
- Cable conformity and identification.
- Cable glands conformity and mounting.
- Earthing connections (cable armour and screen).
- ATEX certificate.
- Equipment is correctly preserved.
- Mark-up drawings are available, etc.

7.1.8 Venturi - Check Sheet C-JX-15

Pre-commissioning checks shall be carried out once the tests have been completed, and after final installation/connection of the concerned Item.

However, turbine meter / vortex meter will be inspected for conformity and damage prior to their installation.

The Check Sheet will be completed after their final installation/connection of all auxiliary devices.



Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification.
- Installation conforms to P&ID and hook-up drawing.
- Installation is in accordance with flow direction and manufacturer's recommendations for upstream and downstream straight lengths.
- Internal parts are clean (and check for free rotation for turbine).
- Identification (tag number, tag plates).
- Supporting and protection against vibrations.
- Accessibility conforms to specifications, with platforming where necessary.
- Equipment is correctly preserved.
- Mark-up drawings are available, etc.

7.1.9 Local gauge / indicator - Check Sheets C-JX-16

Pre-commissioning checks shall be carried out after final reinstatement when all piping tests have been carried out and after final installation/connection of all auxiliary devices and tubing (i.e. double block and bleed, purge, filter etc...).

Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification.
- Installation conforms to P&ID and hook-up drawing.
- Tube fittings manufacturer is the one chosen for the plant.
- Piping connections provide required block & bleed facility.
- Insulation and heat-tracing.

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- Identification (tag number, tag plates).
- Supporting and protection against vibrations.
- The continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments).
- Calibration certificate.
- Instrument positioning and visibility.
- Instrument pipework with dry air.
- Mark-up drawings are available, etc.

7.1.10 Actuated on/off valve (pneumatic/hydraulic type) - Check Sheet C-JX-23

Pre-commissioning checks shall be carried out once the calibration tests have been completed, and after final test/installation/reinstatement of the concerned piping network.

The Check Sheet will be completed after final installation/connection of all auxiliary devices (e.g. tubing, cables, boxes, etc...) Project Specification and **GS EP INS 137**.

Contractor shall particularly check, but not limited to:

- For mechanical damage.
- Installed equipment is suitable and conforms to specification.
- Installation conforms to P&ID and hook-up drawing.
- Valve is installed in accordance with flow direction.
- Identification (tag number, tag plates).
- Accessibility conforms to specifications, with platforming where necessary.
- "Valve + Control Panel" FAT report.
- Limit switches as per form CJX08.
- Control and feedback signals connections.
- Control and feedback cables conformity and identification.
- Cable glands conformity and mounting.
- Earthing connections (cable armour and screen).
- ATEX certificates.
- Flush instrument pipework with dry air.
- Equipment is correctly preserved.
- Mark-up drawings are available, etc.

7.1.11 Actuated on/off valve (electrical type) - Check Sheet C-JX-24

Pre-commissioning checks shall be carried out once the calibration tests have been completed, and after final test/installation/reinstatement of the concerned piping network.

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The Check Sheet will be completed after final installation/connection of all auxiliary devices (e.g. tubing, cables, etc...) as per Project Specification and **GS EP INS 137**.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to P&ID and hook-up drawing,
- Valve is installed in accordance with flow direction,
- Identification (tag number, tag plates),
- Accessibility conforms to specifications, with platforming where necessary,
- Limit switches (CJX08),
- Motor electrical connections,
- Power cable conformity and identification,
- Control and feedback signals connections,
- Control and feedback cables conformity and identification,
- Cable glands conformity and mounting,
- Earthing connections (cable armour and screen,
- ATEX certificates,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

7.1.12 Control valve (pneumatic/hydraulic type) - Check Sheet C-JX-27

Pre-commissioning checks shall be carried out as per Project Specification, **GS EP INS 120** and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices and tubing (i.e. limit switches, purge, filter etc...).

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to P&ID and hook-up drawing,
- Valve is installed in accordance with flow direction,
- Identification (tag number, tag plates),
- Accessibility conforms to specifications, with platforming where necessary,
- Insulation and heat-tracing,
- Calibration certificate,

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- Connections between actuator and electro-positioner,
- Electro-positioner as per form CJX08,
- Flush instrument pipework with dry air,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

7.1.13 Control valve (electrical type) - Check Sheet C-JX-28

Pre-commissioning checks shall be carried out as per Project Specification, **GS EP INS 120** and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices and tubing (i.e. limit switches, purge, filter etc...).

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to P&ID and hook-up drawing,
- Valve is installed in accordance with flow direction,
- Identification (tag number, tag plates),
- Accessibility conforms to specifications, with platforming where necessary,
- Calibration certificate,
- Motor electrical connections,
- Power cable conformity and identification,
- Control and feedback signals connections,
- Control and feedback cables conformity and identification,
- Cable glands conformity and mounting,
- Earthing connections (cable armour and screen,
- ATEX certificates,
- Flush instrument pipework with dry air,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

7.1.14 Annunciator / field instrument panel - Check Sheet C-JX-30

Pre-commissioning checks shall be carried out after final reinstatement when all the tests have been carried out and after final installation/connection of all auxiliary devices and tubing.

Contractor shall particularly check, but not limited to:

- For mechanical damage,

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- Installed equipment is suitable and conforms to specification,
- Installation conforms to hook-up drawing,
- Construction conforms to detailed drawings,
- Tube fittings manufacturer is the one chosen for the plant,
- Insulation and heat-tracing,
- Identification (tag number, tag plates),
- Supporting and protection against vibrations,
- Accessibility conforms to specifications, with platforming where necessary,
- Electrical connections,
- Cables conformity and identification,
- Cable glands conformity and mounting,
- Earthing connections (cable armour and screen),
- ATEX certificates,
- Panel FAT report,
- Flush instrument pipework with dry air,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

7.1.15 Junction / marshalling box - Check Sheet C-JX-31

Pre-commissioning checks shall be carried out when all auxiliary devices (i.e. cables, glands, terminal blocks and plugs) have been installed and connected inside the box.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Equipment is de-energized and safe,
- Available documents are at the latest revision,
- Nameplate data/certification is in accordance with project data,
- All flange faces are clean and greased with approved lubricants, and that all bolts are fitted and correctly tight (Exd only),
- All gaskets and bolts are fitted in covers and gland plates where applicable,
- Enclosure is correctly tagged as per drawing,
- Enclosure is correctly earthed in accordance with project data,
- All unused entries are plugged with approved blanks,

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- That terminals are approved and that the correct numbers are fitted (refer to manufacturer's certificates),
- Segregation barriers are fitted where necessary,
- Enclosure is correctly mounted and easily accessible,
- Mark-up drawings are available, etc...

7.1.16 Gas / smoke detector - Check Sheet C-JX-42

Pre-commissioning checks shall be carried out as per Project Specifications and **GS EP SAF 312** and when all auxiliary devices (i.e. cables, glands, terminal blocks and plugs) have been installed and connected.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Equipment is de-energized and safe,
- Available documents are at the latest revision,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to F&G detection layout drawings,
- Test facility is installed,
- End of line resistors correctly fitted where applicable,
- Protective cap is installed,
- Identification (tag number, tag plates),
- Supporting and protection against vibrations,
- Accessibility conforms to specifications, with platforming where necessary,
- Calibration certificate,
- Electrical connections,
- Cable conformity and identification,
- Cable gland conformity and mounting,
- Earthing connections (cable armour and screen),
- ATEX certificate,
- That all of the comm. spares and special tools are available in the stores,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

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7.1.17 Fire detector - Check Sheet C-JX-43

Pre-commissioning checks shall be carried out as per Project Specifications and **GS EP SAF 312** and when all auxiliary devices (i.e. cables, glands, terminal blocks and plugs) have been installed and connected.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Equipment is de-energized and safe,
- Available documents are at the latest revision,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to F&G detection layout drawings,
- Test facility is installed,
- Sensor activation lamp is visible,
- Remote annunciator is installed where required,
- Identification (tag number, tag plates),
- Supporting and protection against vibrations,
- Accessibility conforms to specifications, with platforming where necessary,
- Calibration certificate,
- Electrical connections,
- Cable conformity and identification,
- Cable gland conformity and mounting,
- Earthing connections (cable armour and screen),
- ATEX certificate,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

7.1.18 Fusible loop - Check Sheet C-JX-45

Pre-commissioning checks shall be carried out as per Project Specifications and **GS EP SAF 312** and when all auxiliary devices (i.e. cables, glands, terminal blocks and plugs) have been installed and connected.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to F&G detection layout drawings,
- Tube fittings manufacturer is the one chosen for the plant,

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- Piping connection provides required block & bleed facility,
- Flush instrument pipework with dry air,
- Insulation and heat-tracing,
- Identification (tag number, tag plates),
- Supporting and protection against vibrations,
- Accessibility conforms to specifications, with platforming where necessary,
- Calibration certificate,
- Electrical connections,
- Cable conformity and identification,
- Cable gland conformity and mounting,
- Earthing connections (cable armour and screen),
- ATEX certificate,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

7.1.19 Frangible bulb / pneumatic detection / deluge - Check Sheet C-JX-46

Pre-commissioning checks shall be carried out as per Project Specifications and **GS EP SAF 312** and when all auxiliary devices (i.e. cables, glands, terminal blocks and plugs) have been installed and connected.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to F&G detection layout drawings,
- Tube fittings manufacturer is the one chosen for the plant,
- That pipework supports for sprinklers and frangible bulbs are adequate,
- Flush instrument pipework with dry air,
- The tightness of the sprinklers,
- Piping connection provides required block & bleed facility,
- Identification (tag number, tag plates),
- Supporting and protection against vibrations,
- Accessibility conforms to specifications, with platforming where necessary,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

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7.1.20 Indoor cabinet / panel - Check Sheet C-JX-48

Pre-commissioning checks shall be carried out when all auxiliary devices (i.e. cables, glands, terminal blocks and plugs) have been installed and connected inside the cabinet.

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Identification (tag number, tag plates),
- Supporting and protection against vibrations,
- Doors handle (type, locking, etc...),
- External arrangement conforms to drawings,
- Internal layout conforms to drawings,
- Signals segregation conforms to specifications,
- Electrical connections,
- Earthing connections (cable armour and screen),
- Cables entries, protective plates and cable glands if relevant,
- Cables identification,
- Ensure equipment is correctly preserved,
- If accessibility and maintenance are possible and safe,
- That all of comm. spares and special tools are available in the stores,
- FAT report,
- Mark-up drawings are available, etc...

7.1.21 Cabinet / panel earthing - Check Sheet C-JX-49

As per **GS EP ELE 031** and **GS EP INS 107**, instrument earthing is identified as three different systems but they shall be interconnected inside each cabinet. Moreover earthing interconnection shall also be achieved at junction boxes and instruments (screen and armour). Exception is made with intrinsically safe earth (I.S.), where screen shall be earthed at only one side (at the cabinet location).

Contractor shall particularly check, but not limited to:

- All earth bars installation and tagging against drawings,
- Earthing cables installation, tagging and cross section against drawings,
- All connections are tight, clean and coated with an approved anti-corrosive grease,
- Interconnections between earthing circuits,
- Earthing networks segregation (IS),
- Earth rods correct installation,

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- Surge protective devices position and assemblies against the drawing,
- Location and height of lightning rods against the drawing,
- Connection of stays to the earthing system,
- Mark-up drawings are available, etc...

7.1.22 MCT Cabling and Cable tray / ladder - Check Sheet C-JX-50

Pre-commissioning checks shall be carried out as per Project Specifications and **GS EP ELE 311** after final installation of all the items.

Contractor shall particularly check, but not limited to:

- MCT's & Cable tray / ladder conform to project standards and specification
- MCT's & Cable tray / ladder are undamaged and installed against drawings without clashes with pipe runs or other equipment,
- Cable tray / ladder is adequately supported against drawings (no excessive deflection),
- Cables segregation in accordance with drawings,
- The capacity of cable tray / ladder (bunching, size of cables, etc...),
- Insulation pads are adapted to stainless steel or aluminium cable tray /ladder,
- Cable tray / ladder cleanness,
- Cable tray / ladder earthed and bonded against drawings,
- Cable arrangement in MCT's is conform with the drawing
- Mark-up drawings are available, etc...

7.2 Static tests

Type of equipment	Test Sheet reference
General purpose	T-JX-00
Control valve (modulating)	T-JX-01
Actuated valve	T-JX-02
Relief valve	T-JX-03
Instrument analogue output	T-JX-04
Instrument switched output	T-JX-05
Tubing pressure test	T-JX-06
Motorized operated valve	T-JX-07
Low pressure closure test	T-JX-08
Instrument power cable	T-JX-09
Multi / single-core instrument control cable	T-JX-10

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Type of equipment	Test Sheet reference
Orifice plate	T-JX-11
Optical fiber cable	T-JX-12
Thermowell	T-JX-13
Cabinet / panel earthing	T-JX-49

7.2.1 General form - Test Sheet T-JX-00

The general Test Sheet form shall be used by Contractor to report any required test on instrumentation equipment not covered by the previous Test Sheets.

7.2.2 Control valve (modulating) - Test Sheet T-JX-01

The Air Failure, Signal Failure, and Valve Signal Range shall be obtained from the Data Sheet and checked against the valve data plate.

Prior to operate, the valve seat shall be checked for cleanliness.

The testing of valves shall be made in accordance with Project Specification Control Valves **GS EP INS 120**. However, as the method of test will vary for valve type, size and service, Contractor shall submit a test procedure to Company for approval as specified in **GS EP EXP 103**.

Contractor shall complete the results on the Test Sheet and note any adjustments made in the remarks section. Contractor shall record in the punch list any remedial work required prior to it being started.

All auxiliary equipment mounted with the valve shall be calibrated and/or static tested and all test results recorded on Test Sheets.

After stroke checking, opening and closing times of the valve are to be confirmed and noted on the Test Sheet.

Seat leakage tests shall have been completed and witnessed at the Vendor/Manufacturer's premises.

Instruments serial number and model number shall be recorded on each Test Sheet and the relevant data sheet be copied and attached to each Test Sheet.

7.2.3 Actuated valve - Test Sheet T-JX-02

In such cases, it is accepted valve operation from the valve control station is not part of the Pre-commissioning scope of work. However special attention shall be paid to overpressure protection, especially when the protection device is mounted on external equipment (e.g. accumulator).

The testing of valves shall be made in accordance with Project Specification Control Valves **GS EP INS 120** and Project Specification On/off valve controls panels and actuators functional and construction requirements **GS EP INS 137**. However, as the method of test will vary for valve type, size and service, Contractor shall submit a test procedure to Company for approval as specified in **GS EP EXP 103**.

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In addition whenever limit switches are installed on actuated valves they shall be adjusted as per the Manufacturer recommendations.

7.2.4 Relief valve - Test Sheet T-JX-03

The testing of relief valves shall be made in accordance with Project Specifications and **GS EP INS 125** and **GS EP INS 120**. However, as the method of test will vary for valve type, size and service, Contractor shall submit the test procedure to Company for approval as specified in **GS EP EXP 103**.

Relief valves shall be tested on an approved test bench located in the immediate vicinity of the Plant and/or the worksite, in order to not impinge the setting integrity during transportation.

The time frame between each relief valve certification test and the Transfer of Operation and Maintenance to Company of the installation shall not exceed 6 months or what is defined by local regulation, whichever the lower.

Acceptance of calibration certificate shall be subject to demonstration of the application of proper preservation plan, as defined by procedures and specifications.

A test label shall be attached with the date and the tag of the valve after the tests have been successfully performed.

Vendor package reliefs valves shall be removed by Contractor and tested in the same manner and shall be re-installed/reinstated.

Valves with back pressure bellows fitted shall have their operational back pressure applied for 10 minutes with a zero leakage rate.

All valves shall be tested on air or nitrogen and adjusted to commence to open at the cold test pressure. This cold test pressure shall include the corrections for service conditions or back pressure or temperature, or both.

The seat leakage test shall be carried out strictly in accordance with **API STD 527**.

The acceptance criteria shall be as follows:

- Resilient seat seals: zero leakage,
- Metal seats: less than 5 bubbles per minute.

Should any valve not conform to the test requirements listed on the data sheet, it shall be brought to the attention of Company prior to remedial work being carried out on the valve.

7.2.5 Instruments transmitters and switches - Test Sheets T-JX-04 & 05

Instruments calibration is not required prior to the installation, as long as Manufacturer's calibration datasheet is provided and transportation or storage conditions have not corrupted the instrument.

In case Calibration is required, Contractor shall conform to the requirements of the Manufacturer's calibration manual to complete the test.

All instruments shall be calibrated by Manufacturer before delivery to the site. To validate this calibration, tests shall be carried out in accordance with Manufacturer's procedure.

These tests may be applied in an instrument workshop on site.

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Prior testing, each instrument data plate shall be checked against the latest version of the Data Sheet to confirm model number, operation, action, certification, etc., and be inspected to ensure against damaged or incorrect parts.

Contractor shall ensure that copies of all Manufacturer installation and calibration instructions are available prior to the commencement of work.

Contractor shall ensure that the configuration parameters of the instruments meet the requirements of the data sheet.

7.2.6 Instrument tube/pipe pressure test - Test Sheet T-JX-06

7.2.6.1 Hydraulic

Flushing and pressure testing shall be carried out by Contractor as per Project Specifications, [GS EP PVV 175](#) and [GS EP PVV 171](#).

Lubrication oil, seal oil and control oil piping shall be cleaned and proven in accordance with [API STD 614](#) and/or Manufacturer/Vendor recommendations.

The Instrument scope of work for pressure testing includes all tubes and pipes that do not carry a line number as dictated by the piping line list. This is specified as the tube and pipe after the piping isolation valve and is shown on the relevant hydraulic hook-up.

After testing and acceptance it is critical that all open pipe and tube ends are capped or taped to prevent contamination by dust or moisture.

7.2.6.2 Pneumatic

Cleaning and pressure testing shall be carried out by Contractor as per Project Specifications, [GS EP PVV 175](#) and [GS EP PVV 171](#).

The Instrument scope of work for pressure testing includes all tubes and pipes that do not carry a line number as dictated by the piping line list. This is specified as the tube and pipe after the piping isolation valve and is shown on the relevant hydraulic hook-up.

Completion of the Test Sheet shall follow the same format as that for hydraulic pipe and tube. As with hydraulic tube it is essential that all open pipe and tube ends are capped or taped after completion of test.

7.2.6.3 Impulse

Cleaning and pressure testing shall be carried out by Contractor as per Project Specifications, [GS EP PVV 175](#) and [GS EP PVV 171](#).

7.2.7 Motorized operated valve - Test Sheet T-JX-07

The testing of valve shall be made in accordance with Project Specifications, [GS EP PVV 142](#) and [GS EP INS 137](#).

However, as the method of test will vary for valve type, size and service, Contractor shall submit a test procedure to Company for approval as specified in [GS EP EXP 103](#).

Contractor shall particularly test, but not limited to:

- response time for opening (duration).

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- response time for closing (duration).
- Power on-open.
- Power on-close.
- Power failure.

7.2.8 Low pressure closure test - Test Sheet T-JX-08

Contractor shall perform a Low Pressure Closure Test on worksite on all critical valves as specifies in **GS EP EXP 103** prior their installation.

Low pressure closure test shall be carried out strictly in accordance with Project Specification, **GS EP PVV 142** and **API STD 598**.

Acceptance criteria: no leaks are acceptable.

7.2.9 Instrument power cable - Test Sheet T-JX-09

Contractor shall carry out all the tests with the cable ends glanded and prepared but not connected. Core and armour continuity checking shall be performed. The insulation resistance tests will be carried out using a 1000 V Megger for LV power cables.

The minimum acceptable value shall be 10 Megohms,

7.2.10 Multi-core /Single-core Instrument control cable - Test Sheet T-JX-10

Contractor shall carry out and record all data for the insulation resistance with the cable ends glanded and prepared but not connected.

On completion of the tests the cable shall be connected.

7.2.10.1 Insulation test

Insulation resistance tests shall be carried out using a 500 V Megohmmeter and the minimum recorded value shall be 10 Megohms.

Insulation tests on screened singles, pairs and triples shall be tested as follows:

- Test voltage applied between each core and all others cores.
- Test voltage applied between each core and screen.
- Test voltage applied between each core and earth/armour.
- Test voltage applied between each screen and others screens.

7.2.10.2 Continuity tests

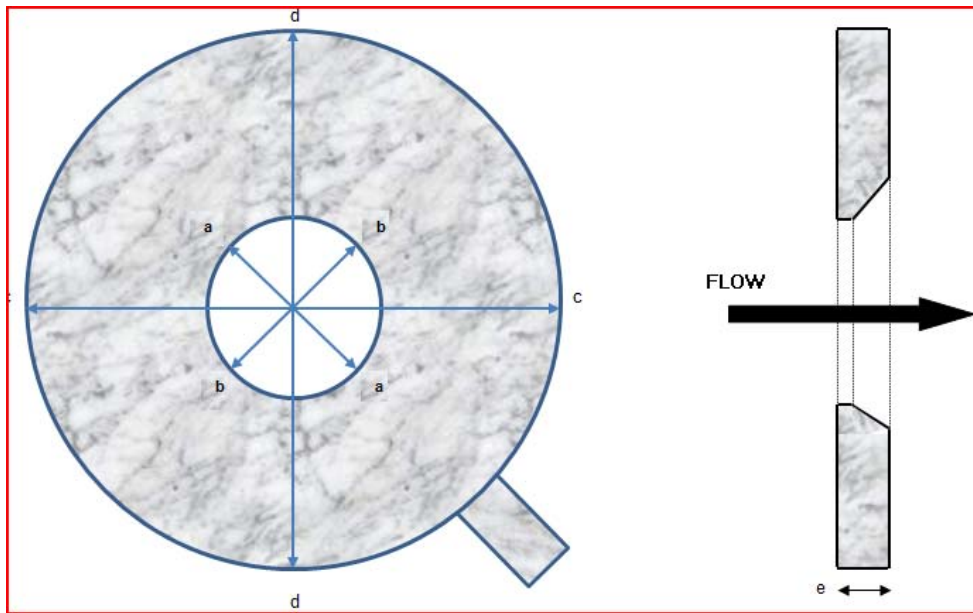
Continuity checks must be proved using low voltage test equipment prior to insulation resistance Megger tests.

Continuity test for core / screen / armour are achieved by using one core for return and deducting this value.

7.2.11 Orifice plate - Test Sheet T-JX-11

Orifice measurements according to data sheet shall be performed prior to orifice plate installation.

Contractor shall take the following measurement of diameter and thickness, as shown in the drawing:



A test label shall be attached after the measurements have been performed.

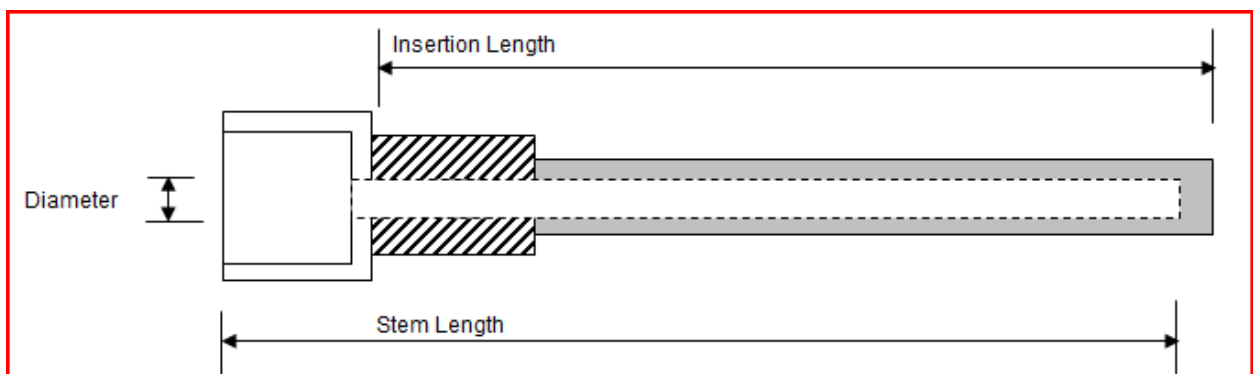
7.2.12 Optical Fiber - Test Sheet T-JX-12

Pre-commissioning tests shall be carried out as per **GS EP TEL 191** Telecom Fiber Optic Systems Design and requirements for the radio disturbance level and immunity requirements of the equipment are described in **CISPR 22** standards.

7.2.13 Thermowell - Test Sheet T-JX-13

Thermowell measurements according to data sheet shall be performed prior installation.

Contractor shall take the following measurement, as shown in the drawing:



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7.2.14 Cabinet / panel earthing – Test Sheet T-JX-49

Pre-commissioning tests shall be carried out as per **GS EP ELE 031** and **GS EP INS 107**.

These tests will be carried out by cabinet/panel individually when all field instrument cables are connected to cabinets (through junction boxes).

When disconnected from the main earth network, have to be established:

- IPE and IE continuity since interconnections are ensured through junction boxes and instruments.
- Segregation of the IS earth when applicable.

The resistance between PE bar and IE/IPE/ISE shall not exceed 1 ohm.

8. Mechanical Pre-commissioning

8.1 Pre-commissioning Conformity checks

Type of equipment	Check List reference
Pedestal crane	C-AX-01
Lift	C-AX-02
Air winches	C-AX-03
Pedestal crane system	C-AX-04
Gantry crane	C-AX-05
Hoist/Chain block	C-AX-06
Air transporter	C-AX-07
Flare tip change out handling unit	C-AX-08
Pull-in riser gantry	C-AX-09
Trolley / Monorail	C-AX-10
Heat Exchanger shell and tube	C-EX-01
Heat exchanger plate	C-EX-02
HVAC Heater coil	C-EX-03
HVAC Cooler	C-EX-04
Heat exchanger air fin	C-EX-05
Reciprocating pump	C-GX-01
Centrifugal pump vertical	C-GX-02
Centrifugal pump	C-GX-03
Electro submersible pump	C-GX-05
Metering pump	C-GX-06
Rotary pump	C-GX-08
Gearbox	C-GX-09
Hydraulic coupling	C-GX-10
Ejector	C-GX-11
HVAC Filter	C-HX-02
Agitator	C-HX-04
Coarse Filter (Rotating element)	C-HX-05
Sand Filter	C-HX-06

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Type of equipment	Check List reference
Gas turbine air inlet filter	C-HX-08
Spring Hanger	C-HX-09
Reciprocating Compressor	C-KX-01
HVAC Fan	C-KX-02
HVAC refrigeration unit	C-KX-03
Gas turbine driver	C-KX-05
Centrifugal compressor	C-KX-06
Inert gas generator	C-KX-07
Turbo expander	C-KX-08
Heater	C-KX-09
Turbine exhaust duct	C-LX-03
Air filter / Flame trap	C-LX-04
Drag chains	C-LX-28
HVAC ducting	C-NX-01
HVAC manual damper	C-NX-02
HVAC automatic damper	C-NX-03
HVAC sound attenuator	C-NX-04
HVAC humidifier	C-NX-05
HVAC air handling unit	C-NX-06
HVAC constant volume box	C-NX-07
HVAC galley hood	C-NX-08
HVAC spray washer	C-NX-09
HVAC fire damper control panel	C-NX-10
HVAC weather louver	C-NX-11
HVAC compressor	C-NX-12
Diesel engine	C-TX-01
Lube oil package	C-VX-04
Flare tip package	C-VX-06
Flare ignition and snuffing package	C-VX-07
Air dryer package	C-VX-09

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Type of equipment	Check List reference
Package	C-ZX-01M

8.1.1 Conformity Checks general requirements

Contractor shall carry out inspection of all mechanical installations/package as per Project Specifications and all applicable manufacturer/vendor requirements.

Contractor shall follow as minimum the requirements indicated in the check list in attachment.

8.2 Static tests

Type of equipment	Test Sheet reference
General purpose	T-MX-00
Machinery alignment	T-MX-08
Ductwork / leak test	T-MX-09
Lifeboat/davit load test	T-MX-10
Monorail and gantry crane load test	T-MX-11
Platform crane	T-MX-12
Pad eyes / static load test	T-MX-13
Base pad levelling	T-MX-15

8.2.1 Machinery alignment - Test Sheet T-MX-08

The machinery alignment shall be made in accordance with Manufacturer/Vendor requirements, the Project Specifications.

Major Items of Rotating Equipment e.g. Turbines, Compressors, Pumps, will have alignment procedures and applicable tolerances by the Manufacturer, to which Contractor shall adhere.

In order to permit alignment to be carried out, Contractor shall be responsible for the removal and replacement of any work, e.g. coupling guards and couplings.

Where the Manufacturer/Vendor has not specified specific procedures or on minor Items of rotating equipment, the tolerances stated by the coupling Manufacturer or the figures quoted below shall be used, whichever are the less.

It shall be Contractor's responsibility to ensure that the worksite is maintained in a clear condition, especially when equipment is being worked on, that all machine nozzles are protected from the ingress of foreign matter, and exposed machinery surfaces are treated with preservative. If for any reason Company has reason to doubt the internal integrity of a rotating machine due to on site work practices, it will be opened for inspection.

The sheet shall be designed to record all readings taken for one specific coupling on each Item of equipment as indicated.

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The alignment for the three conditions listed below, shall be recorded on three separate sheets for each coupling:

- Base Plate Holding Down Bolts-Loose, Piping Flange Bolts-Loose.
- Base Plate Holding Down Bolts-Tight, Piping Flange Bolts-Loose.
- Alignment - Driven Machine, Base Plate Holding Down Bolts-Tight, Piping Flange Bolts-Tight.

Readings will in every instance be witnessed by Commissioning; however, the acceptance signatures will not be given until satisfactory alignment conditions are met.

Where satisfactory machine alignment is achieved above, but subsequently is changed, for example, due to incorrectly installed, sea fastening or modified pipework, Contractor shall repeat the machine alignment to bring it back to a satisfactory condition. The original Test Sheet will be rejected and replaced by the new sheets witnessed and signed by Company.

The following guidelines should be used for the procedure and tolerances whilst making an alignment, if not quoted by the equipment Manufacturer/Vendor.

8.2.1.1 Machine Conditions

- **Coupling Hub Run out**

Prior to checking alignment the Coupling Hub Run out must be checked by mounting the magnetic base of the dial indicator on each hub in turn and placing the dial indicators against the coupling periphery and face, keeping the hub on which the magnetic base is mounted and rotating the hub under the dial indicator.

- **Tolerances**

- Coupling Periphery - **Roundness**
Maximum 0.125 mm
- Coupling Face - **Squareness**
Maximum 0.050 mm

8.2.1.2 Alignment, Base Plate Holding Down Bolts-Loose Piping Flange Bolts-Loose

To be carried out by rotating both the driver and driven shafts together. If this is not possible the alignment is to be made by mounting the magnetic base of the dial indicators rigidly to the most easily rotated machine shaft, and rotating these around the stationary shaft and hub. Readings to be taken at 0° (dial indicators zero), 90°, 180° and 270° positions.

Where there is coupling hub "run out" on the hub being checked, the position of maximum run out should be placed across the 90° - 270° position.

Driven machine suction and discharge pipework is to be supported and no load imposed on the machine nozzles. Parallelism reading may be taken with an inside micrometer of gauges.

- **Tolerances**

- Coupling Periphery Alignment
Maximum 0.125 mm

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- Coupling Face Parallelism
Maximum 0.050 mm.

8.2.1.3 Alignment, Base Plate Holding Down Bolts-Tight Piping Flange Bolts-Loose

The alignment shall be made as for condition 8.2.1.2. The readings shall be taken and recorded before and after tightening the holding down bolts should not change by more than 0.025 mm in any direction. The alignment tolerance will remain the same.

8.2.1.4 Alignment, Base Plate Holding Down Bolts-Tight Piping Flange Bolts-Tight

The alignment shall be made as for condition 8.2.1.2. The readings shall be taken and recorded before and after tightening the suction and discharge flanges to the machine should not change by more than 0.025 mm in any direction. The final alignment should remain within the specified tolerance.

On completion of the machine alignment and after an uncoupled motor run Contractor shall re-check the alignment and subsequently replace the coupling.

Contractor must at all times, have all relevant documentation available for review by Company.

8.2.2 Ductwork leakage test - Test Sheet T-MX-09

In carrying out this procedure the following specifications shall apply:

- HVAC General Specification, HVAC Ductwork/Fabrication, Installation

Contractor shall supply the test equipment and all ancillary equipment and fittings required to carry out the leakage test, and shall perform the leakage tests to the satisfaction of the signatories on the Test Sheet T-MX-09.

The test rig shall be capable of testing the ductwork system up to a test pressure of 2.500 N/m² and shall include:

- Variable speed fan to allow a range of test pressures to be applied.
- Pressure gauge to indicate the test pressure.
- Inclined manometer to measure leakage.

Note: The accuracy of the pressure gauge shall be within $\pm 10\%$ of the test parameters.

All electrical test equipment shall be rated for use on the construction site power system.

All test equipment will be inspected before commencement of testing.

Contractor shall ensure that the sections of ducting to be tested for Air Leakage shall be sealed as follows:

- Main ducts sealed off at flanges by blanking plates.
- Small branch ducts sealing with polythene sheet is acceptable.

Contractor shall ensure that sealants have cured before the commencement of testing.

Before testing, Contractor shall complete all data required on the Test Sheet for Ductwork Leakage T-MX-09 excluding the Test Results section.

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When Test Sheet T-MX-09 has been prepared and preparation work completed Contractor shall perform the Leakage Test.

Contractor shall adjust the test apparatus until the required static pressure is achieved. The pressure shall be maintained for fifteen minutes. After fifteen minutes the test pressure shall be reduced to atmospheric after which it will be immediately re-applied.

Contractor shall complete all the remaining Test data requirements on Test Sheet T-MX-09 and shall sign and date the completed Test Sheet.

If at any time during the test the permitted leakage rate is exceeded then Contractor shall seal the leaks and carry out a re-test. Contractor shall re-test the ductwork as many times as necessary.

Contractor shall re-instate the ducting and indicate the results on the Test Sheet T-MX-09.

Contractor shall obtain the required signatures on the Test Sheet to clear the test.

The originals of the Test Sheet T-MX-09 shall be filed in the Pre-commissioning Dossier of the Sub-system.

8.2.3 Lifeboats davits - Test Sheet T-MX-10

The purpose of this test is to verify the integrity of the life boat and cradle system before load out by performing a load test on the davit. The testing is done using a load beam on which water/sand bags can be suspended. The testing is not to be carried out using the boat. This procedure assumes there is sufficient height to carry out the load tests in the construction configuration.

Before commencing load testing Contractor shall complete the following:

- Erection of the lifeboat davits on to the structure in accordance with design drawings and specifications.
- Erection of all access platforms, ladder, guard-rails and ancillary equipment in accordance with the Manufacturer drawings and specifications.
- Reeving of the wire falls onto the winch and davit blocks in accordance with Manufacturer drawings.
- Completion of the electrical installation such that with the provision of temporary power the falls can be raised from the local stop/start station.

Contractor shall, prior to any load testing provide to Company, a record of satisfactory NDT clearance for all welded components associated with the lifeboat structure.

The Contractor in the case of the electrical equipment shall ensure that all electrical Check Lists and Test Sheets are completed prior to energisation and operation. The energisation and operation will then become the responsibility of Commissioning Team.

Contractor shall ensure that all equipment used for load testing i.e. shackles, slings, etc., are covered by current certification.

The Test Load being 220% x safe working load.

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Contractor shall inform Company as per Project Specification and/or **GS EP EXP 101** when the test is ready to take place. Company will in turn notify the Certifying Authority, in this case the Department of Transport.

After completion of testing, Company shall specify the requirement for further specific NDT on the structure. Contractor shall complete this work and return the documentation to Company.

8.2.4 Monorail / Gantry and Pad-eyes - Test Sheets T-MX-11 and T-MX-13

Pre-commissioning tests shall be in accordance with project specifications.

Contractor shall, prior to any load testing, supply to Company a record of satisfactory NDT clearance for all welded components associated with the lifting structure. The NDT will normally comprise the 100% MPI and the 100 % UT (Magnetic Particle and Ultrasonic Inspections) of all pad-eyes, supports welded to beams, beam joints and specific welds on manufactured beams.

- All pad-eyes shall be load tested at 150 % of SWL.
- All monorails shall be load tested at 125 % of SWL.

The load testing will be carried out to normal statutory requirements, using certified weights or certified load cell.

Contractor when required to load test equipment shall complete Test Sheet T-MX-11 or T-MX-13. He should complete the sheet and complete the sketch showing the weight positions and deflection measuring points.

Contractor shall inform Company as per Project Specification and **GS EP EXP 101** when the Test is ready to take place and they will witness the test. Should the test fail, it is Contractor's responsibility to repeat the Test until Company accepts that the Test Requirements are satisfied.

On completion of the testing Company shall specify the requirement for further specific NDT on the structure. Contractor shall complete this work and return the documentation to Company.

8.2.5 Platform Crane - Test Sheet T-MX-12

The purpose of this procedure is to outline the test equipment required for the Platform Crane before load out.

Load certification and functional testing shall not be part of the Pre-commissioning scope of work.

Contractor shall complete the following:

- Erection of the complete crane on its pedestal.
- All access platforming.
- Reeving of all wire ropes.
- Supply of electrical power and instrument air.
- All hydraulic circuits.
- All instrumentation.

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Contractor shall provide either certified test weights or water bags to enable all tests to be carried out.

Contractor shall supply all suitable slings and shackles for handling the test weights or water bags, and in the case of test weights, a suitable holding frame.

Contractor shall provide instruments, tools, etc; to enable the load testing to be carried out. This shall include but will not be limited to the following items:

- 1-20 m long chains for measuring hook speeds.
- 1-100 m measuring tape.
- Digital thermometers having range 0-100°C.
- Ammeters with range 0-300-1500 Amps.
- Pressure gauges having range 0-400 bar complete with 10 m flexible pressure hoses and adapters suitable for measuring hydraulic oil pressure.
- Hand held radios for communication with crane driver.
- Specific Manufacturer tool kit.
- Mobile crane suitable for handling test weights.

Contractor shall provide degreasing fluid and lubricants. He must verify the exact requirements with the Crane Manufacturer.

All lubricates shall be in accordance with the Manufacturer's lubrication schedule.

Contractor shall be responsible for ensuring that safety precautions are observed at all times during testing. The minimum requirements are the following:

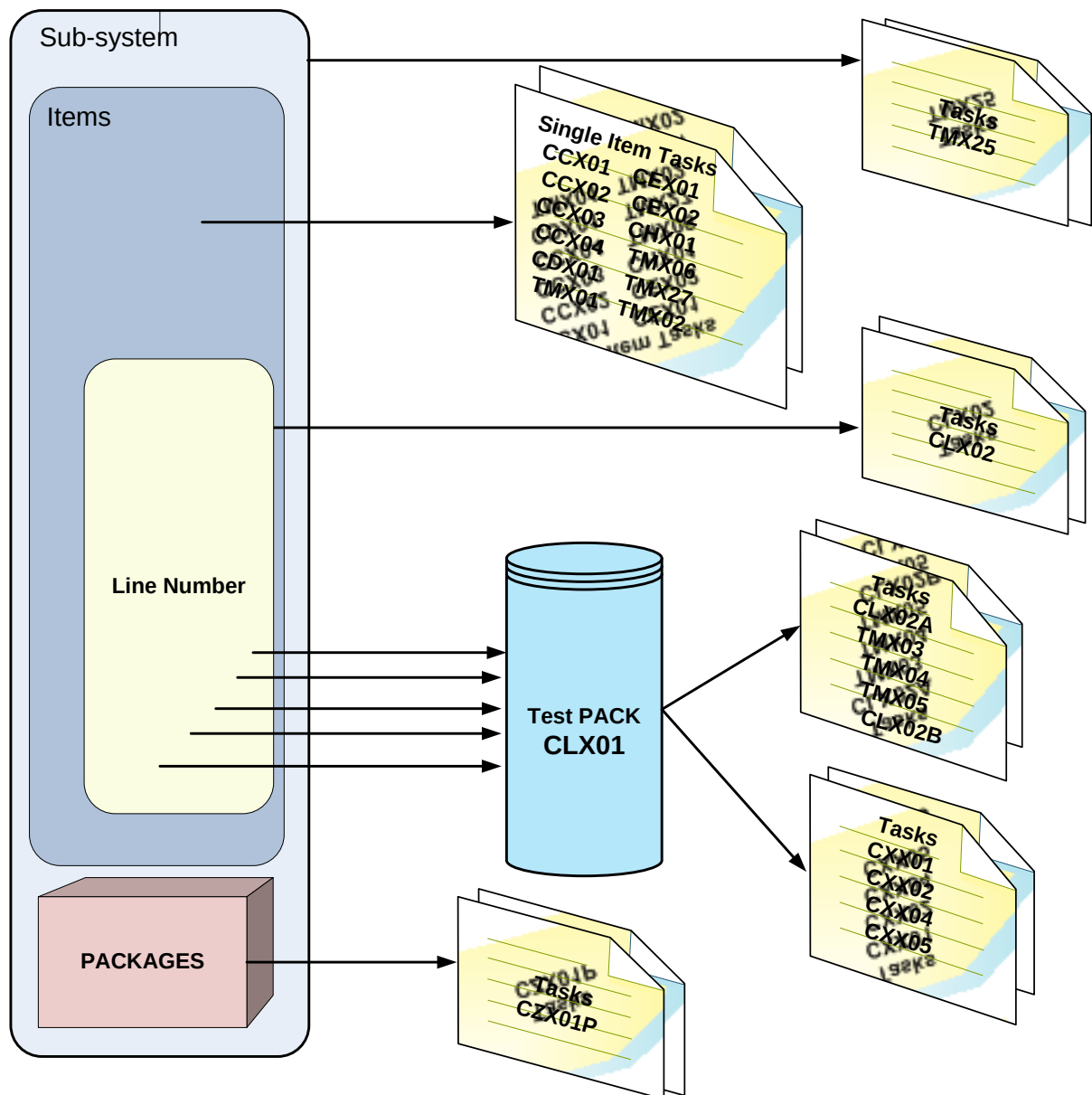
- Notice boards sited in proximity of crane to warn of testing.
- Crane test area to be cleared and marked out of bounds during load tests.
- Electrical insulation resistance checks to be carried out before and after testing.

9. Piping and Vessel Pre-commissioning

9.1 Preamble

Test Pack shall be as specified **GS EP EXP 101** and the composition shall include the requirement as specified in **GS EP EXP 103**.

Piping and vessel Pre-commissioning Static Tests and Conformity Checks shall be organized as follow:



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9.2 Conformity Checks

Type of equipment	Check List reference
Pressure Vessel	C-CX-01
Pig Launcher	C-CX-02
Vessel final closure	C-CX-03
Concrete basin / Sump	C-CX-04
Storage tank	C-DX-01
Strainer-Filter	C-HX-01
Test pack composition	C-LX-01
Pipework	C-LX-02
Pipework before task	C-LX-02A
Pipework after task	C-LX-02B
Thermal insulation	C-XX-01
Painting lines	C-XX-02
Passive fire protection	C-XX-04
Personnel protection	C-XX-05
Packages	C-ZX-01P

9.2.1 Pressure Vessel - Check Sheet C-CX-01

Pre-commissioning checks shall be carried out as per Project Specification and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices (i.e. level transmitter, pressure gauges, spectacle blind, etc...).

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to P&ID and hook-up drawing,
- Identification (tag number, tag plates),
- Equipment has pressure tested and certificate is available,
- Check if the weir has been tested (3 - phase separators),
- Accessibility conforms to specifications, with platforming where necessary,
- Earthing connections,

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- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

9.2.2 Pig Launcher - Check Sheet C-CX-02

Pre-commissioning checks shall be carried out as per Project Specification and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices (i.e. pressure transmitter, pressure gauges, spectacle blind, etc...).

Contractor shall particularly check, but not limited to:

- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to P&ID and hook-up drawing,
- Identification (tag number, tag plates),
- Accessibility conforms to specifications, with platforming where necessary,
- Earthing connections,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

9.2.3 Vessel final closure - Check Sheet C-CX-03

This sheet is to be used as a certificate and aims to:

- Formalize the final closure with the final checks (internal, coating, gasket, preservation, cleanliness, etc...).
- Group at the same time all involved people as per **GS EP EXP 101** (Contractor, Inspection, Operation, Commissioning) according to Vessel Final Closure Procedure.
- Optimize the closure and avoid re-opening.
- The final closure of the vessel is a part of the Pre-commissioning scope. The Pre-commissioning Contractor shall manage this activity and organize the final closure with relevant persons. If the final closure is postponed until the Commissioning phase, Contractor remains responsible accordingly.

This activity shall be noticed according to procedure.

Once the Vessel Final Closure sheet is issued and signed by different parties, the vessel must not be re-open without Company approval.

9.2.4 Concrete basin / Sump - Check Sheet C-CX-04

Pre-commissioning checks shall be carried out as per Project Specification and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices (i.e. level transmitter, spectacle blind, etc...).

Contractor shall particularly check, but not limited to:

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- For mechanical damage,
- Installed equipment is suitable and conforms to specification,
- Installation conforms to P&ID and hook-up drawing,
- Identification (tag number, tag plates),
- Accessibility conforms to specifications, with platforming where necessary,
- Earthing connections,
- Equipment is correctly preserved,
- Mark-up drawings are available, etc...

9.2.5 Storage tank - Check Sheet C-DX-01

Pre-commissioning checks shall be carried out as per Project Specification and [API STD 620](#) and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices (i.e. level transmitter, spectacle blind, etc...).

Contractor shall particularly check, but not limited to:

- The nameplate details are both correct and complete,
- The location, elevation, orientation and that the vessel is level,
- The holding arrangements are correct,
- For any installation damage,
- The nozzles are suitably isolated to enable a safe internal examination to be made,
- The vessel internals are as per approved drawings (including any heating devices),
- The vessel internally for cleanliness,
- That all the internal bolting has been tightened,
- Preservation is carried out as per approved procedure,
- All platforming and ladders are installed as per approved drawings,
- The manholes are accessible and suitable for operation,
- Check out the painting, insulation and the lining for damage,
- The earthing and bonding are as per Project Specifications,
- The pipe supports are in accordance with the approved design,
- The disconnected pipework flanges against the nozzle flanges for correct alignment,
- The internals can be withdrawn with the use of suitable lifting gear.
- Mark-up drawings are available, etc...

Specific checks shall be performed in case of floating roofs as follow:

- Check internally the roof pontoons,

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- Verify the seal installation and its integrity,
- Check the roof support position and roof drain installation,
- Check that the bolting is suitably lubricated.

9.2.6 Strainer / filter - Check Sheet C-HX-01

Pre-commissioning checks shall be carried out as per Project Specification and just before final reinstatement when all piping network tests have been carried out.

Contractor shall particularly check, but not limited to:

- That the nameplate data is complete and correct,
- The available documents are at the latest revision,
- The location, elevation, orientation and that the filter is level,
- That the holding down arrangements are correct,
- That the pipe-supports are in accordance with the design,
- The bolting is suitably lubricated,
- There has been no installation damage,
- The installation of the filter and cartridge is in accordance with the specifications and approved drawings. Also check that they can be removed when required,
- The filter casing internally for cleanliness,
- The accessibility of the unit for maintenance,
- The painting visually for any damage,
- The earthing and bonding are as per Project Specifications,
- When the pipework flanges have been disconnected, that the pipe flanges correctly align with their corresponding filter nozzle flanges,
- All of the commissioning spares and special tools are available in the stores,
- Mark-up drawings are available, etc...

9.2.7 Test pack composition - Check Sheet C-LX-01

When the lines are grouped by Test Pack (See 9.1) the C-LX-01 shall be up-dated (taking in account the tasks concerned by the Test Pack, then the list of lines (or isometrics/spools) shall be completed.

9.2.8 Pipework - Check Sheet C-LX-02

Pre-commissioning activity shall be performed on each line not included or covered by a Test Pack.

When the lines are grouped by Test Pack (See 9.1), CLX02 will be then replaced by CLX02A&B (See 9.2.9).

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Pre-commissioning checks shall be carried out as per Project Specification and after final reinstatement when all piping network tests have been carried out and after final installation/connection of all auxiliary devices (i.e. level transmitter, spectacle blind, etc...).

Contractor shall particularly check, but not limited to:

- All of the material conforms to the specifications,
- The pipework installation conforms to specifications, drawings and P&ID's,
- The pipework and valves are undamaged. Also check the ancillaries and any other components,
- The installation of all pipe-supports is as per specifications and drawings. Also springs have shipping-stops fitted and the piping sits on its supports,
- The location of the pipe anchors,
- The alignment of the pipe guides,
- The check-valves operate freely before they are installed into position,
- The flow direction of the valves is in the correct sense/direction,
- After the installation of a valve, check that it operates freely,
- The valves are correctly lubricated and they have the correct spindle packing,
- There is a suitable access, both to operate and to maintain valves,
- The pipework does not in any way load and stress the equipment it is serving,
- The pipe flanges are mounted square to each other. Also the bolting and gaskets are correct,
- That all the bolts and fasteners are suitably lubricated,
- The painting, the insulation and the heat tracing as per specifications,
- The equipment has been bonded as per drawings and specifications,
- The correct tagging, labelling and color coding of pipework and equipment,
- All golden welds (final tie-ins without hydrotest) have been performed as per procedure,
- Mark-up drawings are available, etc...

9.2.9 Pipework before and after task - Check Sheet C-LX-02A and C-LX-02B

Before and after the cleaning or the pressure testing operations, fragile devices and critical valves shall be respectively removed and reassembled in place (C-LX-02A and C-LX-02B).

The NDT clearance will be checked (done or not) on C-LX-02A for all lines or isometrics constituting the concerned Test Pack.

The construction specifications have to be complied with particular emphasis on the following points:

- Ring joints have to be carefully cleaned.

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- New gaskets must be used on flanges broken for flushing purpose.
- Spring supports, sliding pads, etc., have to be installed according to the drawings and released when the reassembly is completed.
- Threads shall be checked.
- Stuffing boxes and packing of valves shall be checked and changed if necessary.
- Absence of stresses on pump and compressor flanges has to be checked.
- The orientation of check valves, globe valves, etc., shall be checked (according to their arrow) against the direction of flow.
- In-line instruments such as flow orifices, restriction orifices, Rotameters, shall be installed by instrument specialists.
- Expansion bellows shall be freed according to the Manufacturer's instructions.
- Temporary blinds installed for cleaning purposes shall be removed.
- Internal side of flanges has to be painted.

The Certifying Authority and Company Engineer shall verify that the works have been satisfactorily completed.

9.2.10 Thermal insulation / Personnel protection - Check Sheet C-XX-01 and C-XX-05

Thermal insulation Conformity Check task is generally completed after the Pre-commissioning is achieved; in that case temporary Ready For Commissioning Certificate can be released in order to minimize the impact on Commissioning target (refer to **GS EP EXP 101**).

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temporary release certificate to avoid any depressurization, shut down of the else initiated by Commissioning team to allow final painting/coating/insulation or touch-up.

9.2.12 Passive fire protection - Check Sheet C-XX-04

Passive fire protection Conformity Check task is generally completed after the Pre-commissioning is achieved; in that case temporary Ready For Commissioning Certificate can be released in order to minimize the impact on Commissioning target (refer to [GS EP EXP 101](#)).

Pre-commissioning checks shall be carried out as per Project Specifications and for coating requirements [GS EP COR 353](#) and shall particularly conform that, but not limited to:

- Insure C-XX-02 and C-XX-03, Painting piping and structure checks are completed,
- Record of conditions of surface before applying PFP products,
- The materials, the preparation and application method have been approved by Company,
- The fire protection is installed as per design layout drawing,
- Check and make a record of the various thicknesses for each of the different Passive Fire Protection material used,
- For the boxes, the special jackets, the fibre blankets...check if there are removable easily,
- Mark-up drawings are available, etc...

9.3 Static Tests

Type of equipment	Test Sheet reference
Vessel and tank / pressure test	T-MX-01
Heat exchanger tube / pressure test	T-MX-02
Piping pressure test	T-MX-03
Chemical cleaning / Pickling	T-MX-04
Cleaning	T-MX-05
Gross air leak test	T-MX-25
Bolt tensioning / torquing	T-MX-27
Valve interlock	T-MX-29

9.3.1 Vessels and Tanks - Test Sheet T-MX-01

Manufacturer/Vendor supplied Vessels pressure testing is not required prior to the installation, as long as Manufacturer's workshop testing result is provided and transportation or storage conditions have not corrupted the Vessels, any modification shall be subject of pressure test.

In any case, Contractor shall pressure test all the Vessels and Tanks fabricated on worksite.

However, without exception Vessels and Tanks shall be internally inspected on site, prior to being Pressure Tested.

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The testing of Vessels and Tanks shall be carried out in accordance with the technical requirements of the Project Specifications.

If the final location of the Vessel/Tank is different from the design/construction location, it is Contractor's responsibility to ensure that the Vessel/Tank supporting steel work or foundations are adequately designed for the total weight of the Vessel/Tank completely filled with water required for the test.

Should the Test fail, it is Contractor's responsibility to repeat the Test until Company Engineer and/or the Certifying Authority accepts that the Test Requirements are satisfied.

After successful completion of the test Contractor shall be responsible for the draining, drying, preserving and where necessary, the reinstatement of the vessel into its location.

9.3.2 Heat Exchangers - Test Sheet T-MX-02

Manufacturer/Vendor supplied Heat Exchangers pressure testing is not required prior to the installation, as long as Manufacturer's workshop testing result is provided and transportation or storage conditions have not corrupted the Heat Exchangers, any modification shall be subject of pressure test.

In any case, Contractor shall pressure test all the Heat Exchangers fabricated on worksite.

The testing of Heat Exchangers shall be made in accordance with the technical requirements of the Project Specifications.

Contractor when required to pressure test a Heat Exchanger shall complete the Test Sheet.

If the final location of the Heat Exchanger is different from the design/construction location, it is Contractor's responsibility to ensure that the Heat Exchanger supporting steel work or foundations are suitable for the total weight of the Heat Exchanger completely filled with water required for the test.

Should the Test fail, it is Contractor's responsibility to repeat the Test until Company Engineer and/or the Certifying Authority accepts that the Test Requirements are satisfied.

After successful completion of the test, Contractor shall be responsible for the draining, drying, preserving and where necessary, the reinstatement of the Heat Exchanger into its location.

9.3.3 Piping pressure test - Test Sheet T-MX-03

The pressure testing shall be in accordance with the piping project specifications and **GS EP PVV 171** and **GS EP PVV 178**.

The amount of Pressure Testing of piping for each system shall take as many tests as is considered necessary in order to verify the mechanical integrity of all pipework.

It is Contractor's responsibility to carry out and complete all work required for the Pressure Testing, to the satisfaction of Company and the Certifying Authority.

Contractor shall monitor all Pressure Tests by a temperature/pressure recorder and pressure gauge which shall be calibrated before each test or at Certifying Authority's request. Contractor shall verify to the satisfaction of Company that the Test Pressure be between 50 and 80 percent of the instrument range.

The organization of pipework pressure test shall be as follows for each test:

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- Each pressure test shall have a test number.
- Contractor shall prepare and send a pressure test notice to all parties concerned by the witnessing of the test, with the following documents attached:
 - (1) Colored marked isometrics and P&IDs. The following color codes shall be used:
 - Blue: lines to be tested
 - Red: test limits
 - Green: Items to be removed prior to the test
 - Orange: blinds to be installed numbered from 1 to n
 - Yellow: temporary installations (supports, piping, etc.).
 - (2) Inspection clearance certificate indicating that all Inspections Checks and Tests have been carried out on the piping to be tested and that they are satisfactory.
 - (3) Acceptance certificate for calibration of instruments that will be used to assess the pressure test.
- Contractor shall keep a record of blinds installed. These blinds shall always have a tag and a visible handle painted red.
- Contractor shall carry out the test in the presence of the witnesses, Company Engineer and Certifying Authority. Test acceptance will be decided by the Certifying Authority and/or Company representative.
- After successful test completion, Contractor shall re-instate the lines as per C-LX-2B and carry out the necessary works to reach the preservation status as defined in the specifications. He shall then obtain the relevant approval signatures on the Test Sheet T-MX-03 and the recorder chart sheet.
- Contractor shall file in the Pre-commissioning dossier or in the Test Pack Dossier if existing and for each test the following documents:
 - Form T-MX-03.
 - Set of coloured isometrics.
- The original recorder chart.
- The Test Pack number shall be referenced. Whenever a test covers pipes located in different Sub-systems the above set of documents will be filed in the Sub-system that will be first Ready For Commissioning. In the other Sub-system(s) the form T-MX-03 with the relevant pipe numbers lists will be filed, and as remarks will be indicated:
 - The test number and date.
 - The Sub-system where the documents are filed.
- Contractor shall constitute a Test dossier where all pressure tests documents will be filed. Contractor shall maintain a set of marked-up P&IDs to show the status of lines tested, and a status of blinds installed and removed. Above documents filed by Contractor shall be

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maintained available for review by the Local Authorities, Company, and the Certifying Authority.

9.3.4 Chemical Cleaning / Pickling - Test Sheet T-MX-04

All cleaning tasks shall be carried out in accordance with the [GS EP PVV 175](#), Project Specifications.

Contractor shall follow particularly for chemical cleaning the requirement of [ASTM A380](#) and [ASTM A967](#).

In addition the list of lines to be chemically cleaned will be established by the Pre-commissioning during the engineering phase. This list shall be based on:

- The engineering recommendations and specifications.
- The Manufacturers requirements.

Contractor shall complete all engineering part on Test Sheet T-MX-05, excluding the Test Results Section. On completion of the above data, Contractor shall sign and date the form and submit it to Company, for permission for Cleaning.

When Company has signed the Test Sheet for permission for Cleaning, Contractor shall proceed; Company will witness the Cleaning as specified in [GS EP EXP 101](#).

Organization of chemical cleaning operations shall be as follows:

- Each chemical cleaning operation shall have a reference number.
- Contractor shall prepare the Test Sheet T-MX-05.
- Contractor shall prepare a sketch of the network to be chemical cleaned (P&IDs will be used for this purpose). The following colour code shall be used:
 - Blue: lines to be cleaned.
 - Green: Items to be removed.
 - Red: flanges to be disconnected.
 - Orange: Items to be isolated.
- Contractor shall submit the Test Sheet and sketch to the Commissioning for information and comments.
- Contractor shall identify with Commissioning all the fragile devices and shall be removed and/or isolated/protected before processing.
- Contractor shall re-instate the lines (C-LX-2B) and carry out piping preservation works. Once completed he shall obtain the approval signature of the Commissioning Engineer.
- Contractor shall maintain a set of marked-up P&IDs to show the status of cleaned lines.

9.3.5 Cleaning - Test Sheet T-MX-05

All cleaning tasks shall be carried out in accordance with the Project Specifications, [GS EP PVV 175](#) and Manufacturer requirements.

Contractor shall follow particularly for hydraulic lines the requirement of [API STD 614](#).

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Contractor shall complete all engineering part on Test Sheet T-MX-04 excluding the Test Results Section. On completion of the above data, Contractor shall sign and date the form and submit it to Company, for permission for Cleaning.

When Company has signed the Test Sheet for permission for Cleaning, Contractor shall proceed; Company will witness the Cleaning as specified in **GS EP EXP 101**.

Based on the same principle than the TMX-03, the sheets may be filed either in the Pre-commissioning Dossier or in the Test Pack Dossier, if existing.

Contractor shall perform the Cleaning of pipework as construction proceeds thus avoiding important dismantling and re-assembly works. Cleaning operations shall be carried out frequently outside normal construction working hours.

Organization of cleaning operations shall be as follows:

- Each Cleaning operation shall have a reference number.
- Contractor shall prepare the Cleaning Test Sheet T-MX-04 (one Test Sheet for each Cleaning operation).
- Contractor shall prepare a sketch of the network to be cleaned (P&IDs will be used for this purpose). The following colour code shall be used:
 - Blue: lines to be cleaned.
 - Green: Items to be removed.
 - Red: flanges to be disconnected.
 - Orange: Items to be isolated.
- Contractor shall submit the Test Sheet and sketch to the Commissioning for information and comments.
- Contractor shall identify with Commissioning all the fragile devices and shall be removed and/or isolated/protected before processing,
- Contractor shall re-instate the lines (C-LX-2B) and carry out piping preservation works. Once completed he shall obtain the approval signature of the Commissioning Engineer.
- Contractor shall maintain a set of marked-up P&IDs to show the status of cleaned lines.

9.3.6 Gross Air Leak Test - Test Sheet T-MX-25

Gross Air Leak Test shall be carried out on each Sub-system between 7 barg (or below if the maximum operating pressure of the Sub-system is lower) and maximum 10 barg to confirm the correct reinstatement such as the integrity of joints, gaskets and packing. Contractor shall carry out all the work required for gross leak testing to the satisfaction of Company.

Gross Air Leak testing shall be carried out by visual inspection and test pressures measured by pressure gauges which shall be calibrated before each test. The test pressure shall be between 50% and 80% of the pressure gauge range.

After successful test completion, the Contractor shall re-instate the lines (re-installation of removed Items, removal of temporary blinds and repositioning of permanent spectacle blinds) and carry out the necessary works to reach the preservation status defined in the specifications.

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Contractor shall constitute a Test dossier where all pressure test documents will be filed. Contractor shall maintain a set of marked-up P&ID's to show the status of lines tested, and a status of blinds installed and removed. Above documents filed by Contractor shall be maintained available for review by the Local Authorities, Company, and the Certifying Authority as specified in **GS EP EXP 101** and Project Specifications.

9.3.7 Valve interlock - Test Sheet T-MX-29

Pre-commissioning tests shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Check relevant documents are at the latest revision,
- Check the tag is correct and conform to drawings,
- Check the mechanical equipment is correctly installed as per supplier recommendations,
- Check equipment is undamaged and correctly installed,
- Insure interlock procedure is matching the installation,
- Check if the interlock is actuating freely,
- Check all earthing and bonding in accordance with project specifications (if applicable,
- Insure spare set of keys and special tools available,
- Check if accessibility and maintenance are possible and safe,
- Mark-up drawings are available, etc...

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10. Safety Pre-commissioning

10.1 Conformity checks

Type of equipment	Check list reference
Life raft and scramble net	C-YX-01
Life boat davits	C-YX-02
Carbon dioxide / nitrogen rack bottles	C-YX-03
Water deluge system	C-YX-04
Fire water monitor	C-YX-05
Hose reel	C-YX-06
Hydrant, cabinet, Fireman's equipment cabinet	C-YX-07
Portable Fire-Fighting equipment	C-YX-08
Survival equipment (life jackets/buoys)	C-YX-09
First aid equipment	C-YX-10
Escape route	C-YX-15

10.1.1 Life raft and scramble net - Check Sheet C-YX-01

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Both the life raft and scramble net have current certification; also check that they are clearly identified,
- The location of the scramble net, the life raft and the cradle fixation; also check the length of the painter rope,
- The life raft is correctly installed in its cradle and check the operation of the cradle,
- The cradle holding down arrangements,
- For any installation damage,
- the scramble net is of the correct length,
- The life raft and scramble net for cleanliness,
- The scramble net is correctly installed. Also check that the life raft painter is securely tied to the base of the net,
- The painted surface of the life raft casing for damage,
- The last inspection date is clearly indicated and also that the next inspection is not overdue,
- The life raft casing is correctly fastened-up,
- Mark-up drawings are available, etc...

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10.1.2 Life boat davits - Check Sheet C-YX-02

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Certification is complete,
- Nameplate details are correct and complete,
- The cradle location and elevation supports and they are level,
- The lifeboat is correctly orientated,
- The davit holding arrangement is correct,
- For any installation damage,
- The cradle supports and the lifeboat installation is as per approved drawings,
- The cradle supports and the lifeboat both internally and externally for cleanliness,
- The preservation of the lifeboat and of the cradle supports against the approved drawings,
- Against the supplier's check list that all of the items mentioned are installed in the lifeboat,
- The cradle-support operation instructions are clearly displayed in the lifeboat interior,
- The accessibility to the lifeboat installation. Handrailing and walkways are completed as per approved drawings,
- The painted surfaces of the hydraulic power unit, the cradle and the lifeboat surface finish for damage,
- The engine cover is secured,
- The Davits are reeved correctly and that wire ropes are serviceable,
- The manual operation of the winch gear is as per specifications,
- The grabrails and the grablines are secured and in good condition,
- The reflective strips are attached,
- The operation of the lifeboat access doors for ease of use and correct installation,
- The seawater spray nozzles (deluge) are secured,
- The canopy vents are clear,
- The propeller and rudder assemblies for freedom of movement. Also the operation of the helmsman's wheel,
- The exhaust pipe clack valve (non-return) is installed,
- The outlet from the bilge pump is clear of obstruction,
- The required seat belts are installed and that they are functional,
- The seawater pump inlet is clear of obstruction,
- The valve spanner is securely attached,

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- The wet chamber is installed in the exhaust piping,
- The equipment is correctly preserved/lubricated,
- The cradle heat protection shielding is complete and secured,
- The cradle rotation system,
- Check out the cradle "simuldrop" system,
- The hydraulic power-pack,
- The diesel engine,
- The lights function,
- The lifeboat transition pieces,
- Mark-up drawings are available, etc...

10.1.3 Carbon dioxide / nitrogen rack bottles - Check Sheet C-YX-03

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP SAF 331](#), [GS EP SAF 332](#) and [GS EP MEC 050](#) and in accordance with [CEN/TS 14972:2008](#) and [EN 12845 + A2](#) and with manufacturer requirements and shall particularly conform that, but not limited to:

- Nameplate details complete and correct,
- The location of the equipment is correct,
- For any installation damage (Piping and hoses),
- Protection against sun radiation,
- The earthing and bonding are in accordance with the drawings and the specifications,
- Discharge line flushed (free of debris or foreign material) including the 3 way valve (if applicable),
- Number of bottles correct and filled to correct level, weigh or pressure,
- Bottles secured,
- Accessibility of valves, emergency push/release button,
- Technical documentation available:
 - Pressure test certificate for bottles and discharge network,
 - Calculation notes,
 - Logic diagram,
 - Equipments data sheets,
 - Material specification,
- 3 way valve installed for atmosphere release:
 - Valve tagging correct,

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- Instruction sign fitted,
- Discharge line to atmosphere calculation note at full flow,
- Discharge line to atmosphere supported as per design,
- Mark-up drawings are available, etc...

10.1.4 Water deluge system - Check Sheet C-YX-04

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP SAF 322](#) and [GS EP SAF 334](#) and with manufacturer requirements.

Pre-commissioning checks shall be done in accordance with [NFPA 13](#), [NFPA 15](#), [NFPA 16](#) and [NFPA 25](#).

Contractor shall particularly conform that, but not limited to:

- The nameplate details are correct and complete,
- The location and the arrangement of the equipment are correct. Also that it conforms to isometric and P&ID drawings,
- The holding down arrangements,
- For any installation damage,
- That the installation is in accordance with the specifications,
- The general accessibility for operation,
- For cleanliness,
- The painting visually for damage,
- That after disconnection of the pipework flanges that the pipe flanges align correctly with their relative equipment,
- That the earthing and bonding is in accordance with the drawings and specifications,
- Mark-up drawings are available, etc...

10.1.5 Fire water monitor - Check Sheet C-YX-05

Pre-commissioning checks shall be carried out as per Project Specifications, [GS EP SAF 322](#) and with manufacturer requirements and shall particularly conform that, but not limited to:

- The nameplate details are correct and complete,
- The location, the elevation, orientation and that the monitor is level,
- For any installation damage,
- The monitor installation is in accordance with the approved drawings and specifications,
- The monitor for cleanliness,
- The surface finish for damage,

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- Lubrication of the unit has been carried out and that it was done in accordance with the approved procedure,
- The monitor moves freely in its planes of operation (vertical and horizontal). Also that it is easily accessible,
- The bolting is suitably lubricated,
- The earthing and bonding of the unit is in accordance with the drawings and specifications,
- Mark-up drawings are available, etc...

10.1.6 Hose reel - Check Sheet C-YX-06

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- The nameplate details are correct and complete,
- The location, the elevation, orientation and that the Hose reel is level,
- For any installation damage,
- The piping up to the hose reel is complete,
- The free rotation of the reel,
- The hose unwinds freely from the reel,
- The nozzle is installed in the hose and that its fastening is correct,
- Service pressure of the hose in accordance with the maximum network pressure,
- The hose is undamaged,
- The hose and the reel for cleanliness,
- The painting of the reel visually for damage,
- The hose has been correctly wound onto the reel,
- Mark-up drawings are available, etc...

10.1.7 Hydrant, cabinet, Fireman's equipment cabinet - Check Sheet C-YX-07

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- The nameplate details are correct and complete,
- The location, elevation, orientation are correct. Also that the hydrant and fireman's equipment cabinets are level,
- The holding down arrangements and the accessibility for the hydrant and the fireman's equipment cabinets,
- For any installation damage,

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- The following equipment shall be checked together with including a marked up layout drawing indicating the area checked:
 - Hydrant & cabinet,
 - Hoses and nozzles,
 - Fireman's cabinet,
 - Miscellaneous items,
- The items in the fireman's cabinet are in accordance with the Vendors equipment check list,
- The operation of the cabinet doors,
- The cabinet internally for cleanliness,
- The painting visually for damage,
- The hoses connect into the hydrant correctly,
- The nozzles connect into the hose correctly,
- The earthing and bonding are in accordance with the drawings and specifications,
- Mark-up drawings are available, etc...

10.1.8 Portable fire extinguisher - Check Sheet C-YX-08

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Certification is complete and that the nameplate details are complete and correct,
- The equipment "Tag Number" is correct,
- That both the location and the orientation are correct,
- The mounting arrangements are correct,
- Extinguisher certification charge and date,
- Access is not obstructed,
- The following equipment shall be checked together with including a marked up layout drawing indicating the area checked:
 - Portable water extinguisher,
 - Portable dry powder extinguisher,
 - Portable BCF extinguisher,
 - Portable foam extinguisher,
- Mark-up drawings are available, etc...

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10.1.9 Survival equipment - Check Sheet C-YX-09

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Certification is complete and that the nameplate details are complete and correct,
- The equipment "Tag Number" is correct,
- That both the location and the orientation are correct,
- The mounting arrangements are correct,
- The following equipment shall be checked together with including a marked up layout drawing indicating the area checked:
 - Lifebuoys,
 - Smoke and Light units (for man overboard),
 - Lifejackets,
 - Survival suits,
- Mark-up drawings are available, etc...

10.1.10 First aid equipment - Check Sheet C-YX-10

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Certification is complete and that the nameplate details are complete and correct,
- The equipment "Tag Number" is correct,
- That both the location and the orientation are correct,
- The mounting arrangements are correct,
- The pipework supply and drains to the eyewash/ shower unit are installed correctly (where applicable),
- The following equipment shall be checked together with including a marked up layout drawing indicating the area checked:
 - Eye wash container,
 - Eye wash with potable water connected,
 - Eye wash and shower unit,
 - Stretcher,
 - A fixed first-aid cabinet and its contents,
 - Portable first-aid boxes,
- Mark-up drawings are available, etc...

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10.1.11 Escape route - Check Sheet C-YX-15

Pre-commissioning checks shall be carried out as per Project Specifications, **GS EP SAF 351** and with manufacturer requirements and shall particularly conform that, but not limited to:

- Relevant documents are at the latest revision,
- The primary escape routes is in accordance with the drawing requirement in each module,
- The secondary escape routes is in accordance with the drawing requirement in each module,
- The direction indication of the escape routes is in accordance with the drawing requirement in each module,
- The safety lights are in accordance with the drawing requirement,
- The safety labels/signs are in accordance with the drawing requirement,
- If non slip surface finish match to specifications,
- Mark-up drawings are available, etc...

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11. Subsea Pre-commissioning

11.1 Conformity checks

Type of equipment	Test Sheet reference
Equipment skid	C-SX-01
Subsea Xmas tree	C-SX-03
Subsea production manifold	C-SX-04
Subsea control module	C-SX-05
Miscellaneous subsea equipment	C-SX-06
Jumper assembly	C-SX-07
Umbilical	C-SX-08
Subsea structure	C-SX-10
Subsea Xmas tree valve actuator	C-SX-11
Sensor assembly	C-SX-14
Subsea control system	C-SX-15
ROV Panel	C-SX-17
Subsea flow meter	C-SX-18
Electrical flying lead	C-SX-19
Hydraulic flying lead	C-SX-20
Power and Communication Unit	C-SX-21
Emergency Disconnect Package	C-SX-22
Lower Riser Package	C-SX-23
Hydraulic Power Unit	C-SX-24
Subsea Umbilical Termination	C-SX-26
Tubing Hanger	C-SX-27
Topside Umbilical Termination	C-SX-28
Pre-deployment checks	C-SX-29

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11.1.1 Equipment skid - Check Sheet C-SX-01

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Skid piping pressure testing shall be carried out according to the project requirements and shall be properly documented.
- Skid equipment shall be correctly aligned in accordance to specified tolerance
- Check nozzles are blinded off according to preservation requirements.
- All skid bolts shall be torqued or tensioned in accordance with project requirements and package specification. A marked up Vendor P&ID or GA drawing is to be attached as applicable. All values used are to be included in the comments section of the check list. All tensioned bolts are to have grease and protection caps.
- All material certificates and certifications shall comply with project requirements.
- Check on skid enclosures for correct installation and sealing.
- Check all acoustic panels etc. for damage.
- Check for ROV marking where applicable.
- Check that all requirements for shipping/transport have been met.
- Check installation of transport bearings, clamps, securing of on skid loose items, sealing of enclosures and duct openings, etc.
- All paintwork shall comply with project requirements.
- The amount of shims is to be kept to a minimum.
- Shim pack thickness for the skid base shall be in accordance with project requirements.
- Check that the holdings down bolts for the skid installation are the correct length and type in accordance with Vendor and project specifications.
- Check that the welding down of the skid has been completed as applicable and NDE carried out according to project requirements.

11.1.2 Xmas Tree - Check Sheet C-SX-03

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- All item numbering and VPI markings shall be correct, legible and accessible: S/N, P/N, XT type markings and weight.
- All documentations shall be completed and signed off: FAT, EFAT procedures and reports.
- All FAT/EFAT punch items shall be closed.
- Pressure testing of all installed pipework shall be completed and documented.
- Control lines flushing shall be complete and documented.

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- Lifting Certificates for lift cap, shackles and pad eyes shall comply with project requirements.
- All weight reports/certificates shall be complete and available.
- Shipping requirements shall be completed.
- All valves shall have been function tested and free from damage.
- SCM shall be installed correctly, mechanically completed and documented.
- XT mechanical assembly shall be assembled according to latest assembly drawing.
- XT thermal insulation shall be complete and compliant with drawing.
- XT control assembly shall be assembled according to latest assembly drawing.
- ROV interfaces, including Hotstab receptacles and dummy Hotstabs shall be correct.
- Protective covers shall be closed, locked and tied.
- Cathodic protection shall be complete.
- Paintwork shall be completed and free from damage.
- Preservation shall be complete.

11.1.3 Subsea production manifold - Check Sheet C-SX-04

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- All item numbering and VPI markings shall be correct, legible and accessible : S/N, P/N, special markings and weight,
- All documentations shall be completed and signed off: FAT, EFAT procedures and reports,
- All FAT/EFAT punch items shall be closed,
- All Pressure testing of all installed pipework shall be completed and documented,
- Control lines flushing shall be complete and documented,
- Lifting Certificates for lift cap, shackles and pad eyes shall comply with project requirements,
- All weight reports/certificates shall be complete and available,
- Shipping requirements shall be completed,
- Manifold mechanical assembly shall be compliant with the latest assembly drawing,
- Thermal insulation shall be complete and compliant with drawing,
- All valves shall have been function tested and free from damage,
- SCM shall be installed correctly, mechanically completed and documented,
- ROV interfaces, including Hotstab receptacles and dummy Hotstabs shall be correct,
- Protective covers shall be closed, locked and tied,

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- Cathodic protection shall be complete,
- Paintwork shall be completed and free from damage,
- Preservation shall be complete.

11.1.4 Subsea control module - Check Sheet C-SX-05

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- All item numbering and VPI markings shall be correct, legible and accessible : S/N, P/N, special markings and weight,
- All documentations shall be completed and signed off: FAT procedure and report,
- All FAT punch items shall be closed,
- Pressure testing of all installed pipework shall be completed and documented,
- Pressure tests shall be completed and documented,
- SCM shall be assembled according to assembly procedure,
- Flushing and fluid cleanliness checks shall be are complete and documented,
- Calibration shall be complete and documented,
- Software data sheets shall be completed,
- Lifting Certificates for lift cap, shackles and pad eyes shall comply with project requirements,
- All weight reports/certificates shall be complete and available,
- Shipping requirements shall be completed,
- ROV interfaces, including Hotstab receptacles and dummy Hotstabs shall be correct,
- Protective covers shall be closed, locked and tied,
- Paintwork shall be completed and free from damage,
- Preservation shall be complete.

11.1.5 Miscellaneous subsea equipment - Check Sheet C-SX-06

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- All item numbering and VPI markings shall be correct, legible and accessible : S/N, P/N, special markings and weight,
- All documentations shall be completed and signed off: Testing procedures and reports,
- All punch items shall be closed,
- Pressure tests shall be completed and documented,
- Electrical tests shall be completed and documented,

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- Flushing and fluid cleanliness checks shall be completed and documented,
- NDE shall be carried out and documented,
- Lifting Certificates for lift cap, shackles and pad eyes shall comply with project requirements,
- All weight reports/certificates shall be complete and available,
- Shipping requirements shall be completed,
- Assembly shall be according to specifications,
- Paintwork shall be completed and free from damage,
- Preservation shall be complete.

11.1.6 Subsea connection/jumper assembly - Check Sheet C-SX-07

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- All item numbers and marking/tagging shall be according to data sheet,
- Name plate and/or tag No plate fitted,
- All documentations shall be completed and signed off: FAT procedure and reports,
- All punch items shall be closed,
- Pressure test shall be completed and documented,
- Electrical tests shall be completed and documented,
- External water pressure testing shall be completed and documented,
- Flushing and fluid cleanliness checks shall be completed and documented,
- Jumper length shall be compliant with specifications,
- Non return Valves shall be in correct direction of flow for installation and removal,
- Thermal insulation shall be complete and compliant with drawing,
- Assembly shall be compliant with drawings and specifications,
- All weight reports shall be complete and available,
- Shipping requirements shall be completed,
- Cathodic protection shall be complete,
- Paintwork shall be completed and free from damage,
- Preservation shall be complete.

11.1.7 Umbilical - Check Sheet C-SX-08

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

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- Item numbers and marking/tagging is according to data sheet,
- Name plate and/or tag No plate fitted,
- All documentations are completed and signed off: FAT procedure and reports,
- All punch items are closed,
- Pressure test is completed and documented,
- Electrical tests are completed and documented,
- Flushing and fluid cleanliness checks are completed and documented,
- Assembly against drawings and specifications,
- Outer sheathing and protection are correct,
- Termination heads are suitable,
- NDE of tubing and pipe welds in terminations,
- Shipping requirements are completed,
- As built length complies with specifications,
- Weight certificate is available,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete.

11.1.8 Subsea structures - Check Sheet C-SX-10

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Main structural members is according to relevant drawings,
- Name plate and/or tag N° plate fitted,
- All documentations are completed and signed off: FAT procedure and reports,
- All punch items are closed,
- NDE is carried out and documented,
- Dimensional control reports are completed and accepted,
- Lifting Certificates for lift cap, shackles and pad eyes complies with project requirements,
- Material certificates complies with project requirements,
- Shipping requirements are completed,
- Cathodic protection is complete,
- Assembly according to specifications,
- All weight reports/certificates are complete and available,

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- Skirts / mud mats,
- Pipe supports,
- Locking devices,
- ROV interfaces are correct,
- Protective covers are closed, locked and tied,
- Shipping requirements are completed,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete

11.1.9 Xmas tree valve actuator - Check Sheet C-SX-11

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- Check that Item numbers and marking are according to data sheet,
- Name plate and/or tag N° plate fitted,
- All documentations are completed and signed off: FAT procedure and reports,
- All punch items are closed,
- Shipping requirements are completed,
- All sand blasting operations are carried out prior to assembly,
- Mechanical cleaning and washing of parts is done as per specifications,
- Visual inspection of parts prior to assembly,
- Internal with boroscope,
- Internal visual check,
- Stroking of actuator during hot oil flushing,
- Flushing and fluid cleanliness checks are completed and documented,
- The assembly is correct and complete. Functions verified,
- All functions are verified,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete

11.1.10 Sensor assembly - Check Sheet C-SX-14

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

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- That Item numbers and marking are according to data sheet,
- Name plate and/or tag N° plate fitted,
- All documentations are completed and signed off: FAT procedure and reports,
- All punch items are closed,
- The connector orientation is correct,
- The fluid filling is completed and cleanliness verified,
- The cable length is correct,
- Connector interfaces,
- Weight certificate available,
- Protective covers are fitted,
- Shipping requirements are completed,
- Paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.11 Subsea control system equipment - Check Sheet C-SX-15

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings : S/N, P/N, equipment tag number and weight marked properly,
- All documentations are completed and signed off: FAT/EFAT procedures and reports,
- All punch items are closed,
- Assembly is assembled according to procedure,
- Gland plates are secured,
- Components and cabling are secured,
- Cable are appropriately tagged,
- Supplied correctly according to GA drawing,
- Envelope interface dimensions are correct,
- All weight reports/certificates are complete and available,
- Shipping requirements are completed,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete.

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11.1.12 ROV Panel - Check Sheet C-SX-17

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ROV interface tooling is tested and operational. Name plate and/or tag N° plate fitted,
- ROV interface tooling is tested at Shallow Water Test,
- All valves are operable from ROV panel,
- All valve position indicators are functioning correctly,
- ROV marking is correct and visible,
- Multi quick connector is removable and replaceable by ROV tooling,
- Shipping requirements are completed,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete.

11.1.13 Subsea flow meter - Check Sheet C-SX-18

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- That Item numbers and marking are according to data sheet. Name plate and/or tag N° plate fitted,
- That all documentations are completed and signed off: FAT procedure and reports,
- That all punch items are closed,
- That Calibration certificate is valid and available,
- Assembly is assembled according to procedure,
- That connector orientation is correct,
- That the fluid filling is completed and cleanliness verified,
- That cable length is correct,
- That connector interfaces are correct,
- That all weight reports/certificates are complete and available,
- That protective covers are fitted,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

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11.1.14 Electrical Flying Lead (EFL) - Check Sheet C-SX-19

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- That all documentations are completed and signed off: FAT procedure and reports,
- That all punch items are closed,
- Assembly is assembled according to procedure,
- Connector Interfaces for external cleanliness,
- EFL Length, Envelope, Interfaces dimensions,
- Flying lead is free from damage,
- That electrical test is performed according to relevant procedure,
- That the protective covers for couplers are fitted,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.15 Hydraulic Flying Lead (EFL) - Check Sheet C-SX-20

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- That all documentations are completed and signed off: FAT procedure and reports,
- That all punch items are closed,
- Assembly is assembled according to procedure,
- Connector Interfaces for external cleanliness,
- HFL Length, Envelope, Interfaces dimensions,
- Flying lead is free from damage,
- That electrical test is performed according to relevant procedure,
- Pressure testing completed,
- Flushing completed and cleanliness certificate available,
- That the protective covers for couplers are fitted,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

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11.1.16 Power and Communication Unit - Check Sheet C-SX-21

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- That all documentations are completed and signed off: FAT/EFAT procedures and reports,
- That all punch items are closed,
- Assembly is assembled according to procedure,
- That Gland plates are secured,
- That components and cabling are secured,
- All cable are appropriately tagged,
- Supplied correctly according to GA drawing,
- Instrument/power earthing are complete,
- All cable are appropriately tagged,
- Cabinet interconnecting cables are available,
- Removable units (including SOM, modems...etc) are separately and packed,
- That envelope interface dimensions are correct,
- That all weight reports/certificates are complete and available,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.17 Emergency Disconnect Package (EDP) - Check Sheet C-SX-22

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- That all documentations are completed and signed off: FAT/EFAT procedures and reports,
- That all punch items are closed,
- EDP mechanical assembly - assembled according to latest assembly drawing,
- EDP from any mechanical damage,
- EDP control assembly - assembled according to latest assembly drawing,
- That EDP control lines have been flushed according to specification,
- ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct,

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- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.18 Lower riser package (LRP) - Check Sheet C-SX-23

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- That all documentations are completed and signed off: FAT/EFAT procedures and reports,
- That all punch items are closed,
- LRP mechanical assembly - assembled according to latest assembly drawing,
- That LRP is free from any mechanical damage,
- LRP control assembly - assembled according to latest assembly drawing,
- That LRP control lines have been flushed according to specification,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.19 Hydraulic Power Unit (HPU) - Check Sheet C-SX-24

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- That all documentations are completed and signed off: FAT/EFAT procedures and reports,
- That all punch items are closed,
- That HPU control lines have been flushed and filled according to specification,
- That HPU hydraulic fluids are as per specifications,
- That instrument calibration certificates are valid,
- That HPU parts are assembled correctly according to the latest assembly drawings,
- All cable & tubing are appropriately tagged,
- HPU PLC components and cabling are secured,
- Removable units are appropriately installed,
- Instrument/power earthing are complete,

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- HPU pressure tests are completed,
- HPU electrical tests are completed,
- Drain are emptied, confirm protective covers and plugs supplied are fitted,
- Supply and Return reservoir status are according to procedure,
- Accumulator pressure are according to procedure,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.20 Subsea Umbilical Termination - Check Sheet C-SX-26

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- That all documentations are completed and signed off: FAT/EFAT procedures and reports,
- That all punch items are closed,
- Mechanical assembly - assembled according to latest assembly drawing,
- That Umbilical tube interface cover is fitted,
- That subsea hydraulic long-term covers are in place (Record S/N,
- Electrical connector interfaces,
- Record Stab and hinge-Over pin S/N,
- Of lifting sling availability and certification,
- That Shipping requirements are completed,
- That paintwork is completed and free from damage,
- CE marking,
- That Preservation is complete.

11.1.21 Tubing Hanger (TH) - Check Sheet C-SX-27

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- That all documentations are completed and signed off: FAT/EFAT procedures and reports,
- That all punch items are closed,
- Mechanical assembly - assembled according to latest assembly drawing,

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- Annulus Bore & DH Diamould Connector is free from damage,
- All Test Medium is drained from TH,
- Shipping requirements are completed,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete.

11.1.22 Topside Umbilical Termination - Check Sheet C-SX-28

Pre-commissioning checks shall be carried out as per Project Specifications and with manufacturer requirements and shall particularly conform that, but not limited to:

- ID markings: S/N, P/N, equipment tag number and weight marked properly,
- All documentations are completed and signed off: FAT/EFAT procedures and reports,
- All punch items are closed,
- Mechanical assembly - assembled according to latest assembly drawing,
- Assembly verified to drawing(s),
- Flushing is complete and tests fluids are as per specifications,
- Protective covers and plugs are supplied/ fitted,
- Mechanical assembly - assembled according to latest assembly drawing,
- Shipping requirements are completed,
- Paintwork is completed and free from damage,
- CE marking,
- Preservation is complete.

11.2 Static tests

Type of equipment	Check List reference
Bolt tensioning and torquing index	T-SX-02
Pressure test	T-SX-03
Flooding/Cleaning/Gauging	T-SX-05
Umbilical Integrity test	T-SX-07
Flexible Riser Vacuum test	T-SX-08
Global leak test	T-SX-09
Piping operation (gauging)	T-SX-16

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11.2.1 Bolt tensioning and torquing - Test Sheet T-SX-02

This Test Sheet shall be applicable to a whole Sub-system.

Pre-commissioning activities shall be carried out as per Project Specifications, [GS EP PLR 401](#) and with manufacturer requirements and ensure installation documents and results are available at Pre-commissioning stage.

11.2.2 Pressure test - Test Sheet T-SX-03

The pressure testing shall be in accordance with the pipeline project specifications and [GS EP PLR 501](#) and [GS EP PLR 502](#).

The amount of Pressure Testing of pipeline for each Sub-system shall take as many tests as is considered necessary in order to verify the integrity of all pipeline work.

It is Contractor's responsibility to carry out and complete all work required for the Pressure Testing, to the satisfaction of Company and the Certifying Authority.

11.2.3 Flooding/Cleaning/Gauging - Test Sheet T-SX-05

The Pre-commissioning tests and sequences shall be in accordance with the pipeline project specifications and [GS EP PLR 501](#) and [GS EP PLR 502](#).

It is Contractor's responsibility to carry out and complete all work required for the Flooding, Cleaning and Gauging to the satisfaction of Company and the Certifying Authority.

For the flushing operations on the control umbilicals, the operational hydraulic fluid shall be used for the hydraulic control lines within the umbilical. The oil cleanliness specification for these lines shall be in accordance with [GS EP PLR 160](#) and according to project specifications.

For all other lines within the control umbilicals the medium used for flushing shall be the medium that shall remain in the umbilical during and after installation. The cleanliness specification for the service lines and chemical lines within the control umbilicals shall be according to project specifications.

11.2.4 Umbilical integrity test - Test Sheet T-SX-07

Testing shall be in accordance with project specifications and [GS EP PLR 160](#).

It is Contractor's responsibility to carry out and complete all work required for the Pressure Testing, to the satisfaction of Company and the Certifying Authority.

11.2.5 Flexible riser vacuum test - Test Sheet T-SX-08

The vacuum testing shall be in accordance with the project specifications and [GS EP PLR 109](#).

It is Contractor's responsibility to carry out and complete all work required for the Pressure Testing, to the satisfaction of Company and the Certifying Authority.

11.2.6 Global leak test - Test Sheet T-SX-09

The global leak test shall be in accordance with the pipeline project specifications and [GS EP PLR 501](#) and [GS EP PLR 502](#).

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The global leak test of pipeline shall include a complete production or injection loop with all the equipment topside and subsea connected in order to verify the integrity of all pipelinework.

It is Contractor's responsibility to carry out and complete all work required for the Global Leak Test, to the satisfaction of Company and the Certifying Authority (if required).

11.2.7 Piping operation (gauging) - Test Sheet T-SX-16

The Pre-commissioning tests shall be in accordance with the pipeline project specifications and **GS EP PLR 502**.

Piping operation (gauging) shall be different than gauging requirement before the pressure test.

12. Telecommunications Pre-commissioning

12.1 Conformity checks

Type of equipment	Check List reference
PA / GA Loudspeaker + JB	C-IX-01
PA /GA Flashing beacon + JB	C-IX-02
PA access unit / control unit	C-IX-03
PA / GA Central system & Marshalling cabinet	C-IX-05
Telephone Hood Eex w /Telephone beacon & Sounder	C-IX-07
System cabinet	C-IX-12
Indoor radio equipment cabinet	C-IX-13
Meteorological sensor & Cable	C-IX-14
Monitor	C-IX-18
CCTV Control unit	C-IX-19
Radio base station / central unit	C-IX-20
Motorized antenna, feeder & lightning arrestor	C-IX-22
Entertainment distribution network	C-IX-26
Survival craft radio and Beacon	C-IX-27
Antenna, feeder & lightning arrestor	C-IX-34
Radio remote control unit	C-IX-36
Radio handheld, pager & battery charger	C-IX-39
Fibre optic / patch panel	C-IX-42
CCTV camera and housing	C-IX-45
Cabling RJ45	C-IX-46

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Type of equipment	Check List reference
Connection box-PA/GA tank coverage	C-IX-48
Mobile set-PA/GA tank coverage	C-IX-49
GMDSS circuit breaker	C-IX-50
PC workstation	C-IX-51
Server	C-IX-52
Data network equipment	C-IX-53
PC screen / Keyboard switch	C-IX-54
Outdoor radio cabinet	C-IX-55
Radio-Indoor distribution	C-IX-56
Radio-outdoor network	C-IX-57
Antenna Tuning Unit	C-IX-58
Remote station / Portable unit	C-IX-59
GMDSS Console	C-IX-60
Entertainment DVD player	C-IX-61
Oceano sensors	C-IX-62
Gyrocompass: Central / Interface & power supply	C-IX-63
MDF / IDF Cabinet	C-IX-64
Clock Unit	C-IX-65
Non Directional Beacon	C-IX-66
Radar	C-IX-67
Mast	C-IX-68

All telecommunication cables checks (PA/GA Cables, system cables) are covered by the Electrical Check List C-PX-09 and C-PX-10 and Electrical Test Sheet T-PX-09 and T-PX-10 (refer to paragraph 6.1.7, 6.2.9 and 6.2.10).

Junction boxes are covered by Electrical Check List C-PX-31 (refer to paragraph 6.1.16).

All Pre-commissioning checks shall be prepared and performed as per Project Specifications.

12.2 Static tests

Type of equipment	Test Sheet reference
Cabling RJ45	T-IX-01
Optical Fibre	T-IX-02

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Type of equipment	Test Sheet reference
PA / GA system / Loudspeaker loop	T-IX-03

There are 3 specific Telecommunication Test Sheets:

- Cabling with RJ45 outlets, patch panels tests being covered by Telecommunication Test Sheet T-IX-01.
- Optical fibre cables tests will be covered by Telecommunication Test Sheet T-IX-02.
- PA/GA system, loudspeakers loops being covered by Test Sheet T-IX-03

13. Typical Pre-commissioning Tasks Forms

The following appendixes present the typical Checks and Tests sheet forms that shall be done on current material installed and subject to Pre-commissioning activities.

- Proposed standard Check Lists and Test Sheets shall be adapted to the project specificities and submitted to Company for further approval.
- New Check Lists and/or Test Sheets shall be created for complying with the project specificities and submitted to Company for further approval.
- The following appendixes are grouped by main discipline
- Tasks shall be associated to Items or Test Packs or Packages or Sub-system according to Pre-commissioning Task Register

The footer of following typical sheets shall be coherent to the witnessing matrix and adapted consequently.

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Reference	Title
EN 12845 + A2	Fixed firefighting systems - Automatic sprinkler systems - Design, installation and maintenance
ISO 4406:1999	Hydraulic fluid power - Fluids - Method for coding the level of contamination by solid particles
ISO 4021:1992	Hydraulic fluid power - Particulate contamination analysis - Extraction of fluid samples
ISO 3722:1976	Hydraulic fluid power - Fluid sample containers - Qualifying and controlling cleaning methods
SAE AS4059E	Cleanliness Classification for Hydraulic Fluids
CEN/TS 14972:2008	Fixed firefighting systems - Water mist systems - Design and installation
ASME B31.3	Process Piping
ASME B31.4	Pipeline Transportation Systems for Liquid Hydrocarbons and other Liquids
ASME B31.8	Gas transmission and distribution piping systems
ASME BPVC Section V	Non-Destructive Examination
GS EP STR 004	Riser/Umbilical pulling rig and mooring winches
GS EP STR 005	Lifting Appliances other than cranes and winches
GS EP TEL 190	Design and installation of offshore optical fibres based telecommunications



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Appendix 1

Appendix 1 Punch Item Entry and Clearance Forms

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Appendix 1

	Punch list				EPC or EPCC CONTRACTOR LOGO
	Entry / Clearance form				
	 barcode				
	Category code				
Sub-project :					
Originated by :			Company :		
Discipline :			PL activity :		
Module :			Originated date :		
Sub-system :			Location :		
TAG / Item :			DWG / PID :		
ENTRY					
Defect Description :					
Corrective action proposal : Action by : Engineering required : <input style="width: 30px;" type="checkbox"/> Yes/No Material required description : Level 4: Vendor name : Expected clearance date : Estimated time (MH) :					
CLEARANCE					
Corrective action done : Expended time (MH) :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 2

Appendix 2 Building / Civil / Structure Work typical Comforty Check List Forms

Type of equipment	Check list reference
Steel Structure	C-QX-01
Painting structure	C-XX-03
Building general	C-QX-02
Building water proofing	C-QX-03
Building door/window	C-QX-04
Building metallic partition	C-QX-05
Building suspended ceiling	C-QX-06
Building sanitary and tiling equipment	C-QX-07
Building rendering paint	C-QX-08
Building water supply system	C-QX-09
Building raised floor system	C-QX-10
Sanitary fitting	C-QX-11
Macerator	C-QX-12
Concrete basins / sumps	C-QX-13

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	Building / Structure / Civil Work Check List		EPC or EPCC CONTRACTOR LOGO
	Steel Structure  Task number C-QX-01		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that the grating, floor plating, the stair-tread installation and fixing conform to the specification.		
2	Check that the handrailing conforms to the approved drawings and specifications.		
3	Check that ladders, safety hoops and the safety bars conform to the specifications.		
4	Check that the runway beams are level and that they have the end stops fitted.		
5	Carry out a dimensional survey to verify that they are within the accepted tolerances called-up on the specifications.		
6	Check that the installation of the padeyes are in accordance with the contract drawing and specifications.		
7	Check that the painting conforms to that identified on the structure specification.		
8	Check that the fireproofing conforms to the contract drawings and specification.		
9	Check that the earthing system of the equipment is as per specification.		
10	Produce a set of marked-up drawings in accordance with the installation.		
11	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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		Building / Structure / Civil Work Check List		EPC or EPCC CONTRACTOR LOGO	
		Painting structure			
					
		Task number C-XX-03			
Description :		Subsystem :			
Task Location :		Dwg / PID :			
Estimated Time (MH) :		User Group :			
Module :		Expend Time (MH) :			
	Attention should be paid on: Main structures frame All supports Deck floor Stairs Bulkheads....etc				
1	Check that the completed painting is in accordance with the specifications covering quality, thickness and adhesion. Liaise with QA/QC inspector.				
2	Check that the finish colour conforms to the specifications.				
3	Check that the tagging/ labelling / marking are correct.				
4	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Building / Structure / Civil Work Check List		Building general						EPC or EPCC CONTRACTOR LOGO	
				Task number C-QX-02					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the building conforms to the drawings and specifications.								
2	Check the quality and conformity of the pressure and of safety protection: fire walls, fire doors, insulation etc..								
3	Check throughout the building for cleanliness.								
4	Punch Items issued.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Building / Structure / Civil Work Check List		Water proofing  Task number C-QX-03						EPC OF EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the water proofing material is the correct type, thickness and thermal resistance value.								
2	Ensure satisfactory preparation. No oil, loose items or foreign materials.								
3	Ensure satisfactory vapor barrier.								
4	Check the correct method of joining, lap lengths, end of length stagger etc.								
5	Check joining to building components such as drains, curbs, cants, parapet, penetrations etc.								
6	Visually inspect for air pockets, tears, holes or any other form of damage.								
7	Ensure flood test is carried out satisfactorily.								
8	Produce a defects list for Punch List issue.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Building / Structure / Civil Work Check List		Door / window						EPC or EPCC CONTRACTOR LOGO
		Task number C-QX-04						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Ensure that doors and windows are the correct type and size and are							
2	Check all the necessary preparation activities are carried out.							
3	Check frames are plumb and square.							
4	Check all the seal joint between frame and structure.							
5	Check all the doors and windows installation conforms to the drawing and specifications.							
6	Ensure that the frame/glass gaskets are properly installed.							
7	Check the hardware accessories.							
8	Ensure that all the door-locks are provided with master key system.							
9	Ensure that the glazing activities has been carried-out properly.							
10	Produce a defects list for punch List issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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 Building / Structure / Civil Work Check List		Metallic partition						EPC or EPCC CONTRACTOR LOGO	
				Task number C-QX-05					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check all the materials conforms to the specification and are undamaged.								
2	Ensure that all necessary preparations activities are carried out.								
3	Ensure that all the locations and dimensions conforms to the drawing and specification.								
4	Check the installation of plumb and fixing etc.								
5	Check all the connections bolting and welding etc.								
6	Check the frame caulking and other gap etc.								
7	Check and confirm the grouting activities carried-out properly								
8	Ensure that the acoustic insulation conforms to the specification.								
9	Check that the installation, fixing and thickness of partition conforms to the drawing and specification.								
10	Check that all the joint and gap is properly filled by sealant.								
11	Produce a defecs list for Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Building / Structure / Civil Work Check List		Suspended ceiling						EPC or EPCC CONTRACTOR LOGO	
				Task number C-QX-06					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check all the materials conforms to the specification and are undamaged.								
2	Check that the ceiling type conforms to the specification.								
3	Ensure that the steel suspension system and frame conforms to the drawing and specification.								
4	Check that the hanger spacing are in accordance with drawing and specification.								
5	Ensure that all the installation, fixing and alignment conforms to the drawing and specification.								
6	Ensure satisfactory access trap.								
7	Ensure that the insulation conforms to the contract drawing and specification.								
8	Produce a defects list for Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Building / Structure / Civil Work Check List		Tiling and electrical sanitary equipment						EPC or EPCC CONTRACTOR LOGO
		Task number C-QX-07						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Visually inspect all the items sound construction, clean from cracks or any other damage.							
2	Check the materials. Color, manufacture and are undamaged.							
3	Ensure that the type, size and capacity conforms to the specification.							
4	Check that the location/installation/setting of all equipment conforms to the drawing and specification.							
5	Ensure that the supports for all the equipment are satisfactory.							
6	Ensure that the proper operation activity has been carried-out.							
7	Check joining to building components such as drains, curbs, cants, parapet and penetration ...etc							
8	Check that the bedding/joints properly filled with mortar/sealing/caulking.							
9	Ensure that all the accessory has been installed properly.							
10	Check the surface condition, joint, width, alignment and level or fall.							
11	Check that the proper method of tiles protection has been carried-out.							
12	Ensure that the drainage system of wet area is safe (from point of view falls to floor).							
13	Check throughout building for cleanliness.							
14	Ensure that the leak-test is carried-out satisfactorily.							
15	Produce a defects list for Punch List issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted								
Remarks :								
								
Signature								
Name								
Date								

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 Building / Structure / Civil Work Check List		Rendering / paint						EPC or EPCC CONTRACTOR LOGO	
		Task number C-QX-08							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the material is approved brand.								
2	Check the materials batch number.								
3	Check that the color conform to the specification.								
4	Ensure that the proper mixing proportion and method is carried-out properly.								
5	Ensure that the material life is satisfactory.								
6	Ensure that the object surface preparation is carried-out properly.								
7	Check the dew point.								
8	Check the relative humidity.								
9	Ensure that the object surface preparation/damp/temperature is satisfactory.								
10	Ensure that the dry film thickness is applied (wherever applicable).								
11	Visually inspect for air pocket, orange peel, pin hole, sag ...etc								
12	Ensure that the first and final rendering thickness conforms to the specification.								
13	Ensure that the corner bead installation is satisfactory.								
14	Produce a defects list for Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Building / Structure / Civil Work Check List		Water supply system						EPC or EPCC CONTRACTOR LOGO	
Task number C-QX-09									
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Ensure that the quality of pipe, insulation and characteristics conform to the specification.								
2	Check that the preservation of material has been carried-out properly.								
3	Ensure that all the dimension/location conform to the drawing and specification.								
4	Ensure that the piping arrangement verticality/horizontally conform to the drawing.								
5	Ensure that the installation, support, hanger fixing, connection and plumbing fixtures conform to the drawing.								
6	Ensure that the insulation/installation condition is in accordance with specification.								
7	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
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 Building / Structure / Civil Work Check List		Raised floor system						EPC or EPCC CONTRACTOR LOGO	
				Task number C-QX-10					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Ensure the completion of interface prior start-up activity.								
2	Check that the material receiving inspection report is satisfactory.								
3	Check that the support installation, dimension and method of fixing is carried-out properly.								
4	Check that the preparation activities for affected areas has been carried-out properly.								
5	Check that the bracing installation and lateral movement is satisfactory.								
6	Check the lateral installation support.								
7	Check the material and types of removable panels.								
8	Check the installation of removable panels.								
9	Check the final touch-up and protection of the panels.								
10	Carry out a survey to verify that they are in accordance contract drawing and specification.								
11	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Building / Structure / Civil Work Check List		Sanitary fitting  Task number C-QX-11						EPC or EPCC CONTRACTOR LOGO
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that the location and the orientation of the equipment is correct.							
2	Check available documents are at the latest revision.							
3	Check the mounting arrangements, the supports and the gaskets are installed.							
4	Check all the fittings are aligned and connected to their respective services.							
5	Check that the drains have been correctly fitted.							
6	Check that all piping has been fitted that it is undamaged and that it's in accordance with the specification.							
7	Check all surfaces for cracks, blemishes ...etc.							
8	Check the operation of all the fittings and of the valve arrangements.							
9	Produce a defects list for issue in the Punch List.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
TO BE CUSTOMIZED								
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Name								
Date								

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 TOTAL	Building / Structure / Civil Work Check List		EPC or EPCC CONTRACTOR LOGO	
	Macerator  Task number C-QX-12			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
1	Check that the nameplate details and tag are complete and correct.			
2	Check the location, elevation, orientation and also that the sump-tank is level.			
3	Check that the holding down arrangements are correct.			
4	Check for any installation damage.			
5	Check that the nozzles have been suitably isolated to allow safe entry for an internal examination.			
6	Check that the macerator and sump-tank are installed in accordance with the specifications and approved drawings.			
7	Check that any nozzles not in use are suitably sealed/isolated.			
8	Check both the macerator and sump-tank internally for cleanliness.			
9	Check that preservation has been carried out in accordance with the approved procedure.			
10	Check that the installation of the ladders and platforming are in accordance with the approved drawings. Also that the manways are accessible and suitable for operation.			
11	Check the painting visually for damage.			
12	Check that the equipment has been bonded in accordance with the drawings and specifications.			
13	Check that the tank piping supports are in accordance with the design.			
14	Check that when the flanges are unbolted, that the nozzle flanges align correctly with the pipework flanges.			
15	Check that the temporary strainer has been fitted.			
16	Check that the faces of the mechanical seal are undamaged and that the seal complies with the type specified.			
17	Check the free rotation of the shaft in both directions.			
18	Check that the macerator unit can be withdrawn from the sump-tank.			
19	Check that the preservation fluids have been removed and that the systems have been flushed out sufficiently.			
20	Check that the bolts are correctly tightened and lubricated.			
21	Check that both coupling and coupling guards have been installed.			
22	Produce a set of marked up drawings which are in accordance with the installation.			
23	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
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 Building / Structure / Civil Work Check List		Concrete basins / sumps						EPC or EPCC CONTRACTOR LOGO	
		Task number C-QX-13							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are correct and complete.								
2	Check that the material receiving inspection report is satisfactory.								
3	Check that the location the elevation and orientation.								
4	Check that all the slopes are as per drawing.								
5	Check the installation damage.								
6	Check that all the nozzles are as per drawing.								
7	Check that the weir plates are sealed and installed correctly in accordance with the specifications and approved drawings.								
8	Check all plaforms and stairs are as per drawings.								
9	Check gutters are installed as per drawing.								
10	Check all valves are operating properly.								
11	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

Appendix 3 Electrical typical Conformity Check List Forms

Type of equipment	Check list reference
Power generator	C-PX-01
Power transformer	C-PX-02
HV switchboard / MCC	C-PX-04
LV switchboard / MCC	C-PX-05
Contactor panel	C-PX-06
Bus ducting	C-PX-07
HV power cable	C-PX-08
LV power cable	C-PX-09
Multi / Single-core electrical control cables	C-PX-10
HV motor	C-PX-12
LV motor	C-PX-13
DC motor	C-PX-14
LV distribution board	C-PX-15
Charger / inverter	C-PX-16
Battery	C-PX-17
Lighting circuits	C-PX-18
Power socket outlet	C-PX-19
Heater	C-PX-20
Neutral earthing resistor	C-PX-21
Heat tracing	C-PX-22
Control station	C-PX-23
Isolator	C-PX-24
Navigation aids	C-PX-25
Earthing system	C-PX-26
Miscellaneous equipment	C-PX-27
Lightning protection system	C-PX-28
MCT cabling	C-PX-29
Cable tray / ladder	C-PX-30

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Type of equipment	Check list reference
Electrical junction and marshalling box	C-PX-31
Console / control panel	C-PX-32
Cathodic protection	C-PX-33
Package	C-ZX-01E

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		Electrical Check List		Power generator		EPC or EPCC CONTRACTOR LOGO	
				Task number			
		C-PX-01					
TAG Number :				Subsystem :			
Description :				Dwg / PID :			
Task Location :				User Group :			
Estimated Time (MH) :				Expended Time (MH) :			
Module :							
1	Check equipment is de-energized and safe.						
2	Check generator data conformity against data sheet / project specification (rating plate).						
3	Check preservation status and anti-condensation heater is ready to be energized.						
4	Check general mechanical arrangement.						
5	Check all auxiliary devices (cooling fans, vibration & temperature probes, CT's, VT's,,, if any) for proper installation and connection.						
6	Check generator tagged against drawings						
7	Check earthing and bonding against drawings.						
8	Check neutral eathing.						
9	Check power and auxiliary terminal boxes for cleanliness.						
10	Check power and auxiliary terminal boxes tightness.						
11	Check cable glands conformity.						
12	Check cable glands are correctly mounted (power and auxiliary terminal boxes).						
13	Carry out all checks as required by Manufacturer.						
14	Produce marked-up drawings in accordance with installation.						
15	Check coating integrity.						
16	Check the availability of certification documents against hazardous area generator installation.						
17	Check supplier's documentation and drawings.						
18	Produce a defects list for punch list issue.						
	☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted		
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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	Electrical Check List				EPC or EPCC CONTRACTOR LOGO
	Power transformer				
		Task number			
C-PX-02					
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check transformer is de-energized and safe.				
2	Check transformer rating plate is correct.				
3	Check conformity to data sheet /project specification.				
4	Check transformer installation against drawings.				
5	Check dielectric levels are correct with no leak.				
6	Check retention pan is correctly made and clean.				
7	Check transformer access is properly protected and warning labels and safety instructions are adequately posted.				
8	Check primary terminations are clean, undamaged and correctly identified (phase).				
9	Check secondary terminations are clean, undamaged and correctly identified (phase).				
10	Check all termination enclosures have correct gaskets and fixing bolts.				
11	Check accessories according to data sheet are correctly installed and undamaged (thermometers, relay, fans etc...).				
12	Check all cables are identified and supported correctly.				
13	Check tap changer selector is correctly fitted and locked in the mid position (where applicable).				
14	Check On load tap changer control panel to wiring diagram (where applicable).				
15	Perform precomissioning checks of accessories as appropriate (cooling fans, circulation pumps if any...).				
16	Check relief valve has been unlocked.				
17	Check mechanical interlock of terminals.				
18	Check cable connections against drawings (Power and control cables).				
19	Check coating integrity.				
20	Check earthing and bonding against drawings.				
21	Check supplier's documentation and drawings.				
22	Produce a defect list for punch list issue				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Electrical Check List HV switchboard / MCC  Task number C-PX-04		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check switchboard is de-energized and safe.						
2	Check conformity against data sheet and project specification.						
3	Check preservation status and anti-condensation heaters are ready to be energized.						
4	Check equipment is correctly aligned, leveled, rigid and secured with correct bolting.						
5	Check all panel mounted devices are undamaged and tagged in accordance with data.						
6	Check if construction rating plate data is correct.						
7	Check bus bars and supports are clean and clear of debris, torque all bolts to specification.						
8	Check earthing and bonding of all equipment against drawings.						
9	Check gland plates (if any) and terminations are correct and suitable for external cabling.						
10	Check all switching devices are mechanically operational and undamaged.						
11	Check switchgear mechanical interlocks against interlock diagram.						
12	Check all shutters are identified, operational and lockable.						
13	Check C.T's & VT's are properly installed and match drawing and protection diagram.						
14	Check protection relays against protection diagram.						
15	Check protection relays are tagged correctly.						
16	Check interconnection wiring against drawings.						
17	Check all fuses and switchgear ratings (circuit-breakers , contactors ...etc).						
18	Check power cables are properly fitted and armour and screens earthing is correct.						
19	Check vendor special tools are available.						
20	Produce marked-up drawing in accordance with installation.						
21	Check suppliers document.						
#	Produce a defects list for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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 Electrical Check List LV switchboard / MCC  Task number C-PX-05		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check switchboard is de-energized and safe.					
2	Check conformity against data sheet and project specification.					
3	Check preservation status and anti-condensation heaters are ready to be energized.					
4	Check equipment is correctly aligned, leveled, rigid and secured with correct bolting.					
5	Check all panel mounted devices are undamaged.					
6	Check all panel mounted devices are tagged in accordance with data.					
7	Check if construction rating plate data is correct.					
8	Check bus bars and supports are clean and clear of debris, torque all bolts to specifications.					
9	Check earthing and bonding of all equipment against drawings.					
10	Check gland plates (if any) and terminations are correct and suitable for external cabling.					
11	Check all switching devices are mechanically operational and undamaged.					
12	Check all circuit breakers and starter cubicles run freely in compartments.					
13	Check switchgear mechanical interlocks against interlock diagram.					
14	Check all C.T's & VT's are properly installed and match drawings and protection diagram.					
15	Check protection relays against protection diagram.					
16	Check all equipment are identified against drawings (cubicles, relays ...etc).					
17	Check interconnection wiring against drawings.					
18	Check all fuses and switchgear ratings (breakers , contactors...etc).					
19	Check vendor special tools are available.					
20	Produce marked-up drawings in accordance with installation.					
21	Produce a defects list for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 TOTAL	Electrical Check List		EPC or EPCC CONTRACTOR LOGO					
	Contactor panel  Task number C-PX-06							
TAG Number :		Subsystem :						
Description :		Dwg / PID :						
Task Location :		User Group :						
Estimated Time (MH) :		Expend Time (MH) :						
Module :								
1	Check equipment is de-energized and safe.							
2	Check relevant documents are at the latest revision							
3	Check panel is correctly tagged in accordance with general arrangement drawings.							
4	Check earthing/bonding of all equipment are in accordance with specification.							
5	Check alignment of panel and check that unit runs smoothly in and out of cubicle, and that equipment is undamaged.							
6	Check contactor/circuit breaker rating is in accordance with data.							
7	Check all protection devices are in accordance with data and undamaged.							
8	Produce marked-up drawings in accordance with installation.							
9	Check if accessibility and maintenance are possible and safe.							
10	Review of the FAT punch list. Produce a defects list for punch list issue.							
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted				
Remarks : <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 50%;">SWITCHBOARD N°</td> <td style="width: 50%;"></td> </tr> <tr> <td>CUBICLE N°</td> <td></td> </tr> </table>					SWITCHBOARD N°		CUBICLE N°	
SWITCHBOARD N°								
CUBICLE N°								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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	Electrical Check List		EPC or EPCC CONTRACTOR LOGO	
	Bus ducting  Task number C-PX-07			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
1	Check equipment is de-energized and safe.			
2	Check preservation status and anti-condensation heaters are ready to be energized.			
3	Check bus bar supports/insulators are undamaged and clean.			
4	Check for missing bolts.			
5	Check equipment is correctly aligned and leveled, rigid and secured.			
6	Check bolts are torqued according to Manufacturer's requirements.			
7	Check all covers and cover bolts are correctly fitted, specified IP rating is achieved and danger labels are correctly installed.			
8	Check earthing against drawings.			
9	Check nameplate data.			
10	Produce marked-up drawings in accordance with installation.			
11	Produce a defect list for punch list issue.			
☒ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted				
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 Electrical Check List		Multi / Single-core electrical control cable						EPC or EPCC CONTRACTOR LOGO	
		Task number C-PX-10							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check cable is as specified in project cable schedule.								
2	Check relevant documents are at the latest revision.								
3	Check cable is routed in accordance with cable layout drawings.								
4	Check cable for any physical damage.								
5	Check cable is adequately supported and correctly fixed to rack according to Project specification.								
6	Check bending radius is within the specified limits.								
7	Check cable is correctly loomed and segregated in accordance with specification.								
8	Check cable and core marking are in accordance with specification.								
9	Check cable labelling is in accordance with specification.								
10	Check glands, shrouds, MCTU and earthing are in accordance with specification.								
11	Check terminations are in accordance with termination diagram, and produce "AS BUILT" terminations drawings.								
12	Check gland plate for single core cables is non ferrous.								
13	Produce a defects list for punch list issue.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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	Electrical Check List				EPC OF EPCC CONTRACTOR LOGO
	Motor LV				
					
		Task number C-PX-13			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check motor is de-energized and safe.				
2	Check preservation status and anti-condensation heater is ready to be energized.				
3	Check motor is correctly tagged.				
4	Check mechanical general arrangement.				
5	Check shaft rotates free and quietly in both directions, motor uncoupled.				
6	Check motor data conformity against data sheet/ project specification (rating plate).				
7	Check motor earthing against drawings.				
8	Check phase sequence connection.				
9	Check motor terminal box is clean.				
10	Check terminal boxes screws are tightened.				
11	Check cable glands are correctly mounted.				
12	Check auxiliary devices (if any) for proper installation and connection.				
13	Check painting integrity.				
14	Check the availability of certification documents according hazardous area motor installation.				
15	Check Supplier's documentation and drawings.				
16	Produce a defects list for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Electrical Check List		Motor DC		EPC or EPCC CONTRACTOR LOGO	
		Task number C-PX-14			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check equipment is de-energized and safe.				
2	Check preservation status and anti-condensation heaters are ready to be energized.				
3	Check motor nameplate data is correct.				
4	Check motor tag against drawings.				
5	Check motor earthing against drawings.				
6	Motor uncoupled - check free and noiseless rotation in each direction.				
7	Check brushgear is correct and brushes are free in their housing.				
8	Check spring tension on brushes against Manufacturer's specifications.				
9	Check flameproof joints are clean and greased according to manufacturer instructions.				
10	Check proper power cable connection against drawings.				
11	Check cable glands are correctly mounted.				
12	Check terminal box screws are tighten.				
13	Produce a list of defects for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	Electrical Check List LV distribution board		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-PX-15			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check equipment is de-energized and safe.			
2	Check preservation status and anti-condensation heaters are ready to be energized.			
3	Check equipment earthing and bonding against drawings.			
4	Check equipment is undamaged, correctly mounted, tagged and installed in accordance with layout drawings.			
5	Check all doors, gland plates are correctly mounted.			
6	Check panel-front components, indicators, lamps, meters are securely mounted and undamaged.			
7	Check all switching devices rating and tagging against drawings.			
8	Check all switching devices for proper mechanical operation.			
9	Check external wiring and cabling against drawings.			
10	Check cable connections.			
11	Carry out checks in accordance with manufacturer's procedure.			
12	Produce marked-up drawings in accordance with installation.			
13	Produce a list of defects for punch list issue.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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	Electrical Check List Charger / Inverter  Task number C-PX-16				EPC or EPCC CONTRACTOR LOGO	
TAG Number :			Subsystem :			
Description :			Dwg / PID :			
Task Location :			User Group :			
Estimated Time (MH) :			Expend Time (MH) :			
Module :						
1	Check equipment is de-energized and safe.					
2	Check equipment is undamaged, correctly mounted, tagged and installed in accordance with layout drawings.					
3	Check conformity against data sheet and project specification					
4	Check manufacturer's nameplate data.					
5	Check all panel-front components, indicators, lamps, meters are securely mounted and undamaged.					
6	Check equipment cleanness.					
7	Check all earthing and bonding against drawings.					
8	Check battery cable termination against drawings.					
9	Carry out checks in accordance with manufacturer's procedure.					
10	Produce marked-up drawings in accordance with installation.					
11	Produce a list of defects for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Electrical Check List Power socket outlet  Task number C-PX-19		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that circuit is de-energized and safe.					
2	Check the conformity against drawings and specification.					
3	Check sockets are correctly mounted, accessible.					
4	Check sockets and junction boxes are undamaged.					
5	Check socket and junction boxes are installed in accordance with drawings.					
6	Check cable glands mounting and compliance with specification.					
7	Check cable for proper connection.					
8	Check mechanical interlock.					
9	Check circuit breaker rating.					
10	Check earthing and bonding are in conformity with project specifications.					
11	Check earthing and bonding against drawings.					
12	Produce marked-up drawings in accordance with installation.					
13	Produce a defects list for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Electrical Check List		Heater  Task number C-PX-20						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check equipment is de-energized and safe.								
2	Check nameplate data is correct.								
3	Check cable glands and terminals for proper size and installation.								
4	Check equipment tagging against drawings.								
5	Check earthing and bonding against drawings.								
6	Produce marked-up termination drawing in accordance with installation.								
7	Check the availability of certification documents according hazardous area equipment installation.								
8	Check Supplier's documentation and drawings.								
9	Produce a defects list for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 TOTAL	Electrical Check List Neutral earthing resistor				EPC or EPCC CONTRACTOR LOGO
	 Task number C-PX-21				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check equipment is de-energized and safe.				
2	Check equipment is installed according layout.				
3	Check conformity to data sheet / project specification.				
4	Check earthing and bonding against drawings.				
5	Check nameplate data are correct.				
6	Check coating integrity.				
7	Check cable glands (if any) and terminals for proper size and installation.				
8	Check connection.				
9	Check equipment tagging against drawings.				
10	Check warning labels and safety instruction are installed.				
11	Produce marked-up termination drawing in accordance with installation.				
12	Check Supplier's documentation and drawings.				
13	Produce a defects list for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
					
Signature					
Name					
Date					

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 Electrical Check List		Tape Trace Heating						EPC or EPCC CONTRACTOR LOGO	
		Task number C-PX-22							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the circuit is de-energized and safe.								
2	Check all tapes and junction boxes are undamaged.								
3	Check all tapes and junction boxes are installed according to drawings.								
4	Check all tapes characteristics against project data (type, rated power).								
5	Check cable glands mounting and compliance with specification.								
6	Check thermostat installation (if any).								
7	Check rating of circuit breaker against drawings.								
8	Check circuit earthing and bonding against drawings.								
9	Check tapes, junction boxes, cables and accessories tagging.								
10	Check the availability of certification documents according hazardous area equipment installation.								
11	Produce marked-up drawings in accordance with installation.								
12	Produce a defects list for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Electrical Check List		Control station						EPC or EPCC CONTRACTOR LOGO	
				Task number C-PX-23					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check circuit is de-energized and safe.								
2	Check equipment is installed in accordance with layout drawing.								
3	Check equipment is undamaged and correctly tagged.								
4	Check nameplate data is correct								
5	Check control station and emergency stop pushbutton accessibility.								
6	Check pushbuttons for proper mechanical operation.								
7	Check local anmeter scale (if any)								
8	Check all bolts are fitted and all unused entries are suitably plugged.								
9	Check cable glands mounting and compliance with specification.								
10	Check cable glands and terminals for proper size and installation.								
11	Check earthing and bonding against drawings.								
12	Check the availability of certification documents according hazardous area equipment installation.								
13	Produce marked-up termination drawings in accordance with installation.								
14	Produce a defects list for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 TOTAL	Electrical Check List		EPC or EPCC CONTRACTOR LOGO	
	Isolator  Task number C-PX-24			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check relevant documents are at the latest revision.			
2	Check Nameplate data and tags are correct.			
3	Check preservation status.			
4	Check equipment is solidly and correctly mounted and is in accordance with layout drawing.			
5	Check operation of isolator and interlock is correct.			
6	Check all earthing and bonding is in accordance with project specifications.			
7	Produce marked-up as-built termination drawings in accordance with installation.			
8	Produce marked-up drawings in accordance with installation.			
9	Review of the FAT punch list. Produce a defects list for punch list issue.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
SWITCHBOARD N° CUBICLE N° Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 Electrical Check List Navigation aids  Task number C-PX-25		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) : Expended Time (MH) :						
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check equipment is de-energised and safe.					
2	Check all equipments are undamaged.					
3	Check all equipment installation against drawings.					
4	Check all bolts are fitted and correctly tightened.					
5	Check equipment is correctly tagged as per drawings.					
6	Check nameplate data is in accordance with project data.					
7	Check all unused entries are suitably plugged.					
8	Check cable glands mounting and compliance with specification.					
9	Check equipment earthing and bonding against drawings.					
10	Perform Checks according to Manufacturer's procedure (if any).					
11	Check the availability of certification documents according hazardous area equipment installation.					
12	Produce marked-up termination drawing in accordance with installation.					
13	Produce a list of any defects for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Electrical Check List Earthing system  Task number C-PX-26		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) : Expended Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check all earth bars installation and tagging against drawings.						
2	Check earthing cables installation and tagging against drawings.						
3	Check earthing cables cross section against drawings.						
4	Check all connections are tight, clean and coated with an approved anti-corrosive grease.						
5	Check earthing networks segregation (IS).						
6	Check earth rods correct installation.						
7	Produce marked-up drawings in accordance with installation.						
8	Produce a defects list for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Electrical Check List Lightning protection system  Task number C-PX-28		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check all earth bars installation and tagging against drawings.						
2	Check interconnections between earthing circuits against drawings.						
3	Check connection of stays to the earthing system against drawings.						
4	Check all connections are tight, clean and coated with an approved anti-corrosive grease.						
5	Check Surge protective devices position and assemblies against drawing.						
6	Check earth rods correct installation.						
7	Produce marked-up drawings in accordance with installation.						
8	Produce a defects list for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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	Electrical Check List				EPC or EPCC CONTRACTOR LOGO
	MCT cabling  Task number C-PX-29				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check relevant documents are at the latest revision.				
2	Check that MCT's conforms to project standards and specification.				
3	Check MCT's is installed correctly in accordance with layout drawings without clashes with pipe runs or other equipment.				
4	Check MCT's is properly tagged (when applicable).				
5	Check the cable arrangement in MCT's is conform with the drawing.				
6	Produce a defects list for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Electrical Check List				EPC or EPCC CONTRACTOR LOGO
	Cable tray / ladder				
					
Task number					
C-PX-30					
TAG Number :			Subsystem :		
Description :			Dwg / PID :		
Task Location :			User Group :		
Estimated Time (MH) :			Expended Time (MH) :		
Module :					
IT	CHECK LIST				
1	Check cable tray / ladder is undamaged and installed against drawings without clashes with pipe runs or other equipment.				
2	Check cable tray / ladder is adequately supported against drawings (no excessive deflection).				
3	Check cables segregation in accordance with drawings.				
4	Check the capacity of cable tray / ladder (bunching , size of cables, etc...).				
5	Check insulation pads are adapted to stainless steel or aluminium cable tray /ladder.				
6	Check cable tray / ladder cleanness.				
7	Check lids intallation (if any) against drawings.				
8	Check cable tray / ladder earthed and bonded against drawings.				
9	Produce marked-up layout drawing in accordance with installation.				
10	Produce a defects list for punch list issue.				
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted					
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	Electrical Check List Console / control panel		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-PX-32			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check panel is correctly installed in accordance with layout drawing.			
2	Check relevant documents are at the latest revision.			
3	Check if equipment design (IP,...) is in accordance with project specifications.			
4	Check that panel is undamaged and that all components are in good condition.			
5	Check panel earthing and bonding are in accordance with project specifications.			
6	Check internal wiring is correctly loomed and clearly identified.			
7	Carry out checks in accordance with manufacturer's check list.			
8	Produce marked-up drawings in accordance with installation.			
9	Check if maintenance are possible and safe.			
10	Review of the FAT punch list. Produce a defects list for punch list issue.			
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted				
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 Electrical Check List Cathodic protection  Task number C-PX-33		EPC of EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that equipment is de-energized and safe.					
2	Check relevant documents are at the latest revision.					
3	Check that all equipment and cables are clearly identified and tagged in accordance with construction drawings.					
4	Check that equipment is in good condition and installed in the correct location.					
5	Check that all field equipment is suitable for the area in which it is installed.					
6	Check probe type and size.					
7	Check that all test points are positioned correctly and labelled with all necessary information.					
8	Check all cable connections are correctly terminated, clean and secure.					
9	Check the polarisation cells to ground the pipeline as specified and the Spark Gap Surge Diverter is installed at each insulation joint.					
10	Check that cables are adequately supported.					
11	Check all glands and ensure gland plates are suitable for external locations.					
12	Check that all earthing and bonding is as per specification.					
13	Produce marked-up drawings in accordance with the installation.					
14	Check if accessibility and maintenance are possible and safe.					
15	Review of the FAT punch list. Produce a defects list for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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	Electrical Check List				EPC or EPCC CONTRACTOR LOGO
	Package  Task number C-ZX-01E				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the package Electrical equipment is complete and not damaged.				
2	Check that preservation has been carried out in accordance with approved procedures.				
3	Check that the cables are adequately supported and protected.				
4	Check the insulation, painting and for correct tagging and identification.				
5	Check that the equipment, including cables and glands, have been correctly installed. Also check that they conform to the area requirements.				
6	Check that all equipment has been earthed and bonded.				
7	Check that all electrical package interconnections to external power and control systems are in accordance with approved drawings.				
8	Check if accessibility and maintenance are possible and safe.				
9	Check that all of the commissioning spares and special tools are available in the stores.				
10	Produce a defects list for issue in the Punch List (Including FAT Punch List).				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

Appendix 4 Electrical typical Static Test Sheet Forms

Type of equipment	Test Sheet reference
Power generator	T-PX-01
Power transformer	T-PX-02
LV transformer	T-PX-03
HV switchboard / MCC	T-PX-04
LV switchboard / MCC	T-PX-05
Bus ducting	T-PX-07
HV power cable	T-PX-08
LV power cable	T-PX-09
Multi / single-core electrical control cable	T-PX-10
HV motor	T-PX-12
LV motor	T-PX-13
DC motor	T-PX-14
Distribution board / control panel / console	T-PX-15
Charger / inverter	T-PX-16
Battery	T-PX-17
Lighting circuits	T-PX-18
Power socket outlet	T-PX-19
Heater	T-PX-20
Neutral earthing resistor	T-PX-21
Tape trace heating	T-PX-22
Control station	T-PX-23
Navigation aids	T-PX-25
Earthing system	T-PX-26
Miscellaneous equipment	T-PX-27
Lightning protection system	T-PX-28
Cathodic protection	T-PX-33

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 TOTAL	Electrical Test Sheet					EPC or EPCC CONTRACTOR LOGO
	Power generator					
 Task number T-PX-01						
TAG Number :			Subsystem :			
Description :			Dwg / PID :			
Task Location :			User Group :			
Estimated Time (MH) :			Expended Time (MH) :			
Module :						
GENERATOR DATA						
Manufacturer :		Serial N° :		Voltage :		kV
Full Load Current :		Amps	Speed :		rpm	Frequency :
Rated output :		kVA	Power factor :		Data sheet :	
Type of protection (Ex) :		IP RATING :				
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TYPE / SERIAL N° :						
TEST RESULTS						
INSULATION RESISTANCE / H.V. TESTS						
Generator test configuration		TEST VOLT.	MINI REQ.	U-VWE	V-UWE	W-UVE
Insulation resistance test (MOhm)						
Polarisation Index 10:1 Minute ratio		IP =	2,5	FAT VALUE =		
Winding resistance:		U-V	Ohm	U-W	Ohm	V-W
				Voltage	Mini Req	Readings
Exciter insulation resistance / earth						
Space heater insulation resistance phase / earth						
Bearing insulation resistance shaft driving end						
Bearing insulation resistance shaft non driving end						
CONTINUITY TESTS						
		Bearing probe shaft DE	Bearing probe shaft NDE	Space heater circuit	Exciter circuit	
CONTINUITY PH/E						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 TOTAL	Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO	
	Power transformer					
						
		Task number T-PX-02				
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expend Time (MH) :				
Module :						
TRANSFORMER DATA						
Manufacturer :		Serial N° :		Power rating : KVA		
Primary voltage :		Secondary voltage :		Vector group :		
HV Switchboard :		LV Switchboard :		Data Sheet:		
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TYPE / SERIAL N° :						
TEST RESULTS						
INSULATION RESISTANCE / H.V. TESTS						
	Primary winding /Secondary windings - Earth			Secondary windings/primary windings- Earth		
	Voltage	Mini Req	Readings	Voltage	Mini Req	Readings
INSULATION TEST			MΩ			MΩ
				Voltage	Mini Req	Readings
TANK INSULATION RESISTANCE						MΩ
AUXILIARY WIRING INSULATION RESISTANCE						MΩ
OIL BREAKDOWN TESTS						
OIL WATER CONTENT TEST < 50					ppm	
DIELECTRIC STRENGTH					KV/cm	
CONTINUITY CHECK PHASES / TAPPING POSITION						
Remarks :	Ph1 / Ph2	Ph1 / Ph3	Ph3 / Ph2	TAPPING POSITION		
				-5%		
				-3%		
				0%		
				+ 2,5 %		
				+ 5 %		
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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	Electrical Test Sheet			EPC or EPCC CONTRACTOR LOGO
	LV transformer			
				
Task number				
T-PX-03				
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
NAME PLATE DATA				
Manufacturer :	Serial N° :	Power rating :	KVA	
Primary voltage :	Secondary voltage :	Vector group :		
Insulation Class :	Upstreamswitchboard:	Data sheet :		
	Downstreamswitchboard:			
TESTING INSTRUMENTS USED				
TYPE / SERIAL N° :		TYPE / SERIAL N° :		
TYPE / SERIAL N° :				
TEST RESULTS				
INSULATION RESISTANCE TESTS				
	Test Volt.	Mini Req	Readings	
Between primary windings and earth			MΩ	
Between secondary windings and earth			MΩ	
Between secondary windings and primary windings			MΩ	
CONTINUITY CHECK PHASES / TAPPING POSITION				
Ph1 / Ph2	Ph1 / Ph3	Ph3 / Ph2	TAPPING POSITION	
			-5%	
			-3%	
			0%	
			+ 2,5 %	
			+ 5 %	
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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		Electrical Test Sheet				HV switchboard / MCC		EPC or EPCC CONTRACTOR LOGO											
Task number T-PX-04																			
TAG Number :					Subsystem :														
Description :					Dwg / PID :														
Task Location :					User Group :														
Estimated Time (MH) :					Expend Time (MH) :														
Module :																			
SWITCHBOARD DATA																			
MANUFACTURER :			SERIAL N° :			POWER RATING : KVA													
VOLTAGE :			Secondary voltage :			VECTOR GROUP :													
INSULATION CLASS :			Upstreamswitchboard:			DATA SHEET:													
			Downstreamswitchboard:																
TESTING INSTRUMENTS USED																			
TYPE / SERIAL N° :					TYPE / SERIAL N° :														
TYPE / SERIAL N° :																			
TEST RESULTS																			
				Bus bars			Polarity distribution		Space heater circuit	Motor rearming wiring									
				R	S	T	Control	Signalling											
CONTINUITY																			
				BUS-BAR															
				Test VOLT	MINI REQU.	R-STE	S-RTE	T-RSE											
1st INSULATION RESISTANCE -MΩ																			
HV TEST 1 min.																			
2nd INSULATION RESISTANCE -MΩ																			
				Control Wiring		Signaling wiring	Space heater circuit	Motor rearming wiring											
INSULATION RESISTANCE -MΩ				Test VOLT.	MINI REQU.														
VOLTAGE TRANSFORMER INSULATION RESISTANCE TEST																			
		CONTINUITY																	
		INSULATION																	
VT IDENTIFICATION		Primary			Secondary			ry-Earth			Secondary/primary- Earth								
		U1	U2	U3	V1a	V2a	V3a	V1b	V2b	V3b	U1/E	U2/E	U3/E	V1a-E	V2a-E	V3a-E	V1b-E	V2b-E	V3b-E
For VT tests : Secondary shall have neutral disconnected Remarks :																			
TO BE CUSTOMIZED																			
Signature																			
Name																			
Date																			

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	Electrical Test Sheet										EPC or EPCC CONTRACTOR LOGO															
	LV switchboard / MCC																									
 Task number T-PX-05																										
TAG Number :						Subsystem :																				
Description :						Dwg / PID :																				
Task Location :						User Group :																				
Estimated Time (MH) :						Expended Time (MH) :																				
Module :																										
SWITCHBOARD DATA																										
Manufacturer :				Serial N° :				Power rating :				KVA														
Voltage :				V	Current :				A	Vector group :																
Rated peak current:				kA:1s	IP Rating:				Data Sheet :																	
								Specification :																		
TESTING INSTRUMENTS USED																										
TYPE / SERIAL N° :						TYPE / SERIAL N° :																				
TYPE / SERIAL N° :																										
TEST RESULTS																										
INSULATION RESISTANCE / H.V. TESTS																										
						BUS-BAR																				
						Test VOLT	MINI REQU.	R-STE	S-RTE	T-RSE																
1st INSULATION RESISTANCE -MΩ																										
HV TEST 1 min. μA																										
2nd INSULATION RESISTANCE -MΩ																										
						Test VOLT.	MINI REQU.	Control Wiring	Signaling wiring	Space heater circuit																
INSULATION RESISTANCE -MΩ																										
						Bus bars			Polarity distribution		Space heater circuit	Motor rearming wiring														
						R	S	T	Control	Signalling																
CONTINUITY																										
		CONTINUITY										INSULATION														
VT IDENTIFICATION		Primary					Secondary					Prim/seconda					Secondary/primary- Earth									
		U1	U2	U3	V1a	V2a	V3a	V1b	V2b	V3b	U1E	U2E	U3E	V1a-E	V2a-E	V3a-E	V1b-E	V2b-E	V3b-E							
For VT tests : Secondary shall have neutral disconnected																										
Remarks :																										
TO BE CUSTOMIZED																										
Signature																										
Name																										
Date																										

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	Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO	
	Bus ducting  Task number T-PX-07					
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
NAME PLATE DATA						
Manufacturer :		Serial N° :		Type:		
Voltage :		V	Rating:	A	Frequency: HZ	
Associated SWBD:		Associated transf:		I.P. Rating:		
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TYPE / SERIAL N° :						
TEST RESULTS INSULATION RESISTANCE / H.V. TESTS						
			BUS-BAR			
		Test VOLT	MINI REQU.	R-STE	S-RTE	T-RSE
1st INSULATION RESISTANCE -MΩ						
HV TEST 1 min. μA						
2nd INSULATION RESISTANCE -MΩ						
		Test VOLT.	MINI REQU.	Space heater circuit		
INSULATION RESISTANCE -MΩ						
		Bus bars			Space heater circuit	
		R	S	T		
CONTINUITY						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

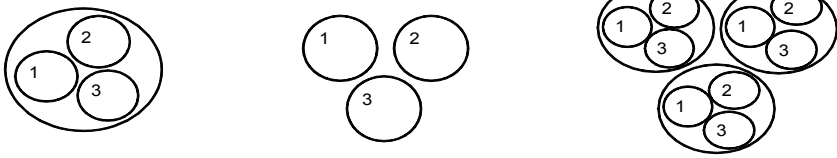
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 Electrical Test Sheet		HV power cable		EPC or EPCC CONTRACTOR LOGO	
		Task number T-PX-08			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
TESTING INSTRUMENTS USED					
TYPE / SERIAL N° :		TYPE / SERIAL N° :			
TYPE / SERIAL N° :					
ELECTRICAL TESTS (CABLE DISCONNECTED)					
CROSS SECTION		mm ²		CABLE SCHEDULE CROSS SECTION: mm ²	
				CABLE TAG NUMBER (for parallel unipolar cables)	
CORE CONTINUITY					
SCREEN CONTINUITY					
ARMOUR CONTINUITY					
1 st INSULATION TEST: Voltage applied:		kV			
Ph1/Ph2-Ph3-armour-Earth :		MΩ			
Ph2/Ph1-Ph3-armour-Earth:		MΩ			
Ph3/Ph2-Ph1-armour-Earth:		MΩ			
HV TEST 1 min. : Voltage applied:		kV			
Ph1/Ph2-Ph3-armour-Earth:		μA			
Ph2/Ph1-Ph3-armour-Earth:		μA			
Ph3/Ph2-Ph1-armour-Earth:		μA			
2nd INSULATION TEST: Voltage applied:		kV			
Ph1/Ph2-Ph3-armour-Earth :		MΩ			
Ph2/Ph1-Ph3-armour-Earth:		MΩ			
Ph3/Ph2-Ph1-armour-Earth:		MΩ			
RE-CONNECT TERMINATIONS					
Tightening torque		N.m			
Remarks :					
					
Signature					
Name					
Date					

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		Electrical Test Sheet						EPC or EPCC CONTRACTOR LOGO	
		LV power cable							
									
		Task number T-PX-09							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
ELECTRICAL TESTS (CABLE DISCONNECTED)									
UPSTREAM CONNECTION ACCORDING CABLE SCHEDULE									
DOWNSTREAM CONNECTION ACCORDING CABLE SCHEDULE									
CROSS SECTION ACCORDING CABLE SCHEDULE									
CONTINUITY									
CORE CONTINUITY		PH 1							
		PH 2							
		PH 3							
ARMOUR CONTINUITY									
PROTECTIVE CONDUCTOR CONTINUITY									
INSULATION									
CORES / EARTH MΩ		PH1/ PH2-PH3-E							
		PH2/ PH1-PH3-E							
		PH3/ PH1-PH2-E							
CORE / ARMOUR MΩ									
CABLE IS CORRECTLY RE-CONNECTED.									
TESTING INSTRUMENTS USED									
TYPE / SERIAL N° :					TYPE / SERIAL N° :				
TYPE / SERIAL N° :									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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		Electrical Test Sheet						EPC or EPCC CONTRACTOR LOGO	
Multi / Single core electrical control cables		Task number T-PX-10							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
INSULATION	CORE to EARTH								
	CORE to CORE								
	CORE to SCREEN								
	CORE to ARMr								
	SCREEN to EARTH								
	SCREEN to ARMr								
CONTINUITY	CORES								
	SCREEN								
	EARTH								
	ARMr								
	TEST VOLTS								
TEST ALL CORES AND RECORD <u>LOWEST</u> VALUE									
Notes: The lowest value is recorded and must be within project specifications									
TESTING INSTRUMENTS USED									
TYPE / SERIAL N° :					Calibration date				
TYPE / SERIAL N° :					Calibration date				
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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	Electrical Test Sheet				EPC of EPCC CONTRACTOR LOGO	
	Motor HV  Task number T-PX-12					
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expend Time (MH) :				
Module :						
MOTOR DATA						
Manufacturer :		Serial N° :		Speed : kV		
Voltage :		V	Frequency :	Hz	Rating : Hz	
Full Load Current :		A	Type of protection :		IP Rating :	
SWBD & CUB REF :		Insulation class :		Data sheet :		
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TEST RESULTS						
INSULATION RESISTANCE / H.V. TESTS						
Generator test configuration		TEST VOLT.	MINI REQU.	U-VWE	V-UWE	W-UWE
Insulation resistance test (M _Ω)						
Polarisation Index 10:1 Minute ratio			5			
STAR Connection ☐		DELTA Connection ☐				
				Voltage	Mini Req	Readings (M _Ω)
Space heater insulation resistance phase / earth						
Bearing insulation resistance shaft driving end						
Bearing insulation resistance shaft non driving end						
Winding resistance		U-V	Ω	U-W	Ω	V-W
Motor rotation facing drive end		C.W. ☐		C.C.W. ☐		
				Bearing probe shaft DE	Bearing probe shaft NDE	Space heater circuit
CONTINUITY TESTS						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 TOTAL	Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO	
	Motor LV  Task number T-PX-13					
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
MOTOR DATA						
Manufacturer :		Serial N° :		Speed : rpm		
Voltage : V		Frequency : Hz		Rating : kW		
Full Load Current : A		Type of protection :		IP Rating :		
SWBD & CUB ref :		Insulation class :		Data Sheet :		
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TEST RESULTS						
Winding Continuity:		U	V	W		
Winding Insulation Resistance			Test Voltage	Mini Req	Readings (MΩ)	
U-VWE						
V-UWE						
W-UVE						
Bearing insulation resistance: phase to earth						
Star connection		☐	Delta connection		☐	
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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	Electrical Test Sheet			EPC or EPCC CONTRACTOR LOGO
	Motor DC  Task number T-PX-14			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
MOTOR DATA				
Manufacturer :	Serial N° :	Speed :	rpm	
Voltage :	V	Full Load Current :	A	Rating : kW
Field :	A	E"x" type :	IP Rating :	
SWBD & CUB ref :			Data Sheet :	
TESTING INSTRUMENTS USED				
TYPE / SERIAL N° :		TYPE / SERIAL N° :		
TYPE / SERIAL N° :				
TEST RESULTS				
Insulation Resistance Tests		Test Voltage	Mini Req	Readings (MΩ)
Armature to earth				
Series field to earth				
Shunt field to earth				
Heater to earth				
Winding resistance	SERIES FIELD Ω	SHUNT FIELD Ω	ARMATURE Ω	
ROTATION FROM NON DRIVE END	C.W.		C.C.W.	
SPRING TENSION ON BRUSHES				
ARMATURE CONTINUITY				
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 TOTAL	Electrical Test Sheet			EPC or EPCC CONTRACTOR LOGO
	Distribution board / control panel / console			
		Task number		
T-PX-15				
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
NAME PLATE DATA				
Manufacturer :		Serial N° :		Type :
Voltage :	V	Frequency :	Hz	Rating : kW
Ingress protection:	N° of outgoing:		Specification :	
SWBD & CUB ref:			Data Sheet :	
TESTING INSTRUMENTS USED				
TYPE / SERIAL N° :		TYPE / SERIAL N° :		
TYPE / SERIAL N° :				
TEST RESULTS				
INSULATION RESISTANCE	TEST VOLTAGE	MINI REQ.	READINGS Mohm	
R-EARTH				
S-EARTH				
T-EARTH				
R-S				
S-T				
R-T				
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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	Electrical Test Sheet		EPC or EPCC CONTRACTOR LOGO
	Charger / Inverter		
			
	Task number		
	T-PX-16		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
NAME PLATE DATA			
Manufacturer :		Serial N° :	Type :
Input :	V	Output :	V Rating :
Input :	A	Output :	A Specification :
SUPPLY SWBD & CUB ref :			Data Sheet :
TESTING INSTRUMENTS USED			
TYPE / SERIAL N° :		TYPE / SERIAL N° :	
TYPE / SERIAL N° :			
TEST RESULTS			
INSULATION RESISTANCE			
To avoid damage to electronic components, refer to manufacturer instructions on testing			
TEST VOLTAGE			Volts
INSULATION RESISTANCE			Mohms
MAIN COMMENTS / REMARKS OF MANUFACTURER:			
Remarks :			
	TO BE CUSTOMIZED		
Signature			
Name			
Date			

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Appendix 4

 Electrical Test Sheet Lighting & convenience socket outlet circuits  Task number T-PX-18		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :	Expend Time (MH) :					
Module :						
Subsystem :						
IT	CHECK LIST					
CIRCUIT DATA						
Distribution Board :						
Type of protection :						
Layout DWG :						
Protection rating (A):						
Voltage (V):						
Circuit load (A):						
Wiring Diag n° :						
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :						
TYPE / SERIAL N° :						
TYPE / SERIAL N° :						
TEST RESULTS - INSULATION RESISTANCE						
TEST VOLTAGE :						
INSULATION RESISTANCE (Mohm):						
Do not use Megger accross phases Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Electrical Test Sheet Power socket outlet  Task number T-PX-19		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
CIRCUIT DATA						
Manufacturer :		Circuit ref :				
Voltage :		V	Rating :	A		
Layout DWG :						
Wiring DWG :						
Type :						
Dist'n board :						
Data Sheet :						
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :						
TYPE / SERIAL N° :						
TYPE / SERIAL N° :						
TEST RESULTS - INSULATION RESISTANCE						
TEST VOLTAGE				Volts		
Test each phase to earth (Record minimum value)				Mohms		
U-V						
V-W						
U-W						
U-Earth						
V-Earth						
W-Earth						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 TOTAL	Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO
	Heater  Task number T-PX-20				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
NAME PLATE DATA					
Manufacturer :		Serial N° :		Type :	
Voltage :		V	FLC :	A	Rating : kW
Frequency :		Hz	IP Rating :		Data Sheet :
Supplied from :		Type of protection :		Specification :	
TESTING INSTRUMENTS USED					
TYPE / SERIAL N° :			TYPE / SERIAL N° :		
TYPE / SERIAL N° :			TYPE / SERIAL N° :		
TEST RESULTS					
INSULATION RESISTANCE					
TEST VOLTAGE Volts					
R/ S-T-EARTH	Mohm	S/ R-T-EARTH	Mohm	T/S-R-EARTH	Mohm
RESISTANCE MEASUREMENT					
R1 - R2	Ohm	S1 - S2	Ohm	T1 - T2	Ohm
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	Electrical Test Sheet Neutral earthing resistor			EPC or EPCC CONTRACTOR LOGO
	 Task number T-PX-21			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
NAME PLATE DATA				
Manufacturer :		Serial N°:		Type :
Voltage :	V	Frequency :	Hz	Data Sheet :
Rating Ohm/Amp/sec :		Permanent :		Supplied from :
TESTING INSTRUMENTS USED				
TYPE / SERIAL N° :		TYPE / SERIAL N° :		
TYPE / SERIAL N° :				
TEST RESULTS				
NER RESISTANCE		Ohm(measured)		Ohm(design)
INSULATION RESISTANCE		Test voltage: V		MOhm
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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		Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO	
Tape Trace Heating		Task number T-PX-22					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
CIRCUIT DATA							
LIST ASSOCIATED HEAT TRACING ISOMETRICS							
TAPE TYPE :							
SUBSYSTEM INSTALLED LENGTH :							
WIRING DIAG :							
TESTING INSTRUMENTS USED							
TYPE / SERIAL N° :							
TYPE / SERIAL N° :							
TEST RESULTS							
Test voltage :							
Tape n° :							
Tape length :							
Thermostats :							
FIRST TEST	Continuity						
	Insulation Resistance						
FINAL TEST	Continuity						
	Insulation Resistance						
FIRST TEST:Continuity and insulation resistance tests to earth for each conductor core are carried out after the tape is installed on pipework but before any insulation and cladding is fitted. FINAL TEST:Same as first test but carried out after pipework has been fully insulated and cladded. Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 TOTAL	Electrical Test Sheet		EPC or EPCC CONTRACTOR LOGO	
	Control station  Task number T-PX-23			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
NAME PLATE DATA				
Manufacturer :		Serial N° :		Type :
Voltage :	V	Frequency :	Hz	Rating : A
Associated equip :		IP Rating :		Data Sheet :
TESTING INSTRUMENTS USED				
TYPE / SERIAL N° :		TYPE / SERIAL N° :		
TYPE / SERIAL N° :				
TEST RESULTS				
ON/OFF TEST		YES		NO
TEST VOLTAGE				Volts
INSULATION RESISTANCE EACH POLE TO EARTH (RECORD MINIMUM VALUE)				Mohm
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 TOTAL	Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO
	Navigation aids  Task number T-PX-25				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
NAME PLATE DATA					
Manufacturer :		Serial N° :		Type :	
Input :	V	Input current :	V	Data sheet :	
Ouput :	V	Output current :	A	Specification :	
Supplied from :					
TESTING INSTRUMENTS USED					
TYPE / SERIAL N° :			TYPE / SERIAL N° :		
TYPE / SERIAL N° :					
TEST RESULTS					
CARRY OUT ALL TESTS IN CONJUNCTION WITH MANUFACTURERS TEST PROCEDURES					
MANUFACTURER REPORT NUMBER :					
MAIN COMMENTS / REMARKS OF MANUFACTURER:					
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Electrical Test Sheet				EPC or EPCC CONTRACTOR LOGO
	Earthing system				
					
		Task number			
T-PX-26					
TAG Number :			Subsystem :		
Description :			Dwg / PID :		
Task Location :			User Group :		
Estimated Time (MH) :			Expended Time (MH) :		
Module :					
TESTING INSTRUMENTS USED					
TYPE / SERIAL N° :			TYPE / SERIAL N° :		
TYPE / SERIAL N° :					
TEST RESULTS					
DRAWING N°	Equipment N° (FROM)	Earth dispatcher (TO)	Loop resistance	Associated cable N°	
GLOBAL EARTHING RESISTANCE		Ohm	TEST CURRENT		A
EARTHING ROD RESISTANCE		Ohm			
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Electrical Test Sheet		EPC or EPCC CONTRACTOR LOGO
	Miscellaneous equipment		
			
Task number			
T-PX-27			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
SWITCHBOARD DATA			
Manufacturer :		Type :	Serial N° :
Voltage :		Frequency :	V Rating :
Supply from :		Output :	A Data Sheet :
TESTING INSTRUMENTS USED			
TYPE / SERIAL N° :		TYPE / SERIAL N° :	
TYPE / SERIAL N° :			
TEST RESULTS			
TEST Description		Result	
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
Remarks :			
		TO BE CUSTOMIZED	
Signature			
Name			
Date			

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	Electrical Test Sheet Cathodic protection				EPC or EPCC CONTRACTOR LOGO	
	 Task number T-PX-33					
TAG Number :			Subsystem :			
Description :			Dwg / PID :			
Task Location :			User Group :			
Estimated Time (MH) :			Expended Time (MH) :			
Module :						
NAME PLATE DATA						
Manufacturer :		Serial N° :		Type :		
Input:		V Input :		A Rating :		
Output:		V Output :		A Equipment class :		
TESTING INSTRUMENTS USED						
TYPE / SERIAL N° :			TYPE / SERIAL N° :			
TEST RESULTS (CARRY OUT ALL TESTS IN CONJUNCTION WITH MANUFACTURERS TEST PROCEDURES) INSULATION RESISTANCE TEST						
TEST VOLTAGE			V EARTH IMPEDANCE TEST CURENT		A	
INSULATION RESISTANCE			Mohm		EARTH RETURN PATH IMPEDANCE Ohm	
ANODE CABLE TEST (AFTER B/F AND COMPACTION)						
LOOP NO.	CABLE LENGTH	Nbr of anodes		LOOP RESISTANCE	REMARKS	
		design	actual			
REFERENCE CELL TEST (AFTER B/F AND COMPACTION)						
REF. CELL NO.	POTENTIAL WITH PORTABLE CU/CUS04			REMARKS		
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

Appendix 5 Instrument typical Conformity Check Lists

Type of equipment	Check List reference
Miscellaneous ➤ Temperature element (T/C or RTD) ➤ Rotameter ➤ Pitot element ➤ Annubar ➤ Etc...	C-JX-00
Relief valve	C-JX-03
Electrical instrument ➤ Pressure differential - pressure switch ➤ Pressure differential - pressure transmitter ➤ Temperature/Differential temperature switch ➤ Temperature/Differential temperature transmitter ➤ Flow transmitter ➤ Flow switch ➤ Level switch ➤ Level transmitter – controller ➤ Solenoid valve ➤ Limit switch ➤ Density transmitter ➤ Signal selector ➤ Hand switch ➤ Analyser ➤ I/P converter ➤ Probe/proximitior/monitor (displacement - vibration key phasor)	C-JX-08
Instrument power cable	C-JX-09
Multi / single-core instrument control cable	C-JX-10
Orifice plate	C-JX-11
Optical fiber cable	C-JX-12
Thermowell	C-JX-13
Turbine / vortex meter	C-JX-14

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Type of equipment	Check List reference
Venturi	C-JX-15
Local gauge / Indicator ➤ Local temperature indicator ➤ Level indicator ➤ Level gauge (sight glass) ➤ Local pressure indicator ➤ Flow indicator	C-JX-16
Bursting disc	C-JX-20
Actuated on/off valve pneumatic type	C-JX-23
Actuated on/off valve electrical type	C-JX-24
Control valve pneumatic / hydraulic type	C-JX-27
Control valve electrical type	C-JX-28
Field instrument panel / annunciator	C-JX-30
Junction & marshalling box	C-JX-31
Gas / smoke detector	C-JX-42
Fire detector	C-JX-43
Fusible loop	C-JX-45
Frangible bulb / pneumatic detection & deluge System	C-JX-46
Indoor cabinet / panel	C-JX-48
Cabinet / panel earthing	C-JX-49
Cable tray / ladder	C-JX-50
Package	C-ZX-01I

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 Instrument Check List		Miscellaneous						EPC or EPCC CONTRACTOR LOGO	
		Task number C-JX-00							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check installed equipment is suitable and conforms to specification.								
3	Check installation conforms to P&ID and hook-up drawing.								
4	Check tube fittings manufacturer is the one chosen for the plant.								
5	Check piping connections provide required block & bleed facility.								
6	Check insulation and heat-tracing.								
7	Check identification (tag number, tag plates).								
8	Check supporting and protection against vibrations.								
9	Check the continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments).								
10	Check calibration certificate.								
11	Flush instrument pipework with dry air.								
12	Check equipment is correctly preserved.								
13	Produce marked-up documents in accordance with installation.								
14	Produce the list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Instrument Check List		Relief valve  Task number C-JX-03						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check installed equipment is suitable and conforms to specification.								
3	Check installation conforms to P&ID and hook-up drawing.								
4	Check installation is in line with manufacturer's recommendations.								
5	Check insulation and heat-tracing.								
6	Check identification (tag number, tag plate with SN, setting value, setting date...etc).								
7	Check calibration certificate and date against tag plate values.								
8	Check supporting and protection against vibrations.								
9	Check accessibility conforms to specifications, with platforming where necessary.								
10	Check that calibration seal is not broken.								
11	Check that transport locking device has been removed after installation.								
12	Check equipment is correctly preserved.								
13	Produce marked-up documents in accordance with installation.								
14	Produce the list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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Appendix 5

 Instrument Check List Electrical instrument  Task number C-JX-08		EPC or EPC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check for mechanical damage.						
2	Check installed equipment is suitable and conforms to specification.						
3	Check installation conforms to P&ID and hook-up drawing.						
4	Check tube fittings manufacturer is the one chosen for the plant.						
5	Check piping connections provide required block & bleed facility.						
6	Check insulation and heat-tracing.						
7	Check identification (tag number, tag plates).						
8	Check supporting and protection against vibrations.						
9	Check the continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments)						
10	Check calibration certificate.						
11	Check electrical connections.						
12	Check cable conformity and identification at instrument side.						
13	Check cable gland conformity and mounting.						
14	Check earthing connections (cable armour and screen).						
15	Check ATEX certificate.						
16	Flush instrument pipework with dry air.						
17	Check equipment is correctly preserved.						
18	Produce marked-up documents in accordance with installation.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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Appendix 5

 Instrument Check List		Multi / Single-core Instrument Control Cable						EPC or EPCC CONTRACTOR LOGO
		Task number C-JX-10						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check cable is as specified in project cable schedule.							
2	Check relevant documents are at the latest revision.							
3	Check cable is routed in accordance with cable layout drawings.							
4	Check cable for any physical damage.							
5	Check cable is adequately supported and correctly fixed to rack according to Project specification.							
6	Check bending radius is within the specified limits.							
7	Check cable is correctly loomed and segregated in accordance with specification.							
8	Check cable and core marking are in accordance with specification.							
9	Check cable labelling is in accordance with specification.							
10	Check glands, shrouds, MCTU and earthing are in accordance with specification.							
11	Check terminations are in accordance with termination diagram, and produce "AS BUILT" terminations drawings.							
12	Check gland plate for single core cables is non ferrous.							
13	Produce a defects list for punch list issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted								
Remarks :								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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Appendix 5

 Instrument Check List		Orifice plate  Task number C-JX-11						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check installed equipment is suitable and conforms to specification.								
3	Check installation conforms to P&ID and hook-up drawing.								
4	Check piping upstream and downstream straight lengths are in line with specifications.								
5	Check flow direction is clearly identified on the tab.								
6	Check tag number is stamped or engraved on tab.								
7	Check accessibility conforms to specifications, with platforming where necessary.								
8	Check calculation certificate.								
9	Check plate flatness and surface finish.								
10	Protect and store plate until ready for installation (just prior to Commissioning).								
11	Produce marked-up documents in accordance with installation.								
12	Produce the list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Instrument Check List		Optical fiber cable		EPC or EPCC CONTRACTOR LOGO	
		 Task number C-JX-12			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check cable physical integrity.				
2	Check cable data against cable schedule.				
3	Check cable routing against drawings (segregation, distance...).				
4	Check cable is supported and fixed to rack according to project specification.				
5	Check bending radius is within the specified limits.				
6	Check cables is correctly loomed and segregated in accordance with specification.				
7	Check cable and core marking against drawings.				
8	Check cable gland suit for cable type.				
9	Check terminations are in accordance with termination diagram and produce marked-up termination drawings.				
10	Check cable earthing against drawings.				
11	Produce the list of defects for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Instrument Check List		Turbine meter / vortex meter						EPC or EPCC CONTRACTOR LOGO	
		Task number C-JX-14							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check installed equipment is suitable and conforms to specification.								
3	Check installation conforms to P&ID and hook-up drawing.								
4	Check installation is in accordance with flow direction and manufacturer's recommendations for upstream and downstream straight lengths.								
5	Check internal parts are clean (and check for free rotation for turbine).								
6	Check insulation and heat-tracing.								
7	Check identification (tag number, tag plates).								
8	Check supporting and protection against vibrations.								
9	Check accessibility conforms to specifications, with platforming where necessary.								
10	Check calibration certificate.								
11	Check electrical connections.								
12	Check cable conformity and identification.								
13	Check cable glands conformity and mounting.								
14	Check earthing connections (cable armour and screen).								
15	Check ATEX certificate.								
16	Check equipment is correctly preserved.								
17	Produce marked-up documents in accordance with installation.								
18	Produce the list of defects for punch list issue.								
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

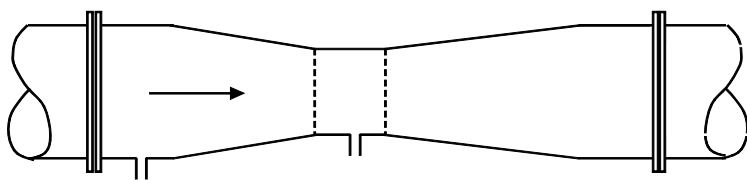
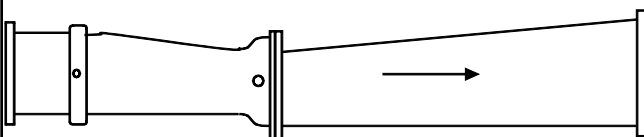
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 TOTAL	<b style="background-color: yellow;">Instrument Check List Venturi  Task number <b style="background-color: yellow;">C-JX-15	EPC or EPCC CONTRACTOR LOGO										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">TAG Number :</td> <td style="width: 50%;">Subsystem :</td> </tr> <tr> <td>Description :</td> <td>Dwg / PID :</td> </tr> <tr> <td>Task Location :</td> <td>User Group :</td> </tr> <tr> <td>Estimated Time (MH) :</td> <td>Expend Time (MH) :</td> </tr> <tr> <td colspan="2">Module :</td> </tr> </table>			TAG Number :	Subsystem :	Description :	Dwg / PID :	Task Location :	User Group :	Estimated Time (MH) :	Expend Time (MH) :	Module :	
TAG Number :	Subsystem :											
Description :	Dwg / PID :											
Task Location :	User Group :											
Estimated Time (MH) :	Expend Time (MH) :											
Module :												
Data												
VENDOR NAME : MODEL N° : DATA SHEET N° :												
 EXAMPLE 1 The classical venturi design  EXAMPLE 2 The eccentric venturi tubes provide additional insurance against buildup of solids materials CHECK VENTURI HAS CORRECT TAG NUMBER, SIZE AND FLOW DIAGRAM												
SPECIFIED ID :		ACTUAL ID :										
MATERIAL :		FLOW ELEMENT CORRECTLY STAMPED : Yes ☐ No ☐										
TESTED LABEL AFFIXED		DATA SHEET ATTACHED										
Remarks :												
TO BE CUSTOMIZED												
Signature												
Name												
Date												

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 Instrument Check List Local gauge / indicator  Task number C-JX-16		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check for mechanical damage.						
2	Check installed equipment is suitable and conforms to specification.						
3	Check installation conforms to P&ID and hook-up drawing.						
4	Check tube fittings manufacturer is the one chosen for the plant.						
5	Check piping connections provide required block & bleed facility.						
6	Check insulation and heat-tracing.						
7	Check identification (tag number, tag plates).						
8	Check supporting and protection against vibrations.						
9	Check the continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments)						
10	Check calibration certificate.						
11	Check instrument positioning and visibility.						
12	Flush instrument pipework with dry air.						
13	Check equipment is correctly preserved.						
14	Produce marked-up documents in accordance with installation.						
15	Produce the list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Instrument Check List		EPC or EPCC CONTRACTOR LOGO					
Bursting disc  Task number C-JX-20							
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check for mechanical damage.						
2	Check piping arrangement and disk holders conform to P&ID and installation details.						
3	Check identification (tag number, tag plates).						
4	Check bursting pressure stamped on disk against datasheet.						
5	Protect and store bursting disk until ready for installation after hydrotest/cleaning and just prior to Commissioning.						
6	Check if accessibility and maintenance are possible and safe.						
7	Check that all comm spares and special tools are available in the stores.						
8	Produce marked-up documents in accordance with installation.						
9	Produce the list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Instrument Check List		Relief valve  Task number C-JX-21						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check installed equipment is suitable and conforms to specification.								
3	Check installation conforms to P&ID and hook-up drawing.								
4	Check installation is in line with manufacturer's recommendations.								
5	Check insulation and heat-tracing.								
6	Check identification (tag number, tag plate with SN, setting value, setting date...etc).								
7	Check calibration certificate and date against tag plate values.								
8	Check supporting and protection against vibrations.								
9	Check accessibility conforms to specifications, with platforming where necessary.								
10	Check that calibration seal is not broken.								
11	Check that transport locking device has been removed after installation.								
12	Check equipment is correctly preserved.								
13	Produce marked-up documents in accordance with installation.								
14	Produce the list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Instrument Check List Control valve - Electrical type  Task number C-JX-28		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check installed equipment is suitable and conforms to specification.						
2	Check for mechanical damage.						
3	Check valve is installed in accordance with flow direction.						
4	Check insulation and heat-tracing.						
5	Check identification (tag number, tag plates).						
6	Check supporting and protection against vibrations.						
7	Check accessibility conforms to specifications, with platforming where necessary.						
8	Check calibration certificate.						
9	Check motor electrical connections.						
10	Check power cable conformity and identification.						
11	Check control and feedback signals connections.						
12	Check control and feedback cables conformity and identification.						
13	Check cable glands conformity and mounting.						
14	Check earthing connections (cable armour and screen).						
15	Check ATEX certificates.						
16	Check equipment is correctly preserved.						
17	Produce marked-up documents in accordance with installation.						
18	Produce the list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Instrument Check List		Annunciator / Field Instrument Panel						EPC or EPCC CONTRACTOR LOGO
		Task number C-JX-30						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check for mechanical damage.							
2	Check installed equipment is suitable and conforms to specification.							
3	Check installation conforms to hook-up drawing.							
4	Check construction conforms to detailed drawings.							
5	Check tube fittings manufacturer is the one chosen for the plant.							
6	Check insulation and heat-tracing.							
7	Check identification (tag number, tag plates).							
8	Check supporting and protection against vibrations.							
9	Check accessibility conforms to specifications, with platforming where necessary.							
10	Check electrical connections.							
11	Check cables conformity and identification.							
12	Check cable glands conformity and mounting.							
13	Check earthing connections (cable armour and screen).							
14	Check ATEX certificates.							
15	Check panel FAT report.							
16	Flush instrument pipework with dry air.							
17	Check equipment is correctly preserved.							
18	Produce marked-up documents in accordance with installation.							
19	Review FAT Punch List. Produce the list of defects for punch list issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted								
Remarks :								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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 Instrument Check List Junction & marshalling box  Task number C-JX-31		EPC or EPC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check equipment is de-energized and safe.						
2	Check available documents are at the latest revision.						
3	Check nameplate data/certification is in accordance with project data.						
4	Check all flange faces are clean and greased with approved lubricants, and that all bolts are fitted and correctly tight (Exd only).						
5	Check all gaskets and bolts are fitted in covers and gland plates where applicable.						
6	Check enclosure is correctly tagged as per drawing.						
7	Check enclosure is correctly earthed in accordance with project data.						
8	Check all unused entries are plugged with approved blanks.						
9	Check that terminals are approved and that the correct numbers are fitted (refer to manufacturer's certificates).						
10	Check segregation barriers are fitted where necessary.						
11	Check enclosure is correctly mounted and easily accessible.						
12	Produce a set of marked-up drawings which are in accordance with the installation.						
13	Review of the FAT punch list. Produce list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Instrument Check List Gas / smoke detector  Task number C-JX-42		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check for mechanical damage.						
2	Check installed equipment is suitable and conforms to specification.						
3	Check installation conforms to F&G detection layout drawings.						
4	Check test facility is installed.						
5	Check end of line resistors correctly fitted where applicable.						
6	Check protective cap is installed.						
7	Check identification (tag number, tag plates).						
8	Check supporting and protection against vibrations.						
9	Check accessibility conforms to specifications, with platforming where necessary.						
10	Check calibration certificate.						
11	Check electrical connections.						
12	Check cable conformity and identification.						
13	Check cable gland conformity and mounting.						
14	Check earthing connections (cable armour and screen).						
15	Check ATEX certificate.						
16	Check that all of the comm spares and special tools are available in the stores.						
17	Dismantle and store sensor until installation just before Commissioning.						
18	Check equipment is correctly preserved.						
19	Produce marked-up documents in accordance with installation.						
20	Produce the list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Instrument Check List		Fire detector  Task number C-JX-43						EPC of EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check installed equipment is suitable and conforms to specification.								
3	Check installation conforms to F&G detection layout drawings.								
4	Check test facility is installed.								
5	Check sensor activation lamp is visible.								
6	Check remote annunciator is installed where required.								
7	Check identification (tag number, tag plates).								
8	Check supporting and protection against vibrations.								
9	Check accessibility conforms to specifications, with platforming where necessary.								
10	Check calibration certificate.								
11	Check electrical connections.								
12	Check cable conformity and identification.								
13	Check cable gland conformity and mounting.								
14	Check earthing connections (cable armour and screen).								
15	Check ATEX certificate.								
16	Check equipment is correctly preserved.								
17	Produce marked-up documents in accordance with installation.								
18	Produce the list of defects for punch list issue.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Instrument Check List		EPC or EPCC CONTRACTOR LOGO					
Fusible loop  Task number C-JX-45							
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check for mechanical damage.						
2	Check installed equipment is suitable and conforms to specification.						
3	Check installation conforms to P&ID and hook-up drawing.						
4	Check tube fittings manufacturer is the one chosen for the plant.						
5	Check piping connection provides required block & bleed facility.						
6	Check insulation and heat-tracing.						
7	Check identification (tag number, tag plates).						
8	Check supporting and protection against vibrations.						
9	Check accessibility conforms to specifications, with platforming where necessary.						
10	Check calibration certificate.						
11	Check electrical connections.						
12	Check cable conformity and identification.						
13	Check cable gland conformity and mounting.						
14	Check earthing connections (cable armour and screen).						
15	Check ATEX certificate.						
16	Flush instrument pipework with dry air.						
17	Check equipment is correctly preserved.						
18	Produce marked-up documents in accordance with installation.						
19	Produce the list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Instrument Check List		Frangible bulb / pneumatic detection / deluge						EPC or EPCC CONTRACTOR LOGO
		Task number C-JX-46						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check for mechanical damage.							
2	Check installation conforms to lay out schematics, G.A. and data sheet.							
3	Check that pipework supports for sprinklers and frangible bulbs are adequate .							
4	Check the protection against vibrations.							
5	Check tube fittings manufacturer is the one chosen for the plant.							
6	Check check piping connection provides required block & bleed facility.							
7	Check the tightness of the sprinklers.							
8	Check identification (tag number, tag plates).							
9	Check accessibility conforms to specifications, with platforming where necessary.							
10	Flush instrument pipework with water.							
11	Check equipment is correctly preserved.							
12	Produce marked-up documents in accordance with installation.							
13	Produce the list of defects for punch list issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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 Instrument Check List		Indoor cabinet / panel						EPC or EPCC CONTRACTOR LOGO	
		Task number C-JX-48							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for mechanical damage.								
2	Check identification (tag number, tag plates).								
3	Check supporting and protection against vibrations.								
4	Check door handles (type, locking, ...).								
5	Check external arrangement conforms to drawings.								
6	Check internal layout conforms to drawings.								
7	Check signals segregation conforms to specifications.								
8	Check electrical connections.								
9	Check earthing connections (cable armour and screen).								
10	Check cables entries, protective plates and cable glands if relevant.								
11	Check cables identification .								
12	Ensure equipment is correctly preserved.								
13	Check if accessibility and maintenance are possible and safe.								
14	Check that all of comm spares and special tools are available in the stores.								
15	Check FAT report.								
16	Produce marked-up documents in accordance with installation.								
17	Produce the list of defects for punch list issue								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ o Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Instrument Check List		Cable tray / ladder		EPC or EPCC CONTRACTOR LOGO	
		 Task number C-JX-50			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
IT	CHECK LIST				
1	Check cable tray / ladder is undamaged and installed against drawings without clashes with pipe runs or other equipment.				
2	Check cable tray / ladder is adequately supported against drawings (no excessive deflection).				
3	Check cables segregation in accordance with drawings.				
4	Check the capacity of cable tray / ladder (bunching , size of cables, etc...).				
5	Check insulation pads are adapted to stainless steel or aluminium cable tray /ladder.				
6	Check cable tray / ladder cleanness.				
7	Check lids intallation (if any) against drawings.				
8	Check cable tray / ladder earthed and bonded against drawings.				
9	Produce marked-up layout drawing in accordance with installation.				
10	Produce a defects list for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Instrument Check List		Package		EPC or EPCC CONTRACTOR LOGO	
		 Task number C-ZX-011			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check the package Instrument equipment for damage and for missing equipment.				
2	Check that preservation has been carried out in accordance with approved procedures.				
3	Check all equipment including small bore piping and fittings have been correctly installed. Check that they conform to the area requirements.				
4	Check cable continuity between the item of equipment and the marshalling cabinet in the Technical Control Room.				
5	Check that all instrument package interconnections to field junction boxes are in accordance with approved drawings.				
6	Check that all of the commissioning spares and special tools are available in the stores.				
7	Check if accessibility and maintenance are possible and safe.				
8	Control calibration sheets for all instruments.				
9	Check the insulation, painting and for correct tagging and identification.				
#	Produce a defects list for issue in the Punch List (including FAT punch List).				
☐	NA	Not Applicable	☒	X	Checked & not accepted
☐			☐	O	Checked & accepted
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 6

Appendix 6 Instrument typical Static Test Sheets

Type of equipment	Test Sheet reference
General purpose	T-JX-00
Control valve (modulating)	T-JX-01
Actuated valve	T-JX-02
Relief valve	T-JX-03
Instrument analogue output	T-JX-04
Instrument switched output	T-JX-05
Tubing pressure test	T-JX-06
Motorized operated valve	T-JX-07
Low pressure closure test	T-JX-08
Instrument power cable	T-JX-09
Multi / single-core instrument control cable	T-JX-10
Orifice plate	T-JX-11
Optical fiber cable	T-JX-12
Thermowell	T-JX-13
Cabinet / panel earthing	T-JX-49

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	Instrument Test Sheet				EPC or EPCC CONTRACTOR LOGO
	General purpose				
		Task number			
		T-JX-00			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
Data					
VENDOR CALIBRATION MANUAL N°:					
CALIBRATION/TEST PROCEDURE N°:					
DATA SHEET N°:					
TEST DETAILS					
TEST RESULTS					
TESTED LABEL AFFIXED			DATA SHEET ATTACHED		
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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		Instrument Test Sheet				EPC or EPCC CONTRACTOR LOGO	
Control valve							
Task number T-JX-01							
TAG Number :				Subsystem :			
Description :				Dwg / PID :			
Task Location :				User Group :			
Estimated Time (MH) :				Expended Time (MH) :			
Module :							
DATA							
VENDOR CALIBRATION MANUAL N° :							
CALIBRATION/TEST PROCEDURE N° :						SERIAL N° :	
DATA SHEET N° :						MODEL N° :	
TEST EQUIPMENT :						SERIAL N° :	
VALVE SIGNAL RANGE				TEST DETAILS			
AIR FAILURE :		OPENS		CLOSES		STAY PUT	
SIGNAL FAILURE :		OPENS		CLOSES		STAY PUT	
OPEN / CLOSING TIME				TEST RESULTS			
SIGNAL		VALVE POSITION *				TIME (SECS)	
MIN	MAX	OPEN	CLOSE	CLOSE	OPEN		
MIN	MAX	OPEN	CLOSE	CLOSE	OPEN		
CALIBRATION POINTS							
SIGNAL INCREASE		VALVE POSITION		SIGNAL DECREASE		VALVE POSITION *	
		OPEN/CLOSED				OPEN/CLOSED	
		75 % / 25 %				75 % / 25 %	
		50%				50%	
		25 % / 75 %				25 % / 75 %	
		CLOSED / OPEN				CLOSED / OPEN	
AUXILLARY EQUIPMENT MOUNTED WITH VALVE							
TYPE	TAG N°	CALIBRATION RANGE	CHECK SATISFACTORY	REMARKS			
SOLENOID							
SOLENOID							
LIMIT SWITCH							
LIMIT SWITCH							
TESTED LABEL AFFIXED				DATA SHEET ATTACHED			
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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		Instrument Test Sheet				EPC or EPC CONTRACTOR LOGO	
Actuated valve							
Task number T-JX-02							
TAG Number :				Subsystem :			
Description :				Dwg / PID :			
Task Location :				User Group :			
Estimated Time (MH) :				Expend Time (MH) :			
Module :							
DATA							
VENDOR CALIBRATION MANUAL N° :							
CALIBRATION/TEST PROCEDURE N° :						SERIAL N° :	
DATA SHEET N° :						MODEL N° :	
TEST EQUIPMENT :						SERIAL N° :	
TEST DETAILS							
VALVE SIGNAL RANGE							
AIR FAILURE :	OPENS		CLOSES		STAY PUT		
SIGNAL FAILURE :	OPENS		CLOSES		STAY PUT		
HYDRAULIC FAILURE :	OPENS		CLOSES		STAY PUT		
POWER FAILURE :	OPENS		CLOSES		STAY PUT		
TEST RESULTS							
OPEN / CLOSING TIME		INDICATED VALVE POSITION *					
SIGNAL		INDICATED VALVE POSITION *		INDICATED VALVE POSITION *		TIME (SECS)	
MIN	→	MAX	OPEN →	CLOSE	CLOSE →	OPEN	
MIN	→	MAX	OPEN →	CLOSE	CLOSE →	OPEN	
(* Delete if not applicable)							
VALVE LEAKAGE TEST							
TEST MEDIUM		TEST PRESSURE		DROPS/MIN		BUBBLES/MIN	
AUXILLARY EQUIPMENT MOUNTED WITH VALVE							
TYPE	TAG N°		RANGE	SATISFACTORY	REMARKS		
SOLENOID							
SOLENOID							
LIMIT SWITCH							
LIMIT SWITCH							
PRESSURE SWITCH							
PRESSURE GAUGE							
PRESSURE GAUGE							
TESTED LABEL AFFIXED						DATA SHEET ATTACHED	
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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	Instrument Test Sheet		EPC or EPCC CONTRACTOR LOGO	
	Relief valve			
	 Task number T-JX-03			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
DATA				
SERIAL N°:				
VENDOR CALIBRATION MANUAL N° :				
CALIBRATION/TEST PROCEDURE N° :				
DATA SHEET N° :				Rev :
BALANCED OR CONVENTIONAL :				
INLET ORIFICE SIZE :		OUTLET ORIFICE SIZE :		
SERIAL N°:		SPRING N° :		
TEST EQUIPMENT :				
TEST DETAILS				
PROPOSED TEST DATE		TEST MEDIUM TEMP		
ACTUAL TEST DATE		DURATION OF TEST		
DESIGN PRESSURE		SEAT LIFT PRESSURE		
TEST PRESSURE REQUIRED		RE-SEAT PRESSURE		
TEST MEDIUM		BUBBLE LEAK RATE		
BACK PRESSURE				
TESTED LABEL AFFIXED		DATA SHEET ATTACHED		
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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	Instrument Test Sheet										EPC or EPCC CONTRACTOR LOGO
	Analogue O/P										
	 Task number T-JX-04										
TAG Number :					Subsystem :						
Description :					Dwg / PID :						
Task Location :					User Group :						
Estimated Time (MH) :					Expended Time (MH) :						
Module :											
DATA											
MODEL N° :					SERIAL N° :						
VENDOR CALIBRATION MANUAL N° :											
CALIBRATION/TEST PROCEDURE N° :											
DATA SHEET N° :					Rev :						
TEST EQUIPMENT :					SERIAL N° :						
TEST DETAILS											
CALIBRATION FIGURES											
CALIBRATION POINTS			RISING				FALLING				UNITS
INPUT A											
INPUT B *											
INPUT C *											
OUTPUT											
* NOTE : COMPLETE IF APPLICABLE TESTED LABEL AFFIXED ☐ DATA SHEET ATTACHED ☐											
Remarks :											
TO BE CUSTOMIZED											
Signature											
Name											
Date											

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	Instrument Test Sheet				EPC of EPCC CONTRACTOR LOGO	
	Switched O/P  Task number T-JX-05					
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
DATA						
MODEL N° :		SERIAL N° :				
VENDOR CALIBRATION MANUAL N° :						
CALIBRATION/TEST PROCEDURE N° :						
DATA SHEET N° :		Rev :				
TEST EQUIPMENT :		SERIAL N° :				
TEST DETAILS						
SWITCH POINTS		RISING		FALLING		UNITS
INPUT A						
INPUT B *						
* NOTE : COMPLETE IF APPLICABLE						
TESTED LABEL AFFIXED		DATA SHEET ATTACHED				
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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		Instrument Test Sheet				Tubing pressure test		EPC or EPCC CONTRACTOR LOGO		
		Task number								
		T-JX-06								
TAG Number :		Subsystem :								
Description :		Dwg / PID :								
Task Location :		User Group :								
Estimated Time (MH) :		Expend Time (MH) :								
Module :										
TEST SPECIFIED USED										
TEST FLUID :		TEST PRESSURE BAR G :				TEST DURATION :				
TEST EQUIPMENT :		SERIAL N° :								
HOOK UP DIAGRAM Number:										
Line FROM		Line TO		Tubing cleaned			Tubing flushed			Diam ID/OD
				Yes No N/A			Yes No N/A			
TESTED LABEL AFFIXED ☐										DATA SHEET ATTACHED ☐
Remarks :										
TO BE CUSTOMIZED										
Signature										
Name										
Date										

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 TOTAL	Instrument Test Sheet		EPC or EPCC CONTRACTOR LOGO
	Low Pressure Closure Test		
	 Task number T-JX-08		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
DATA			
VENDOR CALIBRATION MANUAL N° :			
CALIBRATION/TEST PROCEDURE N° :		SERIAL N° :	
DATA SHEET N° :		MODEL N° :	
TEST EQUIPMENT :		SERIAL N° :	
TEST DETAILS			
<u>TEST CRITERIA (as per GS EP PVV 142 and API STD 598):</u>			
TEST MEDIUM		TEST PRESSURE	TEST DURATION
<u>TEST RESULTS:</u>			
VALVE NORMAL SIZE	STABILIZATON TIME	TEST DURATION	
Maximum allowable leakage rate for closure test : <u>NO LEAKAGE ALLOWED</u>			
TESTED LABEL AFFIXED		DATA SHEET ATTACHED	
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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		Instrument Test Sheet Instrument power cable  Task number T-JX-09					EPC or EPCC CONTRACTOR LOGO	
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
ELECTRICAL TESTS (CABLE DISCONNECTED)								
UPSTREAM CONNECTION ACCORDING CABLE SCHEDULE								
DOWNSTREAM CONNECTION ACCORDING CABLE SCHEDULE								
CROSS SECTION ACCORDING CABLE SCHEDULE								
CONTINUITY								
CORE CONTINUITY		PH 1						
		PH 2						
		PH 3						
ARMOUR CONTINUITY								
PROTECTIVE CONDUCTOR CONTINUITY								
INSULATION								
CORES / EARTH MΩ		PH1/ PH2-PH3-E						
		PH2/ PH1-PH3-E						
		PH3/ PH1-PH2-E						
CORE / ARMOUR MΩ								
CABLE IS CORRECTLY RE-CONNECTED.								
TESTING INSTRUMENTS USED								
TYPE / SERIAL N° :				TYPE / SERIAL N° :				
TYPE / SERIAL N° :								
Remarks :								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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 Instrument Test Sheet		Multi / Single-core instrument cable control						EPC or EPCC CONTRACTOR LOGO	
		Task number T-JX-10							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
INSULATION	CORE to EARTH								
	CORE to CORE								
	CORE to SCREEN								
	CORE to ARMr								
	SCREEN to EARTH								
	SCREEN to ARMr								
CONTINUITY	CORES								
	SCREEN								
	EARTH								
	ARMr								
	TEST VOLTS								
TEST ALL CORES AND RECORD LOWEST VALUE									
Testing method : Continuity test for core / screen / armour are achieved by using one core for return and deducting this value. Insulation tests on screened singles, pairs and triples will be tested as follows : Test voltage applied between : each core and all others cores each core and screen each core and earth/armour each screen and others screens Notes: The lowest value is recorded and must be within project specifications									
TESTING INSTRUMENTS USED									
TYPE / SERIAL N° :					Calibration date				
TYPE / SERIAL N° :					Calibration date				
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 TOTAL	Instrument Test Sheet Orifice plate  Task number T-JX-11	EPC or EPCC CONTRACTOR LOGO		
Task number T-JX-11				
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
DATA				
CALCULATION SHEET REF:				
DATA SHEET N° :				
MATERIAL :		SPECIFIED THICKNESS:		
SPECIFIED ID :		SPECIFIED OD :		
				
Measured Diameter	a:	b:	c:	d:
Flow element correctly stamped: Y/N	Actual plate thickness :		e:	
Presence of degasing holes Y/N	Presence of draining holes Y/N			
TESTED LABEL AFFIXED		DATA SHEET ATTACHED		
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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		Instrument Test Sheet					Optical fibre cable		EPC or EPCC CONTRACTOR LOGO	
							Task number			
		T-JX-12								
Task Location :										
User Group :										
Estimated Time (MH) :		Expended Time (MH) :								
Module :										
Subsystem :										
IT	CHECK LIST									
1	Check optical fibre type, color code, fibers number, slipcover.									
2	Attach supplier inspection protocol on reception.									
3	Attach reflectometry report for each fibre before installation (nude fiber). OTDR . Optical Time Domain Reflectometer.									
4	Check handling optical fibres.									
5	Attach reflectometry report for each fibers after handling installation (without fiber connectors and splicing).									
6	Check fibre fusion, splicing and cleavers.									
7	Attach reflectometry report for each fibre after installation (with fiber connectors).									
8	Check that measured lenght complies with pulled lenght.									
9	Check visual installation complete.									
10	Check power meters and light sources.									
11	Check that variable attenuation complies with specification described in ITU G650.									
12	Check the fibres scopes complies 10 gigabit Ethernet performance requirements.									
13	Attach LAN tester print out to this test sheet.									
14	Produce a list of non compliance for punch list issue.									
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted						
Remarks :										
TO BE CUSTOMIZED										
Signature										
Name										
Date										

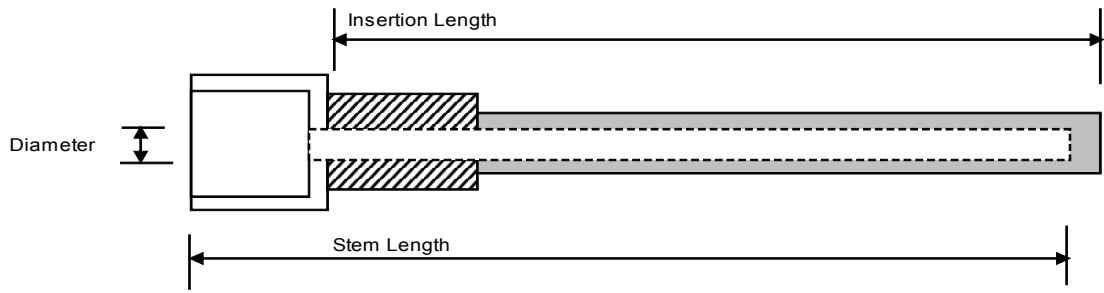
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 Instrument Test Sheet		Thermowell  Task number T-JX-13						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
Insertion length mm									
Internal diameter mm									
Thermowell filled-up by:									
Special compound									
Oil									
Other									
N/A									
Check the continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments)									
									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Instrument Test Sheet Cabinet / panel earthing  Task number T-JX-49		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check earthing connections (IPE,IE and ISE with interconnections).						
2	For intrinsically safe earth :						
	___ after closing all knives terminals used for screens (if applicable)						
	___ after disconnecting the I.S.bus bar from the main bus bar						
	Check the segregation of the I.S earth						
3	For Instrument earth when not in I.S :						
	___ after closing all knives terminals used for screens (if applicable)						
	___ after disconnecting the Instrument earth bus bar from the main bus bar inside the cabinet						
	Check the continuity of the I.E earth (since interconnection is achieved through junction boxes and instruments).						
4	Produce the list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

Appendix 7 Mecanical typical Conformity Check List Forms

Type of equipment	Check List reference
Pedestal crane	C-AX-01
Lift	C-AX-02
Air winches	C-AX-03
Pedestal crane system	C-AX-04
Gantry crane	C-AX-05
Hoist/Chain block	C-AX-06
Air transporter	C-AX-07
Flare tip change out handling unit	C-AX-08
Pull-in riser gantry	C-AX-09
Trolley / Monorail	C-AX-10
Heat Exchanger shell and tube	C-EX-01
Heat exchanger plate	C-EX-02
HVAC Heater coil	C-EX-03
HVAC Cooler	C-EX-04
Heat exchanger air fin	C-EX-05
Reciprocating pump	C-GX-01
Centrifugal pump vertical	C-GX-02
Centrifugal pump	C-GX-03
Electro submersible pump	C-GX-05
Metering pump	C-GX-06
Rotary pump	C-GX-08
Gearbox	C-GX-09
Hydraulic coupling	C-GX-10
Ejector	C-GX-11
HVAC Filter	C-HX-02
Agitator	C-HX-04
Coarse Filter (Rotating element)	C-HX-05
Sand Filter	C-HX-06
Gas turbine air inlet filter	C-HX-08

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Type of equipment	Check List reference
Spring Hanger	C-HX-09
Reciprocating Compressor	C-KX-01
HVAC Fan	C-KX-02
HVAC refrigeration unit	C-KX-03
Gas turbine driver	C-KX-05
Centrifugal compressor	C-KX-06
Inert gas generator	C-KX-07
Turbo expander	C-KX-08
Heater	C-KX-09
Turbine exhaust duct	C-LX-03
Air filter / Flame trap	C-LX-04
Drag chains	C-LX-28
HVAC ducting	C-NX-01
HVAC manual damper	C-NX-02
HVAC automatic damper	C-NX-03
HVAC sound attenuator	C-NX-04
HVAC humidifier	C-NX-05
HVAC air handling unit	C-NX-06
HVAC constant volume box	C-NX-07
HVAC galley hood	C-NX-08
HVAC spray washer	C-NX-09
HVAC fire damper control panel	C-NX-10
HVAC weather louver	C-NX-11
HVAC compressor	C-NX-12
Diesel engine	C-TX-01
Lube oil package	C-VX-04
Flare tip package	C-VX-06
Flare ignition and snuffing package	C-VX-07
Air dryer package	C-VX-09
Package	C-ZX-01M

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	Pedestal crane  Task number C-AX-01		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that the nameplate details are correct.		
2	Check both the location and elevation are correct and the crane is level.		
3	Check for the correct welding of the stub-pedestal and that the slewing ring is torqued to the correct value.		
4	Check for any damage incurred during the installation.		
5	Check the crane is installed as per specifications and approved drawings.		
6	Check the crane for cleanliness.		
7	Check preservation is carried out as per approved procedure.		
8	Check that all the ladders and platforming are installed as per approved drawings.		
9	Check the painting visually for any damage		
10	Check the earthing and bonding of the units is as per drawings and specifications.		
11	Check large items in the crane can be withdrawn using suitable lifting equipment.		
12	Check that all of the ropes of the crane are serviceable.		
13	Check that the crane bolting is suitably lubricated.		
14	Check load/radius diagram is clearly displayed in the drivers control cabin.		
15	Check that the hydraulic system is filled and vented.		
16	Check with the Vendor that he is satisfied that the crane is ready for commissioning.		
17	Check that all the recommended commissioning spares are available in the stores or on site.		
18	Check that bolting, gaskets and lubricants plus any special tools are available in the store.		
19	Produce a set of marked-up drawings in accordance with the installation.		
20	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 Mechanical Check List		Lift  Task number C-AX-02					EPC or EPCC CONTRACTOR LOGO	
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that the nameplate details are correct and that the S.W.L. is clearly displayed.							
2	Check that the location of the tower is correct and that it is level.							
3	Make a dimensional check of the tower against the approved drawings.							
4	Check that the fixing arrangement of the lift is correct and also the mounting in the tower.							
5	Check for any installation damage.							
6	Check that the lift, rack and tower are installed in accordance with approved drawings and specifications.							
7	Check the lift and rack for cleanliness.							
8	Check that preservation has been carried out in accordance with approved procedures.							
9	Check that the shafts are free to rotate in the correct direction.							
10	Check that the pinion wheels are correctly engaged on the rack.							
11	Check that the doors of the car operate freely.							
12	Check the free operation of the station doors.							
13	Check the maintenance access at the lift stations. Also check the trapdoor operation in the car roof.							
14	Check that the ladder in the tower is in accordance with the approved drawings.							
15	Check the painting visually for damage.							
16	Check the alignment between the rack, cab and shaft.							
17	Check that there is adequate space available to withdraw all large items with suitable lifting equipment.							
18	Check that the bolting is suitably lubricated.							
19	Check that the stops are installed at the top and bottom of the complete shaft.							
20	Check the operation of the pit-prop.							
21	Check that all the commissioning spares, bolting, gaskets and any special tools are available in the stores.							
22	Check that the Vendor is satisfied that the lift is ready for commissioning.							
23	Seal up the lift as required.							
24	Produce marked-up drawings in accordance with the installation.							
25	Produce a defects list for issue in the Punch List.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted								
Remarks :								
								
Signature								
Name								
Date								

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 Mechanical Check List		Air winch  Task number C-AX-03						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are complete and correct.								
2	Check the location, the elevation, orientation and that the unit is level.								
3	Check the holding down arrangements.								
4	Check for any installation damage.								
5	Check preservation is carried out as per approved procedures.								
6	Check the painting visually for damage.								
7	Check earthing and bonding are carried out as per approved procedure.								
8	Check the free rotation of the drum.								
9	Check brake linkage and clevis pins.								
10	Check the filter element, lubricator level and the regulator settings.								
11	Check the condition of the wire ropes.								
12	Check the coupling alignment.								
13	Produce marked-up drawings in accordance with the installation.								
14	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 TOTAL		Mechanical Check List Pedestal crane systems		EPC or EPCC CONTRACTOR LOGO	
		 Task number C-AX-04			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Hydraulic Circuit.				
2	Pneumatic Circuit.				
3	Air Receiver. (refer to C-CX-01)				
4	Air Compressor. (refer to C-KX-06)				
5	Hydraulic Tank. (refer to C-DX-01)				
6	Air Filter. (refer to C-HX-01)				
7	Air Dryer. (refer to C-VX-09)				
8	Emergency Slewing System.				
9	Check the location, the elevation, orientation and the level of the Emergency Slewing System (ESS).				
10	Check for any installation damage of ESS.				
11	Check the suction and the discharge piping are adequately supported of ESS.				
12	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Mechanical Check List		Gantry crane		EPC or EPCC CONTRACTOR LOGO		
						
		Task number C-AX-05				
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expend Time (MH) :				
Module :						
1	Check that the name plate details are correct and that it includes the Authority stamp.					
2	Check available documents are at the latest revision.					
3	Check that the S.W.L. is clearly displayed on the gantry.					
4	Check that the gantry location is correct. Also check the elevation, orientation and that the gantry is level.					
5	Check that the gantry is correctly installed on the "downshop beams" and that the end stops are installed.					
6	Check for any installation damage and also the condition of the ropes.					
7	Check that the gantry crane is installed in accordance with both the specifications and the approved drawings.					
8	Check the general cleanliness of the unit.					
9	Check that the preservation of the unit has been carried out in accordance with an approved procedure.					
10	Check that any maintenance ladders or platforms are installed in accordance with the approved drawings.					
11	Check that the painting is sound and without damage					
12	Check that the gantry is correctly aligned on the runway beams over the full operating length. Also check that the gantry contacts squarely on both sets of end-stops.					
13	Check that the trolley is correctly aligned on the gantry over its full operating length.					
14	Check the mechanical operation of the gantry interlocks.					
15	Check that the bearings are correctly lubricated.					
16	Check that all of the components can be withdrawn with suitable lifting gear.					
17	Check that the bolting is suitably lubricated.					
18	Check that all of the commissioning spares, the boltings, gaskets and special tools are available in the stores.					
19	Check that the preservation fluids have been removed and that flushing has been carried out. Control that the systems have been charged with the recommended lubricants.					
20	Check that the operational zone is clear.					
21	Check that the safety devices/protection are installed					
22	Check that the earthing system of the equipment is as per specification.					
23	Seal up the unit as required.					
24	Produce a set of marked-up drawings in accordance with the installation.					
25	Produce a defects list to be issued in the Punch List.					
☐ NA Not Applicable		☒ X Checked & not accepted		☐ o Checked & accepted		
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Mechanical Check List		Hoist / chain block						EPC or EPCC CONTRACTOR LOGO	
		Task number C-AX-06							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are correct and that the S.W.L. is correctly displayed.								
2	Check that the hoist is installed on the correct runway beams.								
3	Check that there is no installation damage.								
4	Check that the hoist is installed in accordance with the specifications.								
5	Check the general cleanliness of the hoist and chain.								
6	Check the preservation is carried out as per approved procedure.								
7	Check any maintenance ladders or platforms are installed as per approved drawings.								
8	Check the condition of the painting for damage.								
9	Check lifting gap (height) is sufficient for the expected use.								
10	If electric motor driven, insure correspondant Pre-commissioning check lists has been issued.								
11	Check that the operation zone is clear.								
12	Pack the handchain into its bag.								
13	Produce marked-up drawings in accordance with the installation.								
14	Produce a defects list for inclusion in the Punch List.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	Flare tip change out handling unit		
		Task number C-AX-08	
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check the nameplate details are correct and has the Certification Authority Stamp and also S.W.L. is displayed.		
2	Check available documents are at the latest revision.		
3	Check that the crane is installed at the correct elevation and that the rails are installed parallel and in accordance with the approved drawings.		
4	Check for any installation damage.		
5	Check that the crane is in accordance with specifications and the approved drawings.		
6	Check that the rope is reeved and anchored to the drum in accordance with the approved drawings. Also it must be undamaged and lubricated as per specifications.		
7	Check that the air hose is sufficiently long to allow the crane to be operated at the limit of its travel.		
8	Check that all the hose couplings are compatible.		
9	Check the general cleanliness of the crane and that the rails are not obstructed.		
10	Check preservation is carried out as per approved procedure.		
11	Check that the painting is sound and undamaged.		
12	Check that all the commissioning spares, the lubricants, bolting and any special tools are available in the stores.		
13	Check that the preservation fluids have been removed and the systems have been flushed out. Also check that the recommended lubricants have been used to fill the system.		
14	Produce a set of marked-up drawings in accordance with the installation.		
15	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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		Mechanical Check List		EPC or EPCC CONTRACTOR LOGO	
		Pull-in riser gantry			
					
		Task number C-AX-09			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Follow precommissioning procedure as stated on Vendor documentation.				
2	Check that the S.W.L. is clearly displayed on the gantry.				
3	Check that the gantry location is correct. Also check the elevation, orientation and that the gantry is level.				
4	Check that the gantry is correctly installed on the "sliding rails" and that the end stops are installed.				
5	Check for any installation damage and also the condition of the wire.				
6	Check that the gantry crane is installed in accordance with both the specifications and the approved drawings.				
7	Check the general cleanliness of the unit.				
8	Check that any maintenance ladders or platforms are installed in accordance with the approved drawings.				
9	Check that the painting is sound and without damage.				
10	Check that the gantry is correctly aligned on the runway beams over the full operating length. Also check that the gantry contacts squarely on both sets of end-stops.				
11	Check the mechanical operation of the gantry interlocks.				
12	Check that the bearings are correctly lubricated.				
13	Check that all of the motors can be withdrawn with the corresponding bracket crane.				
14	Check that the bolting is suitably painted.				
15	Check that all of the commissioning spares, the boltings, gaskets and special tools are available in the stores.				
16	Check that flushing has been carried out. Control that the systems have been charged with the recommended lubricants.				
17	Check that the operational zone is clear.				
18	Check that the Vendor is satisfied that the unit is ready for commissioning.				
19	Seal up the unit as required.				
20	Produce a defects list to be issued in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Mechanical Check List		Trolley / monorail						EPC or EPCC CONTRACTOR LOGO	
				Task number C-AX-10					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check for any installation damage.								
2	Check trolley wheel lubrication.								
3	Check that the open gears are lubricated (if applicable).								
4	Check the painted surfaces visually for any damage.								
5	Check that any maintenance ladders or platform are installed in accordance with the approved drawings.								
6	Check that the SWL is clearly displayed on the monorail.								
7	Check that monorail dimension, orientation and supporting are as per design.								
8	Check chain condition (if applicable).								
9	Check that the stopper plates and the bumpers are installed at both end of the monorail.								
10	Check other fail-safe devices (if applicable).								
11	Check if the distance between track wheel flanges and monorail beam width is within the vendor limits.								
12	Control the trolley is moving smoothly along the entire monorail.								
13	Insure (permanent or removable) testing means are properly installed (pad eyes or fixed point at mid-span under the monorail).								
14	Produce a defects list for inclusion in the Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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		Mechanical Check List Heat exchanger shell and tube  Task number C-EX-01		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the nameplate details are both correct and complete.				
2	Check available documents are at the latest revision.				
3	Check the location, elevation, orientation and that the exchanger is level.				
4	Check that the holding arrangements are correct (eg., the sliding end.).				
5	Check for any installation damage.				
6	Check the exchanger is installed as per approved drawings.				
7	Remove the transport bolts from the bellows (if applicable).				
8	Check the painting visually for any damage.				
9	Check the exchanger is bonded as per approved drawings and specifications.				
10	Check the exchanger pipe supports are as per approved design.				
11	Check with disconnected pipework flanges that the relative nozzle flanges are correctly aligned.				
12	Check that the channel cover can be removed.				
13	Check that it is possible to withdraw the tube-bundle (if applicable)				
14	Check that the bolting is suitably lubricated.				
15	Check preservation is carried out as per approved procedure.				
16	Check that the safety devices/protection are installed.				
17	Check that the earthing system of the equipment is as per specification.				
18	Check if accessibility and maintenance are possible and safe.				
19	Check the special flange for pressure testing is part of the spare parts.				
20	Produce a set of marked-up drawings in accordance with the installation.				
21	Produce a defects list to be included in the Punch List issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ o Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
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		Mechanical Check List Heat exchanger plate  Task number C-EX-02		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the nameplate details are both correct and complete.				
2	Check available documents are at the latest revision.				
3	Check location, elevation, orientation and that the exchanger is level.				
4	Check that the holding down arrangements are correct.				
5	Check for any installation damage.				
6	Check the exchanger is installed as per approved drawings.				
7	Check the general cleanliness of the unit.				
8	Check all the platforming and ladders are installed as per approved drawings.				
9	Check the painting visually for damage.				
10	Check the earthing and bonding is as per the Project specifications.				
11	Check the exchanger pipe supports are as per drawings and specifications.				
12	Check the disconnected pipework flanges are in correct alignment with the nozzle flanges.				
13	Check the detailed plate sequence using the plate specifications.				
14	Check that the plates can be withdrawn with suitable lifting gear.				
15	Check the plates are undamaged and as per approved drawings and specifications.				
16	Check that the bolting is suitably lubricated.				
17	Check if accessibility and maintenance are possible and safe.				
18	Check that the safety devices/protection are installed (where applicable).				
19	Check the correct number of plates are installed and exchanger sealed up.				
20	Produce a set of marked-up drawings in accordance with the installation.				
21	Produce a defects list for inclusion in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
					
Signature					
Name					
Date					

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO	
	HVAC Heater coil			
				
Task number C-EX-03				
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check that the nameplate data are both correct and complete.			
2	Check available documents are at the latest revision.			
3	Check that both the location and orientation of the heater are correct.			
4	Check the mounting arrangement of the connecting duct-work and also the installation of its supports and gaskets.			
5	Check that the access door adjacent to the heater has been installed.			
6	Check that the heater is internally clean and that there is no damage to the heating elements.			
7	Ensure that there is adequate space to perform maintenance.			
8	Check that the earthing and bonding are in accordance with the Project Specifications.			
9	Check that the equipment is preserved correctly.			
10	Check that the safety devices/protection are installed (where applicable).			
11	Produce a defects list for inclusion in the Punch List issue.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
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Name				
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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	HVAC Cooler  Task number C-EX-04		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that the nameplate data and tag are both correct and complete.		
2	Check available documents are at the latest revision.		
3	Check for the correct location and orientation of the cooler.		
4	Check the mounting arrangement of the connecting duct-work and also that its supports and gaskets are installed.		
5	Check that the access door adjacent to the cooler has been installed.		
6	Check the internal cleanliness of the cooler and also, if installed, the eliminator plates.		
7	Check that the cooler element and the eliminator plates are undamaged.		
8	Check the materiel and finish are undamaged and conform to specifications.		
9	Check the drains and water trap are correctly installed (where applicable)		
10	Check that the connecting pipework is adequately supported and that no load is imparted to the cooler.		
11	Ensure that there is adequate space available to remove the cooler.		
12	Check the earthing and bonding are as per Project Specifications.		
13	Check that the equipment has been correctly preserved.		
14	Check if accessibility and maintenance are possible and safe.		
15	Check that the safety devices/protection are installed (where applicable).		
16	Produce a defect list to be included in the Punch List issue.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
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Name			
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 Mechanical Check List Heat exchanger airfin  Task number C-EX-05		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the nameplate data is both correct and complete.					
2	Check available documents are at the latest revision.					
3	Check the structure for line, level and bolting.					
4	Check the platforms and ladders (where applicable).					
5	Check for any installation damage.					
6	Check the exchanger is installed as per approved drawings.					
7	Check the equipment is bonded as per drawings and specifications.					
8	Check the disconnected pipework flanges correctly align with nozzle flanges.					
9	Check that the bolting is suitably lubricated.					
10	Remove the transport clips and bolts.					
11	Check that the fan shaft is both centered and plumb.					
12	Check the belt-sheave alignment.					
13	Check the installation and alignment of the fan blades.					
14	Check the blade-tip clearances.					
15	Check the fan for freedom of rotation.					
16	Check that the fan bearings are correctly lubricated.					
17	Check that the drive belts are correctly installed.					
18	Check that the fan and belt guards are in place and secure.					
19	Check that the louvres and actuators are correctly installed.					
20	Check that the positioners are set correctly and that they are operable.					
21	Check that the earthing system of the equipment is as per specification.					
22	Check preservation is carried out as per approved procedure.					
23	Check that all of the commissioning spares and special tools are available in the stores.					
24	Produce a set of marked-up drawings in accordance with the installation.					
25	Produce a defects list for inclusion in the Punch List.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Mechanical Check List		Reciprocating pump					EPC or EPCC CONTRACTOR LOGO	
		Task number C-GX-01						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that the nameplate data is both correct and complete.							
2	Check the location, elevation and orientation of the pump and that it is level.							
3	Check that the holding down arrangements, for the reciprocating pump plus motor and baseplate, are correct.							
4	Check for any installation damage.							
5	Check that the installation of the pump, gearbox, coupling and baseplate is in accordance with the approved drawings and specifications.							
6	Check that all the nozzles which are not in use are suitably sealed.							
7	Check the pump, gearbox, coupling and the baseplate for cleanliness.							
8	Check that preservation has been carried out in accordance with the approved procedure.							
9	Check for the general accessibility of the unit and for the possibility of its eventual removal for maintenance.							
10	Check visually the painted surfaces for damage.							
11	Check that the earthing and bonding are in accordance with the Project Specifications.							
12	Check that the suction and discharge pipe supports are in accordance with the design.							
13	Check that the coupling alignment has been carried out and record the figures (where applicable).							
14	Check that both the temporary fine mesh filter and the job strainer have not been damaged.							
15	Check that the stuffing-box packing is undamaged and is in accordance with its specification.							
16	Check for the free rotation of the shaft.							
17	Check that all of the bearings, including the motor bearings, are correctly lubricated.							
18	Check that the pulsation damper is in accordance with the specifications.							
19	Check that both the coupling and its coupling guard have been installed.							
20	Check that the nozzles are blanked-off if their piping has not been installed.							
21	Check that all of the commissioning spares and special tools are available in the stores.							
22	Produce a set of marked-up drawings which are in accordance with the installation.							
23	Produce a defects list for issue in the Punch List.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
								
Signature								
Name								
Date								

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 TOTAL	Mechanical Check List Centrifugal pump vertical		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-GX-02			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
1	Check that the nameplate data is both complete and correct.			
2	Check available documents are at the latest revision.			
3	Check the caisson is installed within the limits recommended for its vertical positioning.			
4	Check the free rotation of the pump shaft.			
5	Check that the motor shaft rotates freely.			
6	Check the inlet strainer is correctly installed and it is clean and undamaged.			
7	Check that all of the rising main sections have been installed using the correct bolting and gaskets.			
8	Check that the centering brackets have been correctly installed.			
9	Check that the discharge head is correctly bolted.			
10	Check that the earthing system of the equipment is as per specification.			
11	Check if accessibility and maintenance are possible and safe.			
12	Check that all of the commissioning spares and special tools are available in the stores.			
13	Produce a set of marked-up drawings in accordance with the installation.			
14	Produce a defects list for inclusion in the Punch List issue.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
				
Signature				
Name				
Date				

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	Centrifugal pump		
		Task number C-GX-03	
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that the nameplate data is both complete and correct.		
2	Check available documents are at the latest revision.		
3	Check the location, elevation and the orientation and also the pump is level.		
4	Check the pump, the motor and the baseplate holding down arrangements are correct and secure.		
5	Check for any installation damage.		
6	Check that the pump, coupling, baseplate and the auxiliary piping are installed in accordance with the specifications and the approved drawings.		
7	Check the pump, driver, coupling and baseplate for cleanliness.		
8	Check preservation is carried out as per approved procedure.		
9	Where applicable, check that installation of the platforming and ladders is in accordance with the approved drawings.		
10	Check both the painting and insulation for damage.		
11	Check the earthing and bonding are as per Project Specifications.		
12	Check the suction and discharge pipe-supports are as per design drawings.		
13	Check that there is correct alignment between flanges when the suction and discharge pipework is unbolted.		
14	Check that the strainer with the finer-mesh is installed.		
15	Check the free rotation of the shaft line.		
16	Check that there is adequate space around the unit to withdraw the internals with suitable lifting equipment.		
17	Check that the coupling and the coupling guards have been installed.		
18	Check if accessibility and maintenance are possible and safe.		
19	Check that all of the commissioning spares and special tools are available in the stores.		
20	Produce a set of marked-up drawings in accordance with the installation.		
21	Produce a defects list for inclusion in the Punch List issue.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
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 Machanical Check List Pump electro/submersible  Task number C-GX-05		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check the caisson has been installed within the limits of design verticality.					
2	Check available documents are at the latest revision.					
3	Check that the hypochlorite piping has been installed. (where applicable).					
4	Check the free rotation of the pump shaft.					
5	Check for the correct installation of the inlet strainer, also that it was clean and undamaged prior to being installed.					
6	Check that the head-tank has been installed correctly.					
7	Check that, on the motor, the motor coolant supply and vent piping have been correctly installed.					
8	Check that all the rising-main sections have been installed with the correct bolts and gaskets. Also that motor coolant piping, the electric power and instrument cables are correctly secured at each flange.					
9	Check the centering rings are installed at the correct elevations.					
10	Check that the seawater discharge elbow is correctly bolted and oriented on the mounting plate at the caisson top.					
11	Check that, the chlorination seawater pipe, hypochlorite pipe and the motor coolant supply and vent pipes are terminated correctly, above the mounting plate.					
12	Check that the earthing system of the equipment is as per specification.					
13	Check if accessibility and maintenance are possible and safe.					
14	Check that the safety devices/protection are installed (where applicable).					
15	Check that all of the commissioning spares and special tools are available in the stores.					
16	Produce marked-up drawings in accordance with installation.					
17	Produce a defects list for issue in the Punch List.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Machanical Check List		Metering pump						EPC or EPCC CONTRACTOR LOGO	
				Task number C-GX-06					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are all correct and complete.								
2	Check available documents are at the latest revision.								
3	Check the location, elevation, orientation of the pump and also it is level.								
4	Check the metering pump, motor and baseplate holding down arrangements.								
5	Check for any installation damage.								
6	Check the installation, of the pump, gearbox, coupling and baseplate, complies and is in accordance with the specifications and approved drawings.								
7	Check that all of the nozzles not in use have been suitably sealed.								
8	Check the pump, driver, gearbox coupling and baseplate for cleanliness.								
9	Check preservation is carried out as per approved procedure.								
10	Check the general accessibility of the unit.								
11	Check the painting visually for damage.								
12	Check the earthing and bonding are as per Project Specifications.								
13	Check the suction and the discharge piping are adequately supported.								
14	Check that the temporary fine mesh strainer is installed. (The normal job strainer is made with a coarser mesh).								
15	Check the stuffing box packing is undamaged and that it complies with specifications.								
16	Check there is adequate space around the unit to withdraw its internals.								
17	Check the availability in the stores of the commissioning spares. Also of the motor bearings, lubricants bolting and gaskets plus any special tools.								
18	Check the free rotation of the shaft.								
19	Check that the coupling and the coupling guard have both been installed.								
20	Check if accessibility and maintenance are possible and safe.								
21	Check that the safety devices/protection are installed (where applicable).								
22	Produce a set of marked up drawings in accordance with the installation.								
23	Produce a defects list for inclusion in the Punch List issue.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Mechanical Check List		Rotary pump  Task number C-GX-08						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data is correct and complete.								
2	Check available documents are at the latest revision.								
3	Check the location, elevation and orientation of the pump and it is level.								
4	Check that the holding arrangement, of the rotary pump, motor and baseplate, is secure and correct.								
5	Check for any installation damage.								
6	Check the installation of the pump, coupling and baseplate is in accordance with specifications and approved drawings.								
7	Check the pump, coupling and baseplate for cleanliness.								
8	Check that preservation has been carried out in accordance with the approved procedure.								
9	Check the general accessibility of the unit.								
10	Check the painting visually for damage.								
11	Check the earthing and bonding are in compliance with Project Specifications.								
12	Check the supports of the suction and discharge pipes are as per design.								
13	Check that the temporary strainer has been installed. Note that it has a finer mesh than the normal job strainer.								
14	Check for the free rotation of the shaft.								
15	Check there is adequate space around the unit to be able to withdraw the internals.								
16	Check that both the coupling and coupling guard have been installed.								
17	Check that the safety devices/protection are installed (where applicable).								
18	Check that all of the commissioning spares and special tools are available in the stores.								
19	Produce a set of marked-up drawings in accordance with the installation.								
20	Produce a defects list for inclusion in the Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Mechanical Check List		Gearbox  Task number C-GX-09						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data is complete and correct.								
2	Check available documents are at the latest revision.								
3	Check the location, elevation, orientation and that the gearbox is level.								
4	Check that the holding down arrangements are correct.								
5	Check for any installation damage.								
6	Check the gearbox is installed as per specifications and approved drawings.								
7	Check the gearbox for cleanliness.								
8	Check that preservation has been carried out in accordance with the approved procedure.								
9	Check the painting visually for damage.								
10	Check the earthing and bonding are as per Project Specifications.								
11	Check the lubrication piping for damage and the oil-filters are servicable.								
12	Check that all the bearings are correctly lubricated.								
13	Check that there is adequate space available to withdraw the internals with suitable lifting equipment.								
14	Check for freedom of movement.								
15	Check the input and output shaft couplings and their guards have been installed.								
16	Check that the gearbox is reassembled after inspection.								
17	Check that the safety devices/protection are installed (where applicable).								
18	Check that all of the commissioning spares and special tools are available in the stores.								
19	Produce a defects list for inclusion in the Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Mechanical Check List		Hydraulic coupling						EPC or EPCC CONTRACTOR LOGO	
		Task number C-GX-10							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are correct and complete.								
2	Check available documents are at the latest revision.								
3	Check that the coupling is level.								
4	Check that the holding down arrangements are correct.								
5	Check for any installation damage.								
6	Check the coupling is installed as per specifications and approved drawings.								
7	Check the coupling for cleanliness.								
8	Check preservation is carried out as per approved procedure.								
9	Check the painted surfaces visually for any damage.								
10	Check the earthing and bonding are as per the Project Specifications.								
11	Check that the lube and control piping are not damaged and that the oil filters are serviceable for further use.								
12	Check that there is adequate space available to remove the coupling from position using suitable lifting gear.								
13	Check that the commissioning spares, lubricants, bolting, gaskets and any special tools are available in the store.								
14	Check that the input and output shaft couplings have been installed and also that their guards are in position.								
15	Check that all bolts have been re-tightened after the inspection.								
16	Produce a set of marked-up drawings in accordance with the installation.								
17	Produce a defects list for inclusion in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Mechanical Check List		Ejector  Task number C-GX-11						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data is correct and complete.								
2	Check available documents are at the latest revision.								
3	Check the location, elevation and orientation of the ejector and it is level.								
4	Check that the piping arrangement, of the ejector, is secure and correct.								
5	Check for any installation damage.								
6	Check the installation of the ejector in accordance with specifications and approved drawings.								
7	Check preservation is carried out as per approved procedure.								
8	Check the general accessibility of the ejector.								
9	Check the supports of the moving fluid pipes are as per design.								
10	Check the supports of the suction and discharge pipes are as per design.								
11	Check there is adequate space around the unit to be able to withdraw the internals.								
12	Check that the safety devices/protection are installed (where applicable).								
13	Check that all of the commissioning spares and special tools are available in the stores.								
14	Review of the FAT punch list. Produce list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Mechanical Check List		HVAC Filter  Task number C-HX-02						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data and TAG are complete and correct.								
2	Check available documents are at the latest revision.								
3	Check that the location and orientation of the filter is correct.								
4	Check the mounting arrangements to the connecting duct-work and that the duct supports and gaskets are installed.								
5	Check the equipment is bonded as per drawings and specifications.								
6	Ensure that there is adequate space available for maintenance and to remove the filters.								
7	Check that the filter is internally clean.								
8	Check that the drains are installed. (where applicable)								
9	Check that heat tracing is installed. (where applicable)								
10	Ensure that the maintenance access doors, leading to the filter elements, are correctly replaced.								
11	Check that the HVAC. material is undamaged.								
12	Check that the equipment has been correctly preserved.								
13	Check that the earthing system of the equipment is as per specification.								
14	Check that the safety devices/protection are installed (where applicable).								
15	Check that all of the commissioning spares and special tools are available in the stores.								
16	Produce a set of marked-up drawings which are in accordance with the installation.								
17	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Mechanical Check List		Agitator  Task number C-HX-04					EPC or EPC CONTRACTOR LOGO	
Task Location :								
User Group :								
Estimated Time (MH) :								
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that the nameplate details are correct and complete.							
2	Check available documents are at the latest revision.							
3	Check the location, elevation, orientation and that the shaft is vertical.							
4	Check that the hoisting devices are correct and suitable.							
5	Check that the holding down arrangements are correct.							
6	Check that there is not any installation damage.							
7	Check the equipment has been installed as per specifications and approved drawings.							
8	Check the agitator motor design (Ex IP etc) is suitable for concerned area. Provide certificates or check nameplate.							
9	Check the equipment for cleanliness.							
10	Check preservation has been carried out as per approved procedure.							
11	Check the painted surfaces visually for any damage.							
12	Check the equipment is bonded as per specifications and drawings.							
13	Check for free rotation of the shaft in the correct direction. Also check the rotor for concentricity and that it does not foul the tank internals.							
14	Check that there is adequate space around the unit to withdraw the agitator using suitable lifting gear.							
15	Check that the bolting has been suitably lubricated.							
16	Check that the earthing system of the equipment is as per specification.							
17	Check if accessibility and maintenance are possible and safe.							
18	Check that the safety devices/protection are installed (where applicable).							
19	Check that all of the commissioning spares and special tools are available in the stores.							
20	Produce a set of marked-up drawings which are as per installation.							
21	Produce a defects list for inclusion in the Punch List.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
								
Signature								
Name								
Date								

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 Mechanical Check List		Coarse filter rotating element						EPC or EPCC CONTRACTOR LOGO	
		Task number C-HX-05							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are complete and correct.								
2	Check available documents are at the latest revision.								
3	Check the location, elevation, orientation and that the filter is level.								
4	Check that the holding down arrangement of the filter is correct.								
5	Check for any installation damage.								
6	Check that any nozzles that are not to be used are suitably sealed.								
7	Check that the filter including its internals and gearboxes, are installed in accordance with the specifications and the approved drawings. Also check for general cleanliness.								
8	Check preservation is carried out as per Project Specifications.								
9	Check visually the painting and internal lining for damage.								
10	Check the earthing and the bonding are as per Project Specifications.								
11	Check the piping supports to each filter are as per design drawing.								
12	Check that when the pipework is disconnected from the filters that the pipe flanges align correctly with their corresponding filter nozzle flanges.								
13	Check the filter internals can be withdrawn with the use of suitable lifting gear.								
14	Check the bearings of the rotor, motor and gearbox are correctly lubricated.								
15	Check that the bolting is suitably lubricated.								
16	Check for the free movement of the rotating element.								
17	Check that, after inspection the filters are sealed up and all the external bolts are correctly tightened.								
18	Check if accessibility and maintenance are possible and safe.								
19	Check that all of the commissioning spares and special tools are available in the stores.								
20	Produce a set of marked-up drawings which are as per installation.								
21	Produce a defects list for inclusion in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Mechanical Check List Sand filter package  Task number C-HX-06		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expend Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the nameplate details are correct and complete.					
2	Check available documents are at the latest revision.					
3	Check the filter vessel for location, elevation, orientation and also its level.					
4	Check that the holding down arrangement of the filter vessel is correct.					
5	Check for any installation damage.					
6	Check any of the nozzles that are not in use have been suitably sealed.					
7	Check that the nozzles are suitably isolated to enable a safe internal examination to be carried out.					
8	Check each individual filter vessel is as per data sheets and with approved drawings.					
9	Check that the manway covers can be removed using their davits enabling clear access to the interior of the vessel.					
10	Check the package and the interior of each vessel for cleanliness.					
11	Check the painting and the internal lining visually for damage.					
12	Check preservation is carried out as per approved procedure.					
13	Check that the ladder and handrail installation on the package are in accordance with the approved drawings. Also check that they are suitably robust for the intended use.					
14	Check the equipment is bonded as per drawings and specifications.					
15	Check that the pipe supports for all of the piping connected to the package are in accordance with the design.					
16	Check that when the piping connected to the package is unbolted at the flanges, that the pipe flanges align correctly with their corresponding flanges mounted on the package.					
17	Check that the bolting is suitably lubricated.					
18	Check that all of the preservation coating has been removed.					
19	Check that the earthing system of the equipment is as per specification.					
20	Check if accessibility and maintenance are possible and safe.					
21	Check that the safety devices/protection are installed (where applicable).					
22	Check that all of the commissioning spares and special tools are available in the stores.					
23	Produce a set of marked-up drawings in accordance with the installation.					
24	Produce a defects list for issue in the Punch List.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Mechanical Check List		GT. Air inlet filter					
							
Task number C-HX-08		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check for the correct identification of each individual item or component of the unit.						
2	Check available documents are at the latest revision.						
3	Check the location, elevation, orientation and that the skid is level.						
4	Check that each individual element is correctly installed; a). the coarse inlet filter. -- b). weather louvres. -- c). ducting. d). high efficiency cell filters. - e). expansion joint. - f). silencer						
5	Check that the holding down arrangements of the skid are correct.						
6	Check for any installation (internally/externally) damage and cleanliness.						
7	Check that the filter access door opens freely and that there is admission for internal inspection and maintenance.						
8	Check that the installation of ladders and platforming are suitable and in accordance with the approved drawings.						
9	Check out the painting visually for any damage.						
10	Check the equipment is bonded as per drawings and specifications.						
11	Check that the spool-piece, which connects the combustion air plenum to the turbine enclosure, is correctly installed and aligned as per the drawing.						
12	Check any motorised damper linkage installed is correctly aligned and is as per drawings.						
13	Check that the pre-filters and final filters can be replaced easily when required and that there is working space.						
14	Check that the bolting is suitably lubricated.						
15	Check that all bolting is tightened and internal bolts suitably tab-locked. The access door must close correctly.						
16	Check that the earthing system of the equipment is as per specification.						
17	Check that the safety devices/protection are installed (where applicable).						
18	Check that all of the commissioning spares and special tools are available in the stores.						
19	Produce a set of marked-up drawings in accordance with the installation.						
20	Produce a defects list for issue in the Punch List.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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	Mechanical Check List Reciprocating compressor		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-KX-01			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check that the nameplate details are correct and complete.			
2	Check available documents are at the latest revision.			
3	Check the location, elevation, orientation and that the unit has been installed level.			
4	Check that the holding down arrangements are correct.			
5	Check for any installation damage.			
6	Check the reciprocating compressor is installed as per approved data sheets and drawings.			
7	Check the unit for cleanliness.			
8	Check the suction strainers have been installed. (cooling water and air)			
9	Check the general accessibility of the unit.			
10	Check the painting visually for damage.			
11	Check the earthing and bonding are as per Project Specifications.			
12	Check that the supports, of the suction and discharge pipes, are in accordance with the design drawings.			
13	Check that with the flanges of the suction, discharge and utility pipes unbolted that the flanges align correctly.			
14	Check that there is adequate space to withdraw the unit.			
15	Check that the bolting is suitably lubricated.			
16	Check that the coupling guard has been installed.			
17	Check preservation is carried out as per approved procedure.			
18	Check that the safety devices/protection are installed (where applicable).			
19	Check that all of the commissioning spares and special tools are available in the stores.			
20	Produce a set of marked-up drawings in accordance with the installation.			
21	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
				
Signature				
Name				
Date				

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 Mechanical Check List		HVAC Fan  Task number C-KX-02						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data and TAG number is correct and complete.								
2	Check available documents are at the latest revision.								
3	Check the location elevation and orientation are correct and the fan is level.								
4	Check that the fan and motor are correctly mounted.								
5	Check the anti-vibration mountings are installed and are adjusted correctly.								
6	Check the painting or insulation for damage.								
7	Check that the access doors are installed.								
8	Check that all of the transport/shipping brackets have been removed.								
9	Check that the fan is internally clean.								
10	Check all the lubrication points and grease nipples are easily accessible.								
11	Remove the fan drive belt guards to check that the alignment and tension of the belts are correct.								
12	Check the free rotation of the fan motor and impeller.								
13	Check that there is adequate space available to withdraw the impeller and motor for any required future maintenance.								
14	At the time of removal of the fan drive belt guards, verify that the guards are internally lined with non-ferrous material.								
15	Check the fan inlet guards are securely installed (when applicable).								
16	Check the connecting ductwork has its gaskets installed.								
17	Check the equipment is bonded as per drawings and specifications.								
18	Check that the equipment is depreserved correctly.								
19	Check that the earthing system of the equipment is as per specification.								
20	Check if accessibility and maintenance are possible and safe.								
21	Check that the safety devices/protection are installed (where applicable).								
22	Check that all of the commissioning spares and special tools are available in the stores.								
23	Produce a set of marked-up drawings in accordance with the installation.								
24	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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		Mechanical Check List HVAC Refrigeration unit  Task number C-KX-03		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the nameplate details and tag number are complete and correct.				
2	Check available documents are at the latest revision.				
3	Check the location, elevation, orientation and that the skid is level.				
4	Check that the holding down arrangement is correct and that all the anti-vibration mountings are correctly adjusted.				
5	Check the equipment is bonded as per drawings and specifications.				
6	Remove the compressor coupling guards and the coupling spacer.				
7	Check that the compressor motor rotates freely.				
8	Replace both the coupling spacer and guards.				
9	Check that there is sufficient access to remove both the condenser and chiller tube bundles.				
10	Check that the chillers are correctly insulated as per the design.				
11	Check that the skid pipework is securely mounted and that it is insulated as per the design.				
12	Check the pipework connections to the skid are correctly supported and that they impart no load onto the refrigeration unit.				
13	Ensure all the equipment drains and overflows are piped to a suitable drain line.				
14	Check that the water expansion tank is internally lined with an acceptable coating and that it is clean.				
15	Check that the ball-valve operates correctly.				
16	Check that the freon charge pressure at the skid is being maintained at the vendors recommended level.				
17	Check that the equipment is preserved as per approved procedure.				
18	Check that the earthing system of the equipment is as per specification.				
19	Check if accessibility and maintenance are possible and safe.				
20	Check that the safety devices/protection are installed (where applicable).				
21	Check that all of the commissioning spares and special tools are available in the stores.				
22	Produce a set of marked-up drawings in accordance with the installation.				
23	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
					
Signature					
Name					
Date					

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 TOTAL		Mechanical Check List Gas turbine driver		EPC or EPCC CONTRACTOR LOGO	
		 Task number C-KX-05			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the nameplate details are complete and correct.				
2	Check available documents are at the latest revision				
3	Check all of the auxiliary items are supplied and they are correctly installed.				
4	Check the location, elevation, orientation and that the turbine is level.				
5	Check that the turbine holding down arrangements are correct.				
6	Check for any installation damage.				
7	Check the turbine and its auxiliaries for cleanliness.				
8	Check preservation is carried out as per approved procedure.				
9	Check that the insulation on the power turbine, including that which is for the protection of the personnel, has not been damaged.				
10	Check that the acoustic enclosure is complete and undamaged.				
11	Check that the fuel systems are complete. Where applicable both gas and liquid fuel systems.				
12	Check the equipment is bonded as per drawings and specifications.				
13	Check all of the utility pipe-supports are as per design.				
14	Check that when the utility pipe flanges are disconnected, that they align correctly with their relative skid pipe flanges.				
15	Check that there is adequate space available and provision for the removal of the turbine using suitable lifting gear.				
16	Check that the coupling and the coupling guard have been installed.				
17	Check that the earthing system of the equipment is as per specification.				
18	Check that the safety devices/protection are installed (where applicable).				
19	Check that all of the commissioning spares and special tools are available in the stores.				
20	Produce a set of marked-up drawings in accordance with the installation.				
21	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
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Date					

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		Mechanical Check List Centrifugal compressor  Task number C-KX-06		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the nameplate details are complete and correct.				
2	Check available documents are at the latest revision.				
3	Check the location, elevation, orientation and that the compressor is level.				
4	Check that the compressor holding down arrangements are correct.				
5	Check for any installation damage.				
6	Check the compressor and the auxiliaries for cleanliness.				
7	Check all the platforming and ladders are installed as per approved drawings.				
8	Check all of the auxiliary items are supplied and they have been correctly installed.				
9	Check that the suction strainers have been installed.				
10	Check the painting visually for damage.				
11	Check the equipment is bonded as per drawings and specifications.				
12	Check that with unbolted flanges on the suction and discharge piping, that the corresponding pipe flanges on the package align with them correctly.				
13	Check that the suction, discharge and utility pipe-supports are in accordance with the design drawings.				
14	Check that there is adequate space available to be able to withdraw the internals using suitable lifting gear.				
15	Check that both the coupling and coupling guards have been installed.				
16	Check preservation is carried out as per approved procedure.				
17	Check that the earthing system of the equipment is as per specification.				
18	Check that the safety devices/protection are installed (where applicable).				
19	Check that all of the commissioning spares and special tools are available in the stores.				
20	Check preservation is carried out as per approved procedure.				
21	Produce a set of marked-up drawings which are as per installation.				
22	Produce a defects list to be issued in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ o Checked & accepted	
Remarks :					
					
Signature					
Name					
Date					

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	Inert gas generator		
			
Task number C-KX-07			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
1	Check that the nameplate details are correct and complete.		
2	Check available documents are at the latest revision.		
3	Check the location, elevation, orientation and that the skid is level.		
4	Check that the holding down arrangements are correct.		
5	Check for any installation damage.		
6	Check the package is installed as per specifications and approved drawings.		
7	Check that all the nozzles that are not to be used are suitably sealed.		
8	Check the package throughout for cleanliness.		
9	Check preservation is carried out as per approved procedure.		
10	Check the painting visually for damage.		
11	Check the equipment is bonded as per drawings and specifications.		
12	Check that the skid piping-supports are in accordance with the design.		
13	Check that after unbolting the pipework flanges that they align correctly with their respective skid flanges.		
14	Check that the items can be withdrawn when using suitable lifting gear.		
15	Check that the temporary fine mesh strainer has been installed. (The strainer for normal use is of a coarser mesh)		
16	Check that the two pre-filters and two after- filters are serviceable. (for Y- type stainers)		
17	Check that the bolting is suitably lubricated.		
18	Check that the earthing system of the equipment is as per specification.		
19	Check if accessibility and maintenance are possible and safe.		
20	Check that the safety devices/protection are installed (where applicable).		
21	Check that all of the commissioning spares and special tools are available in the stores.		
22	Produce a set of marked-up drawings in accordance with the installation.		
23	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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		Mechanical Check List		EPC or EPCC CONTRACTOR LOGO	
		Turbo expander  Task number C-KX-08			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the nameplate details are complete and correct.				
2	Check available documents are at the latest revision.				
3	Check the location, elevation, orientation are correct and that the unit is level.				
4	Check that the holding down arrangements are correct.				
5	Check for any installation damage.				
6	Check the unit for cleanliness.				
7	Check that the inlet strainers have been installed.				
8	Check that the seal-gas system is complete.				
9	Check that the equipment is bonded in accordance with drawings and specifications.				
10	Check that the utility piping-supports are constructed in accordance with the design drawings				
11	Check that the unbolted flanges of the inlet, outlet and utility piping align correctly with the pipe flanges on the package.				
12	Check that there is adequate space available to remove the rotors when using suitable lifting gear.				
13	Check that preservation has been carried out in accordance with the approved procedure.				
14	Produce a set of marked-up drawings which are in accordance with the installation.				
15	Check that the earthing system of the equipment is as per specification.				
16	Check if accessibility and maintenance are possible and safe.				
17	Check that the safety devices/protection are installed (where applicable).				
18	Check that all of the commissioning spares and special tools are available in the stores.				
19	Review of the FAT punch list. Produce list of defects for punch list issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Mechanical Check List		Heater		EPC or EPCC CONTRACTOR LOGO	
					
		Task number C-KX-09			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the equipment nameplate is correct.				
2	Check available documents are at the latest revision.				
3	Check the location, elevation, orientation and that the heater is level.				
4	Check for any installation damage.				
5	Check that the holding down arrangements are correct.				
6	Check heater refractory work for quality and conformity.				
7	Check the installation of the burners for conformity, level and orientation. Check operation of the combustion-air louvres.				
8	Check the operation and the position of the stack-damper.				
9	Verify that the vacuum indicators and their piping are correct and that they are not obstructed from view.				
10	Verify the flue gas sampling installation.				
11	Check for the free operation of the overpressure openings.				
12	Check the heater for cleanliness.				
13	Check that the heater is bonded according to the specifications.				
14	Check that the internal tubes-support is in accordance with the design.				
15	Check that the access ladders and the gangway provide easy access and that they conform to the design drawings.				
16	Check that the observation doors, situated on the combustion chamber, operate quite freely.				
17	Check the valving arrangement of the combustible fuel.				
18	Check the combustion ductwork where applicable.				
19	Check that the stack conforms to the project drawings. Also where possible carry out an internal inspection.				
20	Check that the earthing system of the equipment is as per specification.				
21	Check that the safety devices/protection are installed (where applicable).				
22	Check that all of the commissioning spares and special tools are available in the stores.				
23	Produced a set of marked-up drawings which are as per installation.				
24	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Mechanical Check List Turbine exhaust duct		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-LX-03			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check the installation for damage.			
2	Check available documents are at the latest revision			
3	Check that the location, elevation and the orientation of the exhaust system is correct			
4	Check that the ducting is mounted and supported correctly.			
5	Check that each joint in the ducting has the correct type of gasket material is installed.			
6	Check that the flexible expansion bellows is located at its correct position and that the shipping brackets are removed.			
7	Check that the silencer is located at its correct position and that it is adequately supported.			
8	Check that the expansion supports are located in their correct position.			
9	Check that there are access doors installed or another method of gaining entry into the exhaust duct.			
10	Check the interior of the exhaust system to verify that it's clean of debris.			
11	Check that the equipment is bonded in accordance with the specifications and the drawings.			
12	Check that the heat insulation is in place and complete.			
13	Check that the painting is suitable for its intended use and that it is in acceptable condition (high ducting temperature).			
14	Check that the earthing system of the installation is as per specification.			
15	Check if accessibility and maintenance are possible and safe.			
16	Check that the safety devices/protection are installed (where applicable).			
17	Check that all of the commissioning spares and special tools are available in the stores.			
18	Produce a set of marked-up drawings in accordance with the installation.			
19	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
				
Signature				
Name				
Date				

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 Mechanical Check List		Air filter / flame trap						EPC or EPCC CONTRACTOR LOGO	
				Task number C-LX-04					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are complete and correct								
2	Check available documents are at the latest revision.								
3	Check for any installation damage.								
4	Check that the items installed are in accordance with the approved drawings.								
5	Check items for cleanliness								
6	Check the painting visually for damage.								
7	Check that the replaceable items can removed when required.								
8	Check that the earthing system is as per specification.								
9	Check if accessibility and maintenance are possible and safe.								
10	Check that the safety devices/protection are installed (where applicable).								
11	Check that all of the commissioning spares and special tools are available in the stores.								
12	Produce a set of marked-up drawings which are in accordance with the installation.								
13	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
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 Mechanical Check List		HVAC Ducting						EPC or EPCC CONTRACTOR LOGO	
									
		Task number C-NX-01							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Ensure that the ducting system is clearly identified.								
2	Check available documents are at the latest revision.								
3	Check that the location, elevation and orientation are correct. Ensure also that the ductwork system is installed to the P&ID layout drawings and specifications.								
4	Once the layout drawing are checked out it should be attached to this check list.								
5	The correct installation, of the following equipment, shall be verified: a) Flexible connections. b) Inspection doors. c) Access doors. d) External louvres. e) Supply grilles/supply diffusers. f) Extract/transfer grilles. g) Insulation - thermal/sound or fire rated. h) The Surface coating.								
6	Check all the ductwork and equipment is correctly mounted and supported.								
7	Check for chilled ductwork that it is well insulated from its supporting structure.								
8	Check that the connections to the associated equipment are correct. Also that no load or stress is imparted to this equipment by the ducting.								
9	Ensure the ductwork is clean internally and that there is no internal damage.								
10	Check that all ductwork joints have their gaskets installed.								
11	Check the equipment is bonded as per drawings and specifications.								
12	Check that the test holes have been drilled and plugged.								
13	Ensure that the material/finish of the ducting/equipment is undamaged and as per specifications.								
14	In positions, where there are access doors installed in the ductwork, above a false ceiling, ensure that there is access in this ceiling.								
15	Check that the earthing system of the equipment is as per specification.								
16	Produce a set of marked-up drawings which are as per installation.								
17	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Mechanical Check List HVAC Manual damper  Task number C-NX-02		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that the nameplate data and tag are correct.						
2	Check available documents are at the latest revision.						
3	Check that the damper is located and orientated correctly. Also check that it is undamaged.						
4	Check that the mounting arrangement is correct and that the supports and gaskets to connecting ductwork are installed.						
5	Check that the equipment is bonded in accordance with the drawings and specifications.						
6	Check that the access door adjacent to the damper is installed (where applicable).						
7	Check that the damper is internally clean.						
8	Ensure that the damper mechanism is lubricated (where applicable).						
9	Check the free movement of the blade mechanism. Also check that the internal sealing of the blade is correct.						
10	Check that the locking-arm device operates correctly. Also that the indicator arm is installed in the correct position.						
11	Check that the equipment is preserved correctly.						
12	Produce a defects list for inclusion in the Punch List issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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 Mechanical Check List HVAC Automatic damper  Task number C-NX-03		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the nameplate data and tag are correct.					
2	Check available documents are at the latest revision.					
3	Check the location, elevation and orientation of the damper is correct. Also that the equipment is undamaged.					
4	Check that the mounting arrangements are correct and that the damper is adequately supported. Also check that the gaskets to the connecting ductwork are installed.					
5	Check the equipment is bonded as per drawings and specifications.					
6	Check that the access door, adjacent to the damper, is installed.					
7	Check that the damper is internally clean.					
8	Ensure the damper mechanism is lubricated (where applicable).					
9	Check the free movement of the blade mechanism. Also check for the correct internal sealing of the damper blades.					
10	Check that there is adequate space available to do maintenance on the pneumatic actuator and its controls.					
11	Check that the pneumatic pipework is correctly installed.					
12	Check that when the damper is mechanically stroked that the limit switches operate "to make and break".					
13	Ensure that the access door to the controles has been correctly replaced.					
14	Check that the indicator arm is installed in the correct position.					
15	Check that the earthing system of the equipment is as per specification.					
16	Check if accessibility and maintenance are possible and safe.					
17	Check that the equipment is preserved correctly.					
18	Produce a defects list for issue in the Punch List.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Mechanical Check List HVAC Sound attenuator  Task number C-NX-04		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the details on the nameplate and tag are correct.					
2	Check available documents are at the latest revision.					
3	Check that the location and orientation are correct of the sound attenuator.					
4	Check that the mounting arrangements are correct and that the supports and gaskets to the ducting are installed.					
5	Check the equipment is bonded as per drawings and specifications.					
6	Check the sound attenuator is internally clean and no moisture has entered.					
7	Check that the material is to the specification and that it is undamaged.					
8	Check that the earthing system of the equipment is as per specification.					
9	Check if accessibility and maintenance are possible and safe.					
10	Check that the safety devices/protection are installed (where applicable).					
11	Check that all of the commissioning spares and special tools are available in the stores.					
12	Produce a set of marked-up drawings which are in accordance with the installation.					
13	Produce a defects list for inclusion in the Punch List issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Mechanical Check List		HVAC Humidifier					EPC or EPCC CONTRACTOR LOGO	
				Task number				
				C-NX-05				
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that the nameplate details and tag are complete and correct.							
2	Check available documents are at the latest revision.							
3	Check that the location and orientation of the humidifier are correct.							
4	Check that the mounting arrangement supports adequately the humidifier and steam injection duct							
5	Check the steam-injection duct is installed to the manufacturers recommendations. Also check that it drains back to the humidifier.							
6	Check that all of the ductwork connections have had their gaskets installed.							
7	Check that the balance-pipe, from the humidifier to the ductwork, is installed.							
8	Check that the insulation to the steam duct is installed correctly.							
9	Check all pipework connections are correct and they are adequately supported.							
10	Check for the correct action of the water valve.							
11	Ensure that both the drain and overflow are piped to a suitable drain system.							
12	Check the equipment is bonded as per drawings and specifications.							
13	Check that the humidifier is internally clean.							
14	Ensure that there is adequate space to be able to carry out maintenance on the humidifier internals.(i.e. water storage- tank/steam chamber.)							
15	Check that the material is undamaged.							
16	Check that the preservation of the equipment is correct.							
17	Check that the earthing system of the equipment is as per specification.							
18	Check that the safety devices/protection are installed (where applicable).							
19	Check that all of the commissioning spares and special tools are available in the stores.							
20	Produce a set of marked-up drawings in accordance with the installation.							
21	Produce a defects list for inclusion in the Punch List issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
								
Signature								
Name								
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	Mechanical Check List HVAC Air handling unit		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-NX-06			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check that the nameplate details and tag are correct.			
2	Check available documents are at the latest revision.			
3	Check that location, orientation and also that the air-handling unit is level.			
4	Check that the base plate/frame holding down arrangement is correct.			
5	Check material and finish is to the specifications and it is undamaged.			
6	Check that all the ductwork connections have gaskets installed.			
7	Check the equipment is bonded as per drawings and specifications.			
8	Check that the handling unit is internally clean.			
9	Check that the earthing system of the equipment is as per specification.			
10	Check if accessibility and maintenance are possible and safe.			
11	Check that the safety devices/protection are installed (where applicable).			
12	Check that all of the commissioning spares and special tools are available in the stores.			
13	Produce a set of marked-up drawings in accordance with the installation.			
14	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	HVAC Constant volume box		
		Task number	
C-NX-07			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
1	Check that the nameplate details and tag are correct and complete.		
2	Check available documents are at the latest revision.		
3	Check that the location and orientation of the equipment is correct.		
4	Check that the correct mounting arrangements are installed plus the supports and gaskets to the connecting ductwork.		
5	Check that the access doors are installed.		
6	Where applicable check that the heater, attenuator and constant volume valve are clean and undamaged.		
7	Ensure that the valve mechanisms are lubricated.		
8	Check for the free movement of the constant volume valve.		
9	Check that the equipment is preserved correctly.		
10	Check that earthing and bonding are in accordance with the drawings and specifications.		
11	Check if accessibility and maintenance are possible and safe.		
12	Check that the safety devices/protection are installed (where applicable)		
13	Check that all of the commissioning spares and special tools are available in the stores.		
14	Produce a set of marked-up drawings which are in accordance with the installation.		
15	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
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Name			
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	Mechanical Check List HVAC Galley hood  Task number C-NX-08		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check that the nameplate details and tag are correct and complete.			
2	Check available documents are at the latest revision.			
3	Check that the location and the orientation are correct.			
4	Check that the location is correct for the carbon di-oxide nozzles and that they are in accordance with the drawing.			
5	Check that both rating and location of the fusible-link is correct and is in accordance with the drawings and specifications.			
6	Check that the mounting arrangements are correct and that the supports and gaskets are installed.			
7	Where applicable check that the drains are fitted.			
8	Check that the equipment is preserved correctly.			
9	Check that the earthing and bonding are in accordance with the drawings and specifications.			
10	Check that all of the commissioning spares and special tools are available in the stores.			
11	Produce a set of marked-up drawings which are in accordance with the installation.			
12	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 TOTAL		Mechanical Check List HVAC Spray washer  Task number C-NX-09		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the nameplate details and tag number are correct and complete.				
2	Check available documents are at the latest revision.				
3	Check that the location and the orientation of the equipment is correct.				
4	Check that the correct mounting arrangements, supports and gaskets to the connecting ductwork are installed.				
5	Check that the spray washer is internally clean and undamaged.				
6	Check that the drains are correctly fitted.				
7	Check that all of the pipework is installed in accordance with the drawing and that its undamaged.				
8	Check that the equipment is preserved correctly.				
9	Check that the earthing and bonding are in accordance with the drawings and specifications.				
10	Check if accessibility and maintenance are possible and safe.				
11	Check that the safety devices/protection are installed (where applicable).				
12	Check that all of the commissioning spares and special tools are available in the stores.				
13	Produce a set of marked-up drawings which are in accordance with the installation.				
14	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Mechanical Check List		HVAC Fire damper control panel						EPC or EPCC CONTRACTOR LOGO	
				Task number C-NX-10					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details and tag are correct and complete.								
2	Check available documents are at the latest revision.								
3	Check that the location and the orientation of the panel is correct.								
4	Check that the mimic-panel is correct and is in accordance with the drawings.								
5	Check that the pneumatic pipework, the manifolds and valves are correctly installed in accordance with the drawings.								
6	Check for the correct operation of the pneumatic hand-switches.								
7	Check that the earthing system of the equipment is as per specification.								
8	Check if accessibility and maintenance are possible and safe.								
9	Check that the equipment is preserved correctly.								
10	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
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 Mechanical Check List HVAC Weather louver  Task number C-NX-11		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :						
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the nameplate details and tag are correct and complete.					
2	Check available documents are at the latest revision.					
3	Check that both location and orientation of the equipment are correct.					
4	Check that the correct mounting arrangements, the supports and gaskets are installed to the connecting ductwork.					
5	Where applicable check that the drains have been installed.					
6	Check tha the equipment is undamaged.					
7	Check that the equipment is preserved correctly.					
8	Check that the earthing and bonding are in accordance with the drawings and specifications.					
9	Check if accessibility and maintenance are possible and safe.					
10	Check that the safety devices/protection are installed (where applicable).					
11	Check that all of the commissioning spares and special tools are available in the stores.					
12	Produce a defects list for issue in the Punch List.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	HVAC compressor		
		Task number C-NX-12	
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
1	Check that the nameplate details and tag are correct and complete.		
2	Check available documents are at the latest revision.		
3	Check the location, elevation, orientation and that the compressor is level.		
4	Check that the compressor holding down arrangements are correct.		
5	Check for any installation damage.		
6	Check the compressor and the auxiliaries for cleanliness.		
7	Check all the platforming and ladders are installed as per approved drawings.		
8	Check all of the auxiliary items are supplied and they have been correctly installed.		
9	Check that the suction strainers have been installed.		
10	Check the painting visually for damage.		
11	Check the equipment is bonded as per drawings and specifications.		
12	Check that with unbolted flanges on the suction and discharge piping, that the corresponding pipe flanges on the package align with them correctly.		
13	Check that the suction, discharge and utility pipe-supports are in accordance with the design drawings.		
14	Check that there is adequate space available to be able to withdraw the internals using suitable lifting gear.		
15	Check that both the coupling and coupling guards have been installed.		
16	Check if accessibility and maintenance are possible and safe.		
17	Check preservation is carried out as per approved procedure.		
18	Check that the earthing system of the equipment is as per specification.		
19	Check that the safety devices/protection are installed (where applicable).		
20	Check that all of the commissioning spares and special tools are available in the stores.		
21	Produce a set of marked-up drawings which are in accordance with the installation.		
22	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 Mechanical Check List		Diesel engine		EPC or EPCC CONTRACTOR LOGO	
					
		Task number			
		C-TX-01			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the nameplate details and tag are complete and correct.				
2	Check that the location, elevation, orientation are correct and that the engine is level.				
3	Check that the holding down arrangements are correct.				
4	Check for any insulation damage.				
5	Check that the equipment is installed in accordance with the specifications and the approved drawings.				
6	Check that any nozzles not in use are suitably sealed.				
7	Check the engine and its ancillaries for cleanliness.				
8	Check that preservation has been carried out in accordance with the approved procedure.				
9	Check that all ladders and platforming have been installed in accordance with the approved drawings.				
10	Check the painting visually for damage.				
11	Check that the equipment is bonded in accordance with the drawings and specifications.				
12	Check that when the bolts are removed from the piping flanges that they align correctly with the skid nozzle flanges.				
13	Check, that for piping routed to the skid, that the pipe supports are in accordance with the approved design.				
14	Check that the temporary strainer has been installed in the fuel line.				
15	Check that there is adequate space around the engine to withdraw the internals using suitable lifting gear.				
16	Check that the stores contains the commissioning spares and also any special tools that may be required.				
17	Check that the filters for, combustion air, fuel and lube oil are in accordance with specifications and are also serviceable.				
18	Check that the preservation fluids are removed and that the systems have been flushed out as per recommendations.				
19	Check that the cooling system is filled with approved anti-freeze or inhibitor to the correct Ph. value.				
20	Check the hydraulic and pneumatic start systems and their accumulators.				
21	Check that, where applicable, the electric batteries are connected.				
22	Check that the earthing system of the equipment is as per specification.				
23	Check that the safety devices/protection are installed (where applicable).				
24	Produce a set of marked up drawings which are in agreement with the installation.				
25	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Mechanical Check List		EPC or EPCC CONTRACTOR LOGO
	Lube oil package  Task number C-VX-04		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that the nameplate details are correct and complete.		
2	Check available documents are at the latest revision.		
3	Check for any installation damage.		
4	Check that the package has been installed in accordance with the approved drawings and specifications.		
5	Check the package for cleanliness.		
6	Check that preservation has been carried out in accordance with the approved procedure.		
7	Check the painting visually for damage.		
8	Check that the items in the package can be withdrawn using suitable lifting gear.		
9	Check the storage tank is as per drawing and clean.		
10	Check that the pipe-supports, for the piping connected to the skid, are in accordance with the design.		
11	Check after unbolting the skid flanges that the corresponding pipework flanges align correctly.		
12	Check the integrity of the package.		
13	Check the installed oil filters are definitive ones.		
14	Check that the bolting is suitably lubricated.		
15	Check earthing and bonding are as per drawings and specifications.		
16	Check if accessibility and maintenance are possible and safe.		
17	Check that the safety devices/protection are installed (where applicable).		
18	Check that all of the commissioning spares and special tools are available in the stores.		
19	Produce a set of marked-up drawings which are as per installation.		
20	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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		Mechanical Check List		EPC or EPCC CONTRACTOR LOGO	
		Flare tip package			
					
		Task number C-VX-06			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that all the equipment documentation and certification is completed. Check that there are no outstanding items of work and also for the correct and complete nameplate data.				
2	Check available documents are at the latest revision.				
3	Check that there are no outstanding items of work and also for the correct and complete nameplate data.				
4	Check the location, orientation and the elevation of the Flare Tip assemblies.				
5	Check that the bolting down arrangement are correct.				
6	Check for any installation damage.				
7	Check the Flare Tips are installed as per approved drawings.				
8	Check the Flare Tips for cleanliness.				
9	Check the installation of all ladders and platforming are as per approved drawings.				
10	Check the protective coating visually for any damage				
11	Check after unbolting the Flare Tips that the pipe flanges align correctly with the nozzles on the Flare Tips.				
12	Check that the bolting is suitably lubricated.				
13	Arrange a joint visit by both the Commissioning Dept. and the Certification Authority for the final check.				
14	Check that all of the bolting at the Flare Tips has been correctly tightened.				
15	Check all earthing and bonding is as per drawings and specifications.				
16	Check if accessibility and maintenance are possible and safe				
17	Check that all of the commissioning spares and special tools are available in the stores.				
18	Produce a set of marked-up drawings as per installation.				
19	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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		Mechanical Check List Ignition and snuffing package  Task number C-VX-07		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the equipment documentation and the certification have been completed.				
2	Check that there are no outstanding items of work also for correct and complete nameplate data.				
3	Check available documents are at the latest revision.				
4	Check the location, elevation, orientation and that the equipment is level.				
5	Check that the holding down arrangements are correct.				
6	Check for any installation damage.				
7	Check the installation of the packages is as per approved drawings.				
8	Check the packages for cleanliness.				
9	Check that preservation has been carried out acceptably.				
10	Check that the access to the packages is acceptable.				
11	Check the painting visually for damage.				
12	Check for correct operation of the snuffing package cylinder weighing device.				
13	Ensure the stores contain spare snuffing package nitrogen pilot and main cylinders complete with compatible valves.				
14	Ensure the stores has replacements for the snuffing package carbon dioxide cylinders complete with compatible valves.				
15	Ensure that for the ignition package, the stores have replacement propane cylinders complete with compatible valves.				
16	Check earthing and bonding are as per drawings and specifications.				
17	Produce a set of marked-up drawings which are as per installation.				
18	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Mechanical Check List				EPC or EPCC CONTRACTOR LOGO
	Air dryer  Task number C-VX-09				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the nameplate data and tag are both complete and correct.				
2	Check bolting and gasket materials.				
3	Check holding down arrangements are correct and secure.				
4	Check for any installation damage.				
5	Check dessicant level and quantity on each bottle.				
6	Check pre and post filters.				
7	Check preservation is carried out as per approved procedure.				
8	Check if the connections (electrical, Instrument and piping) are complete and secured correctly.				
9	Check local control panel and instruments inside.				
10	Check the earthing and bonding are as per Project Specifications.				
11	Pressure safety valves set at the correct pressure certificate.				
12	Check valves installed in the good direction.				
13	Produce a set of marked-up drawings in accordance with the installation.				
14	Produce a defects list for inclusion in the Punch List issue.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 7

	Mechanical Check List				EPC or EPCC CONTRACTOR LOGO
	Package  Task number C-ZX-01				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the nameplate details are complete and correct.				
2	Check that the package Mechanical equipment is complete and not damaged.				
3	Check for all interface piping/mechanical reinstated on site by the contractor.				
4	Check that preservation has been carried out in accordance with approved procedures.				
5	Check all the equipment for correct lubrication, for oil leaks and cleanliness.				
6	Check for the free rotation of rotating equipment.				
7	Check the insulation, painting and for correct tagging and identification.				
8	Check if accessibility and maintenance are possible and safe.				
9	Check that all of the commissioning spares and special tools are available in the stores.				
10	Produce a defects list for issue in the Punch List (including FAT Punch List).				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 8 Mechanical typical Static Test Sheets

Type of equipment	Test Sheet reference
General purpose	T-MX-00
Machinery alignment	T-MX-08
Ductwork / leak test	T-MX-09
Lifeboat/davit load test	T-MX-10
Monorail and gantry crane load test	T-MX-11
Platform crane	T-MX-12
Pad eyes / static load test	T-MX-13
Base pad levelling	T-MX-15

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	Mechanical Test Sheet					EPC or EPCC CONTRACTOR LOGO
	General purpose					
	 Task number T-MX-00					
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
DATA						
TEST RESULTS						
SKETCHES / NOTES						
Remarks :						
Signature						
Name						
Date						

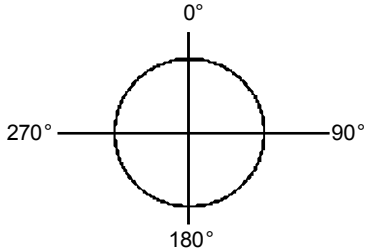
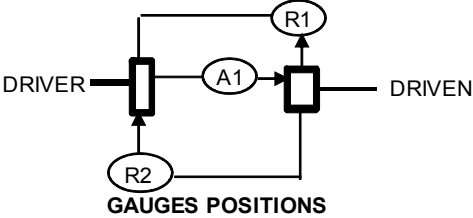
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	<b style="background-color: yellow;">Mechanical Test Sheet Machinery alignment  Task number <b style="background-color: yellow;">T-MX-08	EPC or EPCC CONTRACTOR LOGO										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">TAG Number :</td> <td style="width: 50%;">Subsystem :</td> </tr> <tr> <td>Description :</td> <td>Dwg / PID :</td> </tr> <tr> <td>Task Location :</td> <td>User Group :</td> </tr> <tr> <td>Estimated Time (MH) :</td> <td>Expend Time (MH) :</td> </tr> <tr> <td colspan="2">Module :</td> </tr> </table>			TAG Number :	Subsystem :	Description :	Dwg / PID :	Task Location :	User Group :	Estimated Time (MH) :	Expend Time (MH) :	Module :	
TAG Number :	Subsystem :											
Description :	Dwg / PID :											
Task Location :	User Group :											
Estimated Time (MH) :	Expend Time (MH) :											
Module :												
DATA												
Data sheet												
DRIVEN EQUIPMENT		EQUIPMENT N°										
DRIVER EQUIPMENT		EQUIPMENT N°										
COUPLING TYPE												
COUPLING MANUFACTURER												
MACHINE CONDITIONS												
BASEPLATE HOLDING DOWN BOLTS		LOOSE ☐ TIGHT ☐										
PIPING FLANGE BOLTS		LOOSE ☐ TIGHT ☐										
ALIGNMENT RESULTS												
COLD ALIGNMENT	PERMISSABLE ①	RECORDED VALUES ②										
ANGLE		0° 90° 180° 270°										
RUNOUT												
CONCENTRIC		R1										
		R2										
PARALLEL ③		A1										
NOTES : ① CHECK VENDORS OPER. MANUAL ③ ROTATION OF BOTH COUPLINGS ② VIEWED FROM DRIVER  ORIENTATION FROM VIEWER  GAUGES POSITIONS												
Remarks :												
TO BE CUSTOMIZED												
Signature												
Name												
Date												

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	Mechanical Test Sheet				EPC or EPCC CONTRACTOR LOGO
	Ductwork leak test				
					
		Task number T-MX-09			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
DATA					
DATA SHEET					
DUCTING SECTION TO BE TESTED *				mm ²	
TEST STATIC PRESSURE				Barg	
SURFACE AREA OF DUCT UNDER TEST				m ²	
LEAKAGE FACTOR				Litre/sec	
MAXIMUM LEAKAGE FACTOR (2 x LEAKAGE FACTOR)				Litre/sec	
TEST RESULTS *					
Duct static pressure reading				Barg	
Type of flow measuring device					
Measuring device measurement range					
Interpreted air flow leakage rate at start of test					
Interpreted air flow leakage rate after 15 minutes				Litre/sec	
Interpreted air flow leakage rate after re-application of test pressure				Litre/sec	
NOTES : * ATTACH MARKED UP DUCTING & INSTRUMENT DIAGRAM NOTES : ** TMX24 (leak test index) SHALL BE ATTACHED Remarks :					
					
Signature					
Name					
Date					

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 TOTAL	Mechanical Test Sheet Lifeboat davit static load test  Task number T-MX-10				EPC or EPCC CONTRACTOR LOGO	
TAG Number :			Subsystem :			
Description :			Dwg / PID :			
Task Location :			User Group :			
Estimated Time (MH) :			Expended Time (MH) :			
Module :						
DATA						
DATASHEET						
SAFE WORKING LOAD (RATED LOAD CAPACITY)			Kg			
TEST LOAD = 2.2 x S.W.L.			Kg			
TEST RESULTS						
STATIC LOAD TEST						
COMPLEMENTARY NDT ASKED			Yes ☐		No ☐	
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

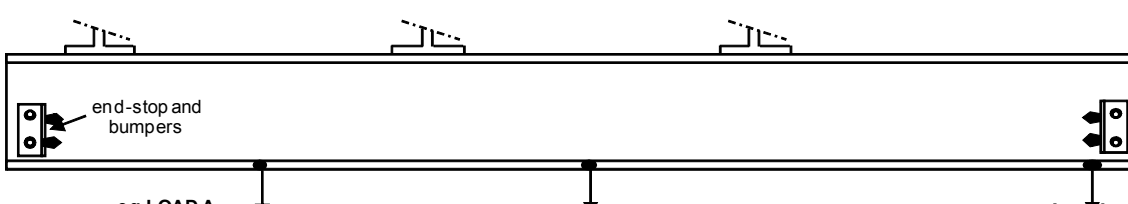
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 TOTAL	<b style="color: red;">Mechanical Test Sheet Monorail / gantry static load test  Task number T-MX-11	EPC or EPCC CONTRACTOR LOGO
Task number T-MX-11		
TAG Number :		Subsystem :
Description :		Dwg / PID :
Task Location :		User Group :
Estimated Time (MH) :		Expend Time (MH) :
Module :		
DATA		
Data sheet :		
SWL :		Test Factor :
Test Certif. :		Test Date :
Assoc. Equip. :		Fabricat Year :
TEST RESULTS		
TYPE OF EQUIPMENT		MONORAIL ☐ 3 GANTRY CRANE ☐
TEST METHOD		DEAD WEIGHT ☐ LOAD CELL ☐
LOAD LOCATION POINT		
TEST LOAD	1 2	Tonnes
DEFLECTIONS		mm
DURATION OF TEST		min
PERMANENT DEFLECTIONS		mm
COMPLEMENTARY NDT ASKED		Yes ☐ No ☐
NOTES : 1 SWL+25% 2 ATTACH CERTIFICATION OF TEST (for LOAD CELL or WEIGHTS) 3 USE TWO SHEETS ONE FOR EACH BEAM		
SKETCH OF TEST LOAD POSITIONS AND DEFLECTION POINTS		
		
VENDOR FABRICATOR DRAWING REFERENCE		
Remarks :		
<b style="color: red; font-size: 2em;">TO BE CUSTOMIZED		
Signature		
Name		
Date		

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	Mechanical Test Sheet					
	Platform crane					
	 Task number T-MX-12					
TAG Number :			Subsystem :			
Description :			Dwg / PID :			
Task Location :			User Group :			
Estimated Time (MH) :			Expended Time (MH) :			
Module :						
DATA						
DATASHEET						
VENDOR						
MODEL						
SERIAL N°						
1	Erection of the complete crane on its pedestal.					
2	All access platforming.					
3	Reeving of all wire ropes.					
4	All systems have been checked (refer to C-AX-04).					
5	Instrument and Electrical Pre-commissioning tasks done.					
Remarks :						
Signature						
Name						
Date						

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 Mechanical Test Sheet Padeyes static load test  Task number T-MX-13		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :	Expended Time (MH) :						
Module :							
Subsystem :							
IT	CHECK LIST						
NDT CLEARANCE DONE:	☐ Y						
TEST METHOD: DEAD WEIGHT	☐ DW	LOAD CELL	☐ LC				
TEST LOAD	☐ 1 ☐ 2	☐ Tonn					
TEST DURATION	☐ mn						
COMPLEMENTARY NDT ASKED	☐ Y/N						
NOTES: ☐ 1 SWL + 50% ☐ 2 ATTACH TEST CERTIFICATE FOR THE LOAD CELL OR DEAD WEIGHTS.							
VENDOR / FABRICATOR DRAWING REFERENCE :							
Remarks :							
							
Signature							
Name							
Date							

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Appendix 9 Piping and Vessel typical Conformity Check List Forms

Type of equipment	Check List reference
Pressure Vessel	C-CX-01
Pig Launcher	C-CX-02
Vessel final closure	C-CX-03
Concrete basin / Sump	C-CX-04
Storage tank	C-DX-01
Strainer-Filter	C-HX-01
Test pack composition	C-LX-01
Pipework	C-LX-02
Pipework before task	C-LX-02A
Pipework after task	C-LX-02B
Thermal insulation	C-XX-01
Painting lines	C-XX-02
Passive fire protection	C-XX-04
Personnel protection	C-XX-05
Packages	C-ZX-01P

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		Piping Check List Pressure vessel  Task number C-CX-01		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
Pressure vessel					
1	Check that the nameplate details are both correct and complete.				
2	Check location, elevation, orientation and that the vessel is level.				
3	Check that the holding arrangements are correct (bolts torqued and sliding feet free).				
4	Check for any installation damage.				
5	Check that the vessel and its internals are in accordance with the approved drawings.				
6	Check the vessel internally for cleanliness.				
7	Check that all the internal bolting is correctly tightened.				
8	Check preservation is carried out as per approved procedure.				
9	Check that all the platforming and ladders are installed in accordance with the approved drawings.				
10	Check that the manways are accessible and suitable for use (grease, freedom movement of the davit).				
11	Check all painting / insulation / internal linings for damage.				
12	Check the earthing and bonding is as per project specification.				
13	Check that the vessel pipe supports are in accordance with the design.				
14	Check with disconnected pipework that the pipe flanges correctly align with the nozzle flanges.				
15	Check that the internal components can be withdrawn with the aid of suitably installed lifting equipment.				
16	Check that the bolting is suitably lubricated.				
17	Produce a set of marked-up drawings in accordance with the installation.				
18	Produce a defects list for inclusion in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks : Pressure test Ref : Date :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL		Piping Check List Pig launcher  Task number C-CX-02		EPC or EPCC CONTRACTOR LOGO	
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the nameplate details are correct.				
2	Check the location the elevation, orientation and the pig launcher is level.				
3	Check that the holding down arrangements are correct.				
4	Check for any installation damage.				
5	Check the launcher internally for cleanliness.				
6	Check that the pig launcher is installed in accordance with the specifications and the approved drawings.				
7	Check that all the nozzels not in use are suitably sealed.				
8	Check preservation is carried out as per approved procedure.				
9	Check visually all painting and insulation for damage.				
10	Check all earthing and bonding are as per Project Specifications.				
11	Check the launcher piping supports are as per approved design.				
12	Check that with disconnected pipwork flanges, that the nozzle flanges are in correct alignment.				
13	Check the operation of the loading hatch.				
14	Check that the bolting is suitably lubricated.				
15	Check that the stores contain all the commissioning spares, the bolting, gaskets, lubricants and any special tools.				
16	Check that the safety devices/protection are installed.				
17	Check that all the external bolting is correctly tightened and also that the launcher is sealed up.				
18	Produce a set of marked-up drawings in accordance with the installation.				
19	Produce a defects list for inclusion in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks : Pressure test Ref : Date :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	Piping Check List Vessel final closure		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-CX-03			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check correspondant C-CX-01 has been carried out.			
2	Check that major PUNCH LIST Items are cleared (no necessary to re-open the vessel).			
3	Confirm internal integrity check has been done by Inspection representative (Including, when necessary, the weir plate leak testing).			
4	Check that equipment is blinded off.			
5	Check all equipment valves are isolated.			
6	Check for the equipment is internally clean.			
7	Check the internal coating is acceptable.			
8	Check if nobody is inside before to close the vessel.			
9	Check the manhole final closure is carried out according specification (New gasket installed).			
10	The equipment is accepted and declared ready for final closure.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
				
Signature				
Name				
Date				

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	Piping Check List Concrete basins / sumps		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-CX-04			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check that the nameplate details are correct and complete.			
2	Check the location the elevation and orientation.			
3	Check that all the slopes are as per drawing.			
4	Check for any installation damage.			
5	Check that nozzles are correctly installed as per drawing.			
6	Check that the weir plates are sealed and installed correctly in accordance with the specifications and approved drawings.			
7	Check that weir plate is adjustable within limits.			
8	Check all platforms and stairs are as per drawings.			
9	Check basin/sump surface for damage.			
10	Check gutters are installed as per drawing.			
11	Check all valves are operating properly.			
12	Check that all the mechanical equipment is fit for purpose and installed as per specifications and approved drawings.			
13	Check that all the electrical equipment and connection are in accordance with specifications and the approved drawings.			
14	Produce a set of marked-up drawings in accordance with the installation.			
15	Produce a defects list for inclusion in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
				
Signature				
Name				
Date				

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	Piping Check List		EPC or EPCC CONTRACTOR LOGO
	Storage tank  Task number C-DX-01		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that the nameplate details are both correct and complete.		
2	Check the location, elevation, orientation and that the vessel is level.		
3	Check that the holding arrangements are correct.		
4	Check for any installation damage.		
5	Check that the nozzles are suitably isolated to enable a safe internal examination to be made.		
6	Check the vessel internals are as per approved drawings; (including any heating devices.)		
7	Check the vessel internally for cleanliness.		
8	Check that all the internal bolting has been tightened.		
9	Check preservation is carried out as per approved procedure.		
10	Check all platforming and ladders are installed as per approved drawings.		
11	Check that manways are accessible and suitable for operation.		
12	Check out the painting, insulation and the lining for damage.		
13	Check the earthing and bonding are as per Project Specifications.		
14	Check that the pipe supports are in accordance with the approved design.		
15	Check the disconnected pipework flanges against the nozzle flanges for correct alignment.		
16	Check the internals can be withdrawn with the use of suitable lifting gear.		
For floating roofs:			
17	Check internally the roof pontoons.		
18	Verify the seal installation and its integrity.		
19	Check the roof support position and roof drain installation.		
20	Check that the bolting is suitably lubricated.		
21	Produce a set of marked-up drawings in accordance with the installation.		
22	Produce a defects list for inclusion in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 Piping Check List		Strainer / filter						EPC or EPCC CONTRACTOR LOGO	
				Task number C-HX-01					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data is complete and correct.								
2	Check available documents are at the latest revision.								
3	Check the location, elevation, orientation and that the filter is level.								
4	Check that the holding down arrangements are correct.								
5	Check that the pipe-supports are in accordance with the design.								
6	Check that the bolting is suitably lubricated.								
7	Check that there has been no installation damage.								
8	Check that the installation of the filter and cartridge is in accordance with the specifications and approved drawings. Also check that they can be removed when required.								
9	Check the filter casing internally for cleanliness.								
10	Check the accessibility of the unit for maintenance.								
11	Check the painting visually for any damage.								
12	Check the earthing and bonding are as per Project Specifications.								
13	Check that when the pipework flanges have been disconnected, that the pipe flanges correctly align with their corresponding filter nozzle flanges.								
14	Check that all of the commissioning spares and special tools are available in the stores.								
15	Produce a set of marked- up drawings which are as per installation.								
16	Produce a defects list for inclusion in the Punch List issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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	Piping Check List		EPC or EPCC CONTRACTOR LOGO
	Pipework  Task number C-LX-02		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check that all of the materiel conforms to the specifications.		
2	Check the pipework installation conforms to specifications, drawings and P&ID's.		
3	Check that the pipework and valves are undamaged. Also check the ancillaries and any other components.		
4	Check the installation of all pipe-supports are as per specifications and drawings. Also springs have shipping-stops fitted and the piping sits on its supports.		
5	Check the location of the pipe anchors.		
6	Check the alignment of the pipe guides.		
7	Check the check-valves operate freely before they are installed into position.		
8	Check that the flow direction of the valves is in the correct sense/direction.		
9	After the installation of a valve check that it operates freely.		
10	Check the valves are correctly lubricated and they have the correct spindle packing.		
11	Check there is a suitable access, both to operate and to maintain valves.		
12	Check that the pipework does not in any way load and stress the equipment it is serving.		
13	Check the pipe flanges are mounted square to each other. Also the bolting and gaskets are correct.		
14	Check that all the bolts and fasteners are suitably lubricated.		
15	Check the painting, the insulation and the heat tracing as per specifications.		
16	Check the equipment has been bonded as per drawings and specifications.		
17	Check for the correct tagging, labelling and colour coding of pipework and equipment.		
18	Check that all golden welds (final tie-ins without hydrotest) have been performed as per procedure.		
19	Produce a set of marked-up drawings in accordance with the installation.		
20	Produce a defects list for issue in the Punch List.		
☐ NA Not Applicable		☒ X Checked & not accepted	☐ O Checked & accepted
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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	Piping Check List Pipework before task		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-LX-02A			
TP Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
1	Check the installation of all pipe-supports are in accordance with the specifications and drawings.			
2	Check that springs have shipping-stops fitted and that the piping sits on.			
3	Check that pipework at pump and vessel nozzles are free from spring.			
4	Check the location of the pipe anchors.			
5	Check the alignment of the pipe guides.			
6	Check that the pipe flanges have been mounted square to each other. Also that the bolting and gaskets are correct.			
7	Check bolt tensionning and torquing . When applicable use T-MX-27 form.			
8	Check that the flow direction of the valves and ckeck-valve is in the correct sense/direction.			
9	Check that the removed equipment is in accordance with the agreed list of fragile devices.			
10	Check that spool pieces or other substitution means have been put in place instead of the removed fragile devices.			
11	Check for each line of the Test Pack the NDT clearance			
12	Check the Blind list.			
13	Check that all of the materiel to perform the task conforms to the procedure.			
14	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted				
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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		Piping Check List Pipework after task  Task number C-LX-02B		EPC or EPCC CONTRACTOR LOGO	
TP Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check that the pipework and equipment are drained as per procedure.				
2	Before definitive closure, insure that all flanges has been painted (internal side).				
3	Check that the pipework and equipment (re)installation conforms to the specifications, drawings and to the P&ID's.				
4	Check that the pipework does not anyway load and stress the equipment it is serving.				
5	Check that new gasket have been installed after pipework and equipment reinstallation.				
6	All plugs installed on vents and drains for test have been removed.				
7	Check that all removed fragile devices and critical valves have been re-installed.				
8	Check if all temporary equipment (test spades, filters, spool pieces...etc) have been removed.				
9	All specific blinds and/or spectacle blinds have been correctly installed as per PID.				
10	Check that the pipework, valves, check valves are undamaged. Also check the ancillaries and any other components.				
11	After the (re)installation of a valve check that it operates freely.				
12	Check that the flow direction of the valves and ckeck-valve is in the correct sense/direction.				
13	Check that the valves have been correctly lubricated and that they have the correct spindle packing.				
14	Check that all the bolts and fasteners are suitably lubricated.				
15	Check that the bolts have been retensioned at opened joints.				
16	Check that all golden welds (final tie-ins without hydrotest) have been performed as per procedure.				
17	Produce a set of marked-up drawings in accordance with the installation.				
18	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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	Piping Check List Thermal insulation		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-XX-01			
TP Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
1	Insure C-LX-02B reinstatement check completed.			
2	Insure C-XX-02 Painting check (for the concerned insulated lines) completed.			
3	Insure T-MX-04 Chemical cleaning/passivation completed.			
4	Insure C-PX-22 Heat tracing check completed.			
5	Check that the insulation and cladding materials conform to the specifications.			
6	Check that the insulation is compatible with the heat tracing system.			
7	Check the surface preparation prior to the application of the insulation.			
8	Check the method of application for the various materials.			
9	Check the installation of wire mesh.			
10	Check the overlap of the metal cladding.			
11	Check that each joint is sealed with a suitable sealant specified for water proofing.			
12	Check the staggering of the metal cladding joints and verify that they have been applied as per the specifications.			
13	Control that the locking devices boxes operate satisfactorily.			
14	Check the blinds, the spectacles and the instruments are visible.			
15	Check the flange accessibility without damaging the insulation.			
16	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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Appendix 9

	Piping Check List				EPC or EPCC CONTRACTOR LOGO
	Painting line				
					
		Task number C-XX-02			
TP Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
1	Check that the completed painting is in accordance with the specifications covering quality and thickness. Liaise with QA/QC inspector.				
2	Check that the colour coding conforms to the specifications.				
3	Check that the fluid direction is correct.				
4	Check that line marking is correct.				
5	Check that the painting of piping systems and of the equipment is "touched up" conform to the specifications.				
6	Produce a defects list for issue in the Punch List.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 9

	Piping Check List Passive fire protection		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-XX-04			
TP Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
1	Insure C-XX-02 and C-XX-03, Painting piping and structure checks are completed.			
2	Record of conditions of surface before applying PFP products.			
3	Check that the materials, the preparation and application method have been approved by Company.			
4	Check that the fire protection is installed as per design layout drawing.			
5	Check and make a record of the various thicknesses for each of the different Passive Fire Protection material used.			
6	For the boxes, the special jackets, the fibre blankets...check if there are removable easily.			
7	Produce a defects list for issue in the Punch list.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
				
Signature				
Name				
Date				

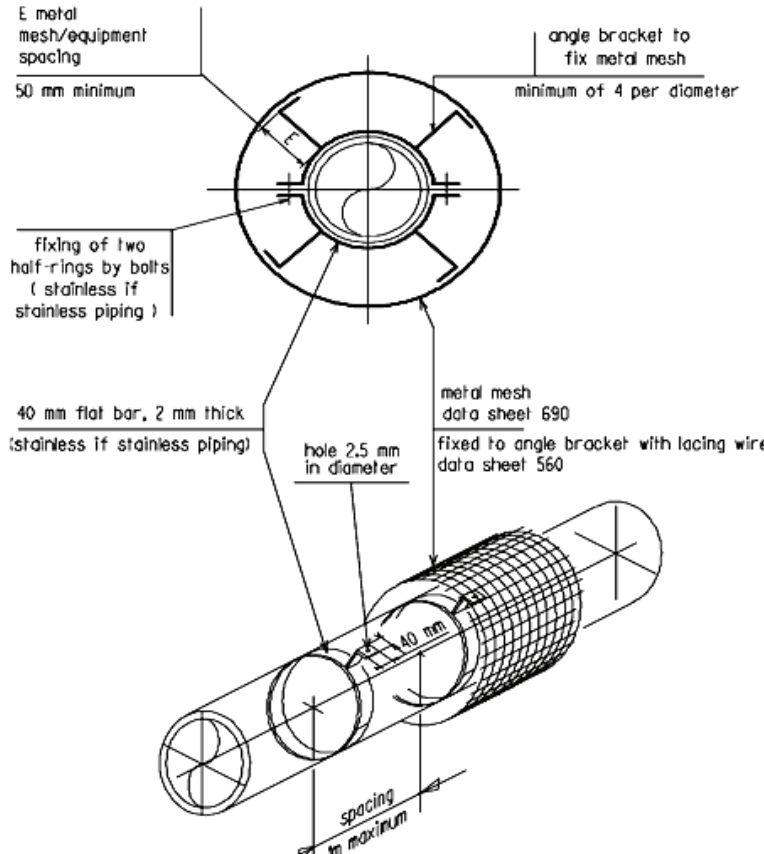
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Appendix 9

 Piping Check List Personnel protection  Task number C-XX-05		EPC or EPCC CONTRACTOR LOGO	
TP Number :	Subsystem :		
Description :	Dwg / PID :		
Task Location :	User Group :		
Estimated Time (MH) :	Expend Time (MH) :		
Module :			
1	Check that the protection has been installed as per approved drawing.		
2	Check that the material and its installation are conform to approved design.		
3	Check if installed protection is easily removable.		
4	Check if installed protection do not interfere with other equipment.		
5	Produce a defects list for issue in the Punch list.		
NA	Not Applicable	X	Checked & not accepted
		O	Checked & accepted
Remarks : 			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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Appendix 9

	Piping Check List				EPC or EPCC CONTRACTOR LOGO
	Package  Task number C-ZX-01P				
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check the package Piping equipment for any damage or missing items / equipment.				
2	Check that the piping Test Packs, relevant to package equipment, are correctly compiled, completed and signed off.				
3	Check alignment and flushing of all piping reinstated on site.				
4	Check that preservation has been carried out in accordance with approved procedures.				
5	Check the insulation, painting and for correct tagging and identification.				
6	Check that all piping package interconnections to external tie-in points are in accordance with approved drawings.				
7	Check for the correct operation of all manual valves.				
8	Produce a defects list for issue in the Punch List (Including FAT Punch List).				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 10

Appendix 10 Piping and Vessel typical Static Test Sheets

Type of equipment	Test Sheet reference
Vessel and tank / pressure test	T-MX-01
Heat exchanger tube / pressure test	T-MX-02
Pressure test	T-MX-03
Chemical cleaning / Pickling	T-MX-04
Cleaning	T-MX-05
Gross air leak test	T-MX-25
Bolt tensioning / torquing	T-MX-27
Valve interlock	T-MX-29

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Appendix 10

 TOTAL	Piping Test Sheet				EPC or EPCC CONTRACTOR LOGO
	Vessel and tank pressure test				
 Task number T-MX-01					
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
DATA					
DESIGN PRESSURE:		Barg			
TEST PRESSURE:		Barg			
TEST MEDIUM:					
STATIC HEAD:		m			
TEST RESULTS					
DURATION OF TEST		min			
TEST PRESSURE - START		Barg			
TEST PRESSURE - FINISH		Barg			
TEST MEDIUM TEMPERATURE		°C			
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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Appendix 10

 TOTAL	Piping Test Sheet		EPC or EPCC CONTRACTOR LOGO
	Heat exchanger tube pressure test		
			
Task number T-MX-02			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
DATA			
Data sheet:			
		TUBE BUNDLE	SHELL
DESIGN PRESSURE	Barg		
TEST PRESSURE	Barg		
TEST MEDIUM			
TEST RESULTS			
		TUBE BUNDLE	SHELL
DURATION OF TEST	min		
TEST PRESSURE - START	Barg		
TEST PRESSURE - FINISH	Barg		
TEST MEDIUM TEMPERATURE	°C		
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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	Piping Test Sheet				EPC or EPCC CONTRACTOR LOGO
	Pressure test				
	 Task number T-MX-03				
TP Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expend Time (MH) :			
Module :					
TEST PREPARATION					
Weight control (for gas line supports): No ☐ Yes ☐					
Water quality		Inhibitor: No ☐ Yes ☐			
		Filtration: No ☐ Yes ☐			
Equipment removed:* No ☐ Yes ☐ Conformity PID's** No ☐ Yes ☐					
REQUESTED PRESSURE TEST DATE:				WITNESSING: No ☐ Yes ☐	
PERMISSION TO TEST		NAME		DATE	
DATA					
DESIGN PRESSURE:		TEST PRESSURE:		TEST MEDIUM:	
CALIBRATION CERTIFICATE:			BLIND LIST:		
TEST RESULTS					
TEST DATE:		TEST DURATION:		WITNESSING BY:	
TEST PRESS-START:		TEST PRESS- FINISH:		TEST MEDIUM TEMP:	
* Agreed list of removed fragile devices shall be attached to this Task ** Excepted removed equipments, pipework installation is conform to the specification & PID's Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	Piping Test Sheet Chemical cleaning / pickling  Task number T-MX-04	EPC or EPCC CONTRACTOR LOGO															
TP Number :	Subsystem :																
Description :	Dwg / PID :																
Task Location :	User Group :																
Estimated Time (MH) :	Expend Time (MH) :																
Module :																	
TEST PREPARATION																	
REQUESTED CLEAN-UP DATE:		WITNESSING: No ☐ Yes ☐															
PERMISSION TO CLEAN-UP	NAME	DATE															
Type of Chemical:	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Product</th> <th>Quantity</th> <th>Proportion</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	Product	Quantity	Proportion													
Product	Quantity	Proportion															
Carbon steel pipes ☐		Stainless steel pipes ☐															
Equipment removed:*	No ☐ Yes ☐	Conformity PID's** No ☐ Yes ☐															
Equipment added : ***	No ☐ Yes ☐																
* Agreed list of removed fragile devices shall be attached to this Test Sheet ** Excepted removed equipments, pipework installation is conform to the specifications & PID's *** Exhaustive list shall be attached (temporary filters, spools...etc)																	
OPERATION DESCRIPTION																	
Static or circulation cleaning	Passivation																
Internal or external surface cleaning	Quality control																
Degreasing	Inerting / preservation																
Cold pickling	Effluent disposal																
Rinsing	Blind list																
SAFETY PRECAUTIONS																	
RESULTS AND COMMENTS																	
TO BE CUSTOMIZED																	
Signature																	
Name																	
Date																	

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	Piping Test Sheet		EPC OF EPCC CONTRACTOR LOGO
	Cleaning		
			
Task number T-MX-05			
TP Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
Cleaning method: Air ☐ Water ☐ Steam ☐ Oil ☐ Other ☐ Mechanical ☐			
TEST PREPARATION			
Weight control (for gas line supports):		No ☐ Yes ☐	
Water quality	Inhibitor:		No ☐ Yes ☐
	Filtration:		No ☐ Yes ☐
Water disposal		No ☐ Yes ☐	
Equipment removed:*	No ☐ Yes ☐	Conformity PID's**	No ☐ Yes ☐
Equipment added : ***	No ☐ Yes ☐		
REQUESTED CLEANING DATE:		WITNESSING: No ☐ Yes ☐	
PERMISSION TO CLEAN		NAME	DATE
Cleaning medium :		Flow rate :	Cleaning medium T° :
Cleaning date :	Flushing duration :		Witnessing by:
* Agreed list of removed fragile devices shall be attached to this Test Sheet ** Excepted removed equipments, pipework installation is conform to the specifications & PID's *** Exhaustive list shall be attached (temporary filters, spools...etc)			
OPERATION DESCRIPTION:			
SAFETY PRECAUTIONS:			
RESULTS AND COMMENTS:			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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	Piping Test Sheet		EPC or EPCC CONTRACTOR LOGO
	Gross air leak test		
			
	Task number T-MX-25		
Description :	Subsystem :		
Task Location :	Dwg / PID :		
Estimated Time (MH) :	User Group :		
Module :	Expend Time (MH) :		
TEST PREPARATION			
Equipment reinstated:	YES ☐	Conformity PID's	NO ☐ YES ☐
Temporary equipment removed:	YES ☐		
Request pressure test:	DATE:		
Permission to test:	DATE:	NAME:	
DATA			
Design pressure:	Test pressure:*	Test medium:	
TEST RESULTS			
Test date:	Test duration:	Witnessing by:	
Test pressure-start:	Test pressure -finish:		
Note * : Pressure shall be 7 bars or below if maximum operating pressure is lower			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

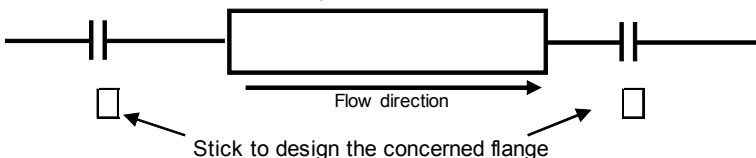
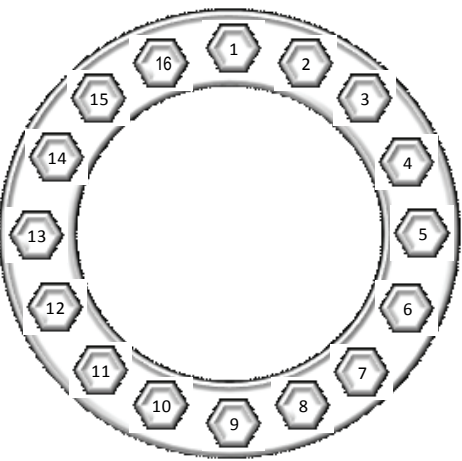
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 TOTAL	<b style="color: red;">Piping Test Sheet Bolt tensioning / torquing  Task number <b style="background-color: yellow;">T-MX-27	EPC or EPCC CONTRACTOR LOGO		
Task number T-MX-27				
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
EQUIPMENT TAG  Stick to design the concerned flange				
Flange type		Used tools		
Flange size				
Gasket type				
Bolt tensioning / torquing values				
		To be adapted to the concerned flange type/size		
		Sequence	Pre tension/torque	Final tension/torque
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		
		9		
		10		
		11		
		12		
		13		
		14		
		15		
		16		
Specification N°				
Remarks :				
<b style="color: red; font-size: 2em;">TO BE CUSTOMIZED				
Signature				
Name				
Date				

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	Piping Test Sheet		EPC or EPCC CONTRACTOR LOGO
	Valve interlock  Task number T-MX-29		
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expend Time (MH) :	
Module :			
1	Check relevant documents are at the latest revision.		
2	Check the tag is correct and conform with drawings.		
3	Check the mechanical equipment is correctly installed as per supplier recommendations.		
4	Check equipment is undamaged and correctly installed.		
5	Insure interlock procedure is matching the installation.		
6	Check all earthing and bonding in accordance with project specifications (if applicable).		
7	Insure spare set of keys and special tools available.		
8	Produce marked-up drawings in accordance with installation.		
9	Check if accessibility and maintenance are possible and safe.		
10	Produce a defects list for punch list issue.		
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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Appendix 11

Appendix 11 Safety Conformity Check List Forms

Type of equipment	Check list reference
Life raft and scramble net	C-YX-01
Life boat davits	C-YX-02
Carbon dioxide / nitrogen rack bottles	C-YX-03
Water deluge system	C-YX-04
Fire water monitor	C-YX-05
Hose reel	C-YX-06
Hydrant, cabinet, Fireman's equipment cabinet	C-YX-07
Portable Fire-Fighting equipment	C-YX-08
Survival equipment (life jackets/buoys)	C-YX-09
First aid equipment	C-YX-10
Escape route	C-YX-15

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 Safety Check List		Liferaft and scramble net						EPC or EPCC CONTRACTOR LOGO	
		Task number C-YX-01							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that both the life raft and scramble net have current certification. Also check that they are clearly identified.								
2	Check the location of the scramble net, the life raft and the cradle fixation. Also check the length of the painter rope.								
3	Check that the life raft is correctly installed in its cradle and check the operation of the cradle.								
4	Check the cradle holding down arrangements.								
5	Check for any installation damage.								
6	Check that the scramble net is of the correct length.								
7	Check both the life raft and scramble net for cleanliness.								
8	Check that the scramble net is correctly installed. Also check that the life raft painter is securely tied to the base of the net.								
9	Check the painted surface of the life raft casing for damage.								
10	Check that the last inspection date is clearly indicated. Also that the next inspection is not overdue.								
11	Check that the life raft casing is correctly fastened-up.								
12	Produce a set of marked-up drawings which are in accordance with the installation.								
13	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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		Safety Check List Lifeboat and cradle		EPC or EPCC CONTRACTOR LOGO		
		 Task number C-YX-02				
TAG Number :		Subsystem :				
Description :		Dwg / PID :				
Task Location :		User Group :				
Estimated Time (MH) :		Expend Time (MH) :				
Module :						
1	Check that certification is complete. Check also that the nameplate details are correct and complete.					
2	Check the cradle location and elevation supports and they are level.					
3	Check that the lifeboat is correctly orientated.					
4	Check that the davit holding arrangement is correct.					
5	Check for any installation damage.					
6	Check the cradle supports and the lifeboat installation is as per approved drawings.					
7	Check the cradle supports and the lifeboat both internally and externally for cleanliness.					
8	Check the preservation of the lifeboat and of the cradle supports against the approved drawings.					
9	Check against the supplier's check list that all of the items mentioned are installed in the lifeboat.					
10	Check that the cradle-support operation instructions are clearly displayed in the lifeboat interior.					
11	Check the accessibility to the lifeboat installation. Handrailing and walkways are completed as per approved drawings.					
12	Check the painted surfaces of the hydraulic power unit, the cradle and the lifeboat surface finish for damage.					
13	Check that the engine cover is secured.					
14	Check the Davits are reeved correctly and that wire ropes are serviceable.					
15	Check that the manual operation of the winch gear is as per specifications.					
16	Check that the grabrails and the grablines are secured and in good condition.					
17	Check that the reflective strips are attached.					
18	Check the operation of the lifeboat access doors for ease of use and correct installation.					
19	Check that the seawater spray nozzels (deluge) are secured.					
20	Check that the canopy vents are clear.					
21	Check the propeller and rudder assemblies for freedom of movement. Also the operation of the helmsman's wheel.					
22	Check that the exhaust pipe clack valve (non-return) is installed.					
23	Check that the outlet from the bilge pump is clear of obstruction.					
24	Check that all the required seat belts are installed and that they are functional.					
25	Check that the seawater pump inlet is clear of obstruction.					
26	Check that the valve spanner is securely attached.					
27	Check that the wet chamber is installed in the exhaust piping.					
28	Check that the equipment is correctly preserved/lubricated.					
29	Check that the cradle heat protection shielding is complete and secured.					
30	Check the cradle rotation system.					
31	Check out the cradle "simuldrop" system.					
32	Check the hydraulic power-pack.					
33	Check the diesel engine.					
34	Visually check that the lights function.					
35	Check the lifeboat transition pieces.					
36	Produce a set of marked-up drawings which are as per lifeboat installation.					
37	Produce a defects list for issue in the Punch List.					
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted		
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Safety Check List		Carbon dioxide / nitrogen / rack bottles						EPC or EPCC CONTRACTOR LOGO	
Task number C-YX-03									
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Nameplate details complete and correct.								
2	Check that the location of the equipment is correct.								
3	Check for any installation damage (Piping and hoses)								
4	Protection against sun radiation.								
5	Check that the earthing and bonding are in accordance with the drawings and the specifications.								
6	Discharge line flushed (free of debris or foreign material) including the 3 way valve (if applicable).								
7	Number of bottles correct and filled to correct level, weigh or pressure.								
8	Bottles secured								
9	Check accessibility of valves, emergency push/release button...								
Technical documentation available:									
10	- pressure test certificate for bottles and discharge network								
11	- calculation notes								
12	- logic diagram								
13	- equipments data sheets								
14	- material specification								
3 way valve installed for atmosphere release :									
15	- valve tagging correct								
16	- instruction sign fitted								
17	- discharge line to atmosphere calculation note at full flow								
18	- discharge line to atmosphere supported as per design								
19	Produce a set of marked-up drawings which are in accordance with the installation.								
20	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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Appendix 11

	Safety Check List Water deluge system		EPC or EPCC CONTRACTOR LOGO	
	 Task number C-YX-04			
TAG Number :		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expend Time (MH) :		
Module :				
1	Check that the nameplate details are correct and complete.			
2	Check the location and the arrangement of the equipment is correct. Also that it conforms to isometric and P&ID drawings.			
3	Check the holding down arrangements.			
4	Check for any installation damage.			
5	Check that the installation is in accordance with the specifications.			
6	Check the general accessibility for operation.			
7	Check for cleanliness.			
8	Check the painting visually for damage.			
9	Check that after disconnection of the pipework flanges that the pipe flanges align correctly with their relative equipment.			
10	Check that the earthing and bonding is in accordance with the drawings and specifications.			
11	Produce a set of marked-up drawings which are in accordance with the deluge installation.			
12	Produce a defects list for issue in the Punch List.			
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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 Safety Check List		Firewater monitor						EPC or EPCC CONTRACTOR LOGO	
		Task number C-YX-05							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are correct and complete.								
2	Check the location, the elevation, orientation and that the monitor is level.								
3	Check for any installation damage.								
4	Check that the monitor installation is in accordance with the approved drawings and specifications.								
5	Check the monitor for cleanliness.								
6	Check the surface finish for damage.								
7	Check that lubrication of the unit has been carried out and that it was done in accordance with the approved procedure.								
8	Check that the monitor moves freely in its planes of operation (vertical and horizontal). Also that it is easily accessible.								
9	Check that the bolting is suitably lubricated.								
10	Check that the earthing and bonding of the unit is in accordance with the drawings and specifications.								
11	Produce a set of marked-up drawings which are in accordance with the installation.								
12	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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Appendix 11

 Safety Check List		Hose reel  Task number C-YX-06						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check the location and elevation of the hose reel.								
2	Check that the mounting arrangements are correct and that there is easy access.								
3	Check for any installation damage.								
4	Check that the piping up to the hose reel is complete.								
5	Check for the free rotation of the reel.								
6	Check that the hose unwinds freely from the reel.								
7	Check that the nozzle is installed in the hose and that its fastening is correct.								
8	Service pressure of the hose in accordance with the maximum network pressure.								
9	Check that the hose is undamaged.								
10	Check the hose and the reel for cleanliness.								
11	Check the painting of the reel visually for damage.								
12	Check that the hose has been correctly wound onto the reel.								
13	Initiate a set of marked-up drawings for modification.								
14	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Safety Check List		Hydrant / cabinet / equipment						EPC or EPCC CONTRACTOR LOGO	
				Task number C-YX-07					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate details are complete and correct.								
2	Check the location, elevation, orientation are correct. Also that the hydrant and fireman's equipment cabinets are level.								
3	Check the holding down arrangements and the accessibility for the hydrant and the fireman's equipment cabinets.								
4	Check for any installation damage.								
5	Check that the following equipment is installed in accordance with the approved drawings and P&ID's:- hydrant & cabinet, hoses and nozzles, fireman's cabinet, miscellaneous items.								
6	Check that the items in the fireman's cabinet are in accordance with the Vendors equipment check list.								
7	Check the operation of the cabinet doors.								
8	Check the cabinet internally for cleanliness.								
9	Check the painting visually for damage.								
10	Check that the hoses connect into the hydrant correctly.								
11	Check that the nozzles connect into the hose correctly.								
12	Check that the earthing and bonding are in accordance with the drawings and specifications.								
13	Produce a set of marked-up drawings which are in accordance with the installation.								
14	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Safety Check List		Portable fire extinguisher						EPC or EPCC CONTRACTOR LOGO	
				Task number C-YX-08					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the nameplate data is complete and correct.								
2	Check that the equipment "Tag Number" is correct.								
3	Check that the location is correct.								
4	Access is not obstructed.								
5	Check that the mounting is correct.								
6	Extinguisher certification charge and date.								
7	Check that the various types of extinguishers are correctly colour coded.								
The following equipment shall be checked in accordance with a marked-up layout drawing of the area.									
8	Portable water extinguisher.								
9	Portable dry powder extinguisher.								
10	Portable BCF extinguisher.								
11	Portable foam extinguisher.								
12	Produce a defects list for issue in the Punch List.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Safety Check List Survival equipment  Task number C-YX-09		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that the equipment certification is complete and that the nameplate data is correct.						
2	Check that the equipment "Tag Number" is correct.						
3	Check that the location is correct.						
4	Check that the mounting arrangements are correct.						
The following equipment shall be checked in accordance with a marked-up layout drawing.							
5	Lifebuoys.						
6	Smoke and Light units (for man overboard).						
7	Lifejackets.						
8	Survival suits						
9	Produce a defects list for issue in the Punch List.						
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted			
Remarks :							
							
Signature							
Name							
Date							

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 Safety Check List							
First aid equipment		EPC or EPCC CONTRACTOR LOGO					
							
Task number C-YX-10							
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that certification is complete and that the nameplate details are complete and correct.						
2	Check that the equipment "Tag Number" is correct.						
3	Check that both the location and the orientation are correct.						
4	Check that the mounting arrangements are correct.						
5	Check that the pipework supply and drains to the eyewash/ shower unit are installed correctly (where applicable).						
The following equipment shall be checked together with including a marked up layout drawing indicating the area checked.							
6	Eye wash container.						
7	Eye wash with potable water connected.						
8	Eye wash and shower unit.						
9	Stretcher.						
10	A fixed first-aid cabinet and its contents.						
11	Portable first-aid boxes						
12	Produce a defects list for issue in the Punch List.						
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted			
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Safety Check List		Escape route					
							
Task number		EPC or EPCC CONTRACTOR LOGO					
C-YX-15							
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check relevant documents are at the latest revision.						
2	Check the primary escape routes is in accordance with the drawing requirement in each module.						
3	Check the secondary escape routes is in accordance with the drawing requirement in each module.						
4	Check the direction indication of the escape routes is in accordance with the drawing requirement in each module.						
5	Check the safety lights are in accordance with the drawing requirement.						
6	Check the safety labels/signs are in accordance with the drawing requirement.						
7	Produce marked-up drawings which is in accordance with the installation.						
8	Check if non slip surface finish match to specifications.						
9	Produce a defects list for issue in the punch list.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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Appendix 12 Subsea typical Conformity Check List Forms

Type of equipment	Check List reference
Equipment skid	C-SX-01
Subsea Xmas tree	C-SX-03
Subsea production manifold	C-SX-04
Subsea control module	C-SX-05
Miscellaneous subsea equipment	C-SX-06
Jumper assembly	C-SX-07
Umbilical	C-SX-08
Subsea structure	C-SX-10
Subsea Xmas tree valve actuator	C-SX-11
Sensor assembly	C-SX-14
Subsea control system	C-SX-15
ROV Panel	C-SX-17
Subsea flow meter	C-SX-18
Electrical flying lead	C-SX-19
Hydraulic flying lead	C-SX-20
Power and Communication Unit	C-SX-21
Emergency Disconnect Package	C-SX-22
Lower Riser Package	C-SX-23
Hydraulic Power Unit	C-SX-24
Subsea Umbilical Termination	C-SX-26
Tubing Hanger	C-SX-27
Topside Umbilical Termination	C-SX-28
Pre-deployment checks	C-SX-29

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 TOTAL	<b style="background-color: yellow;">Subsea Check List XMAS tree  Task number <b style="background-color: yellow;">C-SX-03	EPC or EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check all item numbering and VPI markings are correct, legible and accessible : S/N, P/N, XT type markings and weight.	
2	Check that all documentations are completed and signed off: FAT, EFAT procedures and reports.	
3	Check that all FAT/EFAT punch items are closed.	
4	Check that Pressure testing of all installed pipework is completed and documented.	
5	Check that control lines flushing is complete and documented.	
6	Check Lifting Certificates for lift cap, shackles and pad eyes complies with project requirements.	
7	Check that all weight reports/certificates are complete and available.	
8	Check that Shipping requirements are completed.	
9	Check cathodic protection - electrical continuity.	
10	Check CHC interfaces and Hub.	
11	Check that all valves are function tested and free from damage.	
12	Check that SCM is installed correctly, mechanically completed and documented.	
13	Check XT mechanical assembly is assembled according to latest assembly drawing.	
14	Check XT thermal insulation is complete and compliant with drawing.	
15	Check XT control assembly is assembled according to latest assembly drawing.	
16	Check ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct.	
17	Check hydraulic piping and cable support.	
18	Check that protective covers are closed, locked and tied.	
19	Check cathodic protection is complete.	
20	Check that paintwork is completed and free from damage.	
21	Check CE marking.	
22	Check that Preservation is complete.	
NA	Not Applicable	X
X	Checked & not accepted	O
O	Checked & accepted	
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 TOTAL	<b style="color: red;">Subsea Check List Production manifold  Task number <b style="color: black;">C-SX-04	EPC of EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check all item numbering and VPI markings are correct, legible and accessible : S/N, P/N, special markings and weight.	
2	Check that all documentations are completed and signed off: FAT, EFAT procedures and reports.	
3	Check that all FAT/EFAT punch items are closed.	
4	Check that Pressure testing of all installed pipework is completed and documented.	
5	Check that control lines flushing is complete and documented.	
6	Check Lifting Certificates for lift cap, shackles and pad eyes complies with project requirements.	
7	Check that all weight reports/certificates are complete and available.	
8	Check that Shipping requirements are completed.	
9	Check cathodic protection - electrical continuity.	
10	Check Manifold mechanical assembly is compliant with the latest assembly drawing.	
11	Check Thermal insulation is complete and compliant with drawing.	
12	Check that all valves are function tested and free from damage.	
13	Check that SCM is installed correctly, mechanically completed and documented.	
14	Check ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct.	
15	Check hydraulic piping and cable support.	
16	Check that protective covers are closed, locked and tied.	
17	Check cathodic protection is complete.	
18	Check that paintwork is completed and free from damage.	
19	Check CE marking.	
20	Check that Preservation is complete.	
NA Not Applicable X Checked & not accepted O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 Subsea Check List		Control module		EPC or EPCC CONTRACTOR LOGO	
					
		Task number C-SX-05			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
Serial N°: _____ *		* check / update mandatory			
Part N°: _____					
Permanent Subsystem N°: _____ **		** to be updated after installation offshore			
Permanent Equip. tag N°: _____ **					
1	Check all item numbering and VPI markings are correct, legible and accessible : S/N, P/N, special markings and weight.				
2	Check that all documentations are completed and signed off: FAT procedure and report.				
3	Check that all FAT punch items are closed.				
4	Check that Pressure testing of all installed pipework is completed and documented.				
5	Check that Pressure tests are completed and documented.				
6	Check that SCM is assembled according to assembly procedure.				
7	Check that flushing and fluid cleanliness checks are complete and documented				
8	Check that calibration is complete and documented.				
9	Check that Software data sheets are completed.				
10	Check Lifting Certificates for lift cap, shackles and pad eyes complies with project requirements.				
11	Check that all weight reports/certificates are complete and available.				
12	Check that Shipping requirements are completed.				
13	Check Connector interfaces for cleanliness and correct connections.				
14	Check volume compensation system.				
15	Check Locking devices.				
16	Check ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct.				
17	Check that protective covers are closed, locked and tied.				
18	Check that paintwork is completed and free from damage.				
19	Check CE marking.				
20	Check that Preservation is complete.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	<b style="color: red;">Subsea Check List Miscellaneous equipment  Task number <b style="color: black;">C-SX-06	EPC or EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check all item numbering and VPI markings are correct, legible and accessible : S/N, P/N, special markings and weight.	
2	Check that all documentations are completed and signed off: Testing procedures and reports.	
3	Check that all punch items are closed.	
4	Check that Pressure tests are completed and documented.	
5	Check that Electrical tests are completed and documented.	
6	Check that flushing and fluid cleanliness checks are completed and documented.	
7	Check that NDE is carried out and documented.	
8	Check Lifting Certificates for lift cap, shackles and pad eyes complies with project requirements.	
9	Check that all weight reports/certificates are complete and available.	
10	Check that Shipping requirements are completed.	
11	Check assembly according to specifications.	
12	Check that paintwork is completed and free from damage.	
13	Check CE marking.	
14	Check that Preservation is complete.	
☐ NA	Not Applicable	☒ X
☐ X	Checked & not accepted	☐ O
☐ O	Checked & accepted	
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 TOTAL	<b style="color: red;">Subsea Check List Jumper assembly  Task number <b style="color: black;">C-SX-07	EPC or EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check that item numbers and marking/tagging is according to data sheet. Name plate and/or tag No plate fitted.	
2	Check that all documentations are completed and signed off: FAT procedure and reports.	
3	Check that all punch items are closed.	
4	Check that pressure test is completed and documented.	
5	Check that electrical tests are completed and documented.	
6	Check that external water pressure testing is completed and documented.	
7	Check that flushing and fluid cleanliness checks are completed and documented.	
8	Check jumper length is compliant with specifications.	
9	Check non return Valves in correct direction of flow for installation and removal.	
10	Check Thermal insulation is complete and compliant with drawing.	
11	Check mechanical integrity of jumper.	
12	Check assembly against drawings and specifications.	
13	Check that all weight reports are complete and available.	
14	Check that Shipping requirements are completed.	
15	Check Connector interfaces.	
16	Check cathodic protection is complete.	
17	Check that paintwork is completed and free from damage.	
18	Check CE marking.	
19	Check that Preservation is complete.	
NA Not Applicable X Checked & not accepted O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 Subsea Check List		EPC or EPCC CONTRACTOR LOGO
Umbilical  Task number C-SX-08		
TAG Number :	Subsystem :	
Description :	Dwg / PID :	
Task Location :	User Group :	
Estimated Time (MH) :	Expended Time (MH) :	
Module :		
Serial N°: _____ *	* check / update mandatory	
Part N°: _____		
Permanent Subsystem N°: _____ **	** to be updated after installation offshore	
Permanent Equip. tag N°: _____ **		
1	Check that item numbers and marking/tagging is according to data sheet. Name plate and/or tag No plate fitted.	
2	Check that all documentations are completed and signed off: FAT procedure and reports.	
3	Check that all punch items are closed.	
4	Check that pressure test is completed and documented.	
5	Check that electrical tests are completed and documented.	
6	Check that flushing and fluid cleanliness checks are completed and documented.	
7	Check assembly against drawings and specifications.	
8	Check that outer sheathing and protection are correct.	
9	Check termination heads.	
10	Check NDE of tubing and pipe welds in terminations	
11	Check that Shipping requirements are completed.	
12	Check that as built length complies with specifications.	
13	Check that Weight certificate is available.	
14	Check that paintwork is completed and free from damage.	
15	Check CE marking.	
16	Check that Preservation is complete.	
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 Subsea Check List		Structure		EPC or EPCC CONTRACTOR LOGO	
		Task number C-SX-10			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
Serial N°: _____ *		* check / update mandatory			
Part N°: _____					
Permanent Subsystem N°: _____ **		** to be updated after installation offshore			
Permanent Equip. tag N°: _____ **					
1	Check that Main structural members is according to relevant drawings.Name plate and/or tag N° plate fitted.				
2	Check that all documentations are completed and signed off: FAT procedure and reports.				
3	Check that all punch items are closed.				
4	Check that NDE is carried out and documented.				
5	Check that Dimensional control reports are completed and accepted.				
6	Check Lifting Certificates for lift cap, shackles and pad eyes complies with project requirements.				
7	Check that material certificates complies with project requirements.				
8	Check that Shipping requirements are completed.				
9	Check cathodic protection is complete.				
10	Check assembly according to specifications.				
11	Check that all weight reports/certificates are complete and available.				
12	Check Skirts / mud mats.				
13	Check Pipe supports.				
14	Check Locking devices.				
15	Check ROV interfaces are correct.				
16	Check that protective covers are closed, locked and tied.				
17	Check that paintwork is completed and free from damage.				
18	Check CE marking.				
19	Check that Preservation is complete.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 Subsea Check List XMAS tree valve actuator  Task number C-SX-11		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that Item numbers and marking are according to data sheet.Name plate and/or tag N° plate fitted.					
2	Check that all documentations are completed and signed off: FAT procedure and reports.					
3	Check that all punch items are closed.					
4	Check that Shipping requirements are completed.					
5	Check that AI sand blasting operations are carried out prior to assembly.					
6	Check Mechanical cleaning and washing of parts is done as per specifications.					
7	Visual inspection of parts prior to assembly.					
8	Check Internal with boroscope.					
9	Internal visual check.					
10	Check Stroking of actuator during hot oil flushing.					
11	Check that flushing and fluid cleanliness checks are completed and documented.					
12	Check that the assembly is correct and complete. Functions verified.					
13	Check that all functions are verified.					
14	Check that paintwork is completed and free from damage.					
15	Check CE marking.					
16	Check that Preservation is complete.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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		Subsea Check List					Sensor assembly		EPC or EPCC CONTRACTOR LOGO	
							Task number			
		C-SX-14								
Task Location :										
User Group :										
Estimated Time (MH) :		Expended Time (MH) :								
Module :										
Subsystem :										
IT	CHECK LIST									
1	Check that Item numbers and marking are according to data sheet.Name plate and/or tag N° plate fitted.									
2	Check that all documentations are completed and signed off: FAT procedure and reports.									
3	Check that all punch items are closed.									
4	Check that the connector orientation is correct.									
5	Check that the fluid filling is completed and cleanliness verified.									
6	Check that the cable length is correct.									
7	Check connector interfaces.									
8	Weight certificate available.									
9	Check that Shipping requirements are completed.									
10	Check that protective covers are fitted.									
11	Check that paintwork is completed and free from damage.									
12	Check CE marking.									
13	Check that Preservation is complete.									
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted										
Remarks :										
TO BE CUSTOMIZED										
Signature										
Name										
Date										

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 Subsea Check List		Control system		EPC or EPCC CONTRACTOR LOGO	
					
		Task number			
		C-SX-15			
TAG Number :		Subsystem :			
Description :		Dwg / PID :			
Task Location :		User Group :			
Estimated Time (MH) :		Expended Time (MH) :			
Module :					
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.				
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.				
3	Check that all punch items are closed.				
4	Check assembly is assembled according to procedure.				
5	Check that Gland plates are secured.				
6	Check that components and cabling are secured.				
7	Check all cable are appropriately tagged.				
8	Supplied correctly according to GA drawing.				
9	Check that envelope interface dimensions are correct.				
10	Check that all weight reports/certificates are complete and available.				
11	Check that Shipping requirements are completed.				
12	Check that paintwork is completed and free from damage.				
13	Check CE marking.				
14	Check that Preservation is complete.				
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted	
Remarks :					
TO BE CUSTOMIZED					
Signature					
Name					
Date					

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 TOTAL	Subsea Check List		EPC or EPCC CONTRACTOR LOGO
	Electrical Flying lead (EFL)		
 Task number C-SX-19			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
Serial N°: _____ *		* check / update mandatory	
Part N°: _____			
Permanent Subsystem N°: _____ **		** to be updated after installation offshore	
Permanent Equip. tag N°: _____ **			
1	Check that all documentations are completed and signed off: FAT procedure and reports.		
2	Check that all punch items are closed.		
3	Check assembly is assembled according to procedure.		
4	Check connector Interfaces for external cleanliness.		
5	Check EFL Length, Envelope, Interfaces dimensions.		
6	Check flying lead is free from damage.		
7	Check that electrical test is performed according to relevant procedure.		
8	Check that the protective covers for couplers are fitted		
9	Check that Shipping requirements are completed.		
10	Check that paintwork is completed and free from damage.		
11	Check CE marking.		
12	Check that Preservation is complete.		
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 TOTAL	<b style="color: red;">Subsea Check List Hydraulic flying lead (HFL)  Task number <b style="color: red;">C-SX-20	EPC or EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check that all documentations are completed and signed off: FAT procedure and reports.	
2	Check that all punch items are closed.	
3	Check assembly is assembled according to procedure.	
4	Check connector Interfaces for external cleanliness.	
5	Check HFL Length, Envelope, Interfaces dimensions.	
6	Check flying lead is free from damage.	
7	Check that electrical test is performed according to relevant procedure.	
8	Pressure testing completed.	
9	Flushing completed and cleanliness certificate available.	
10	Check that the protective covers for couplers are fitted	
11	Check that Shipping requirements are completed.	
12	Check that paintwork is completed and free from damage.	
13	Check CE marking.	
14	Check that Preservation is complete.	
NA Not Applicable X Checked & not accepted O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 TOTAL	<b style="color: red;">Subsea Check List Power and Communication Unit  Task number <b style="color: black;">C-SX-21	EPC of EPCC CONTRACTOR LOGO
Task number C-SX-21		
TAG Number :		Subsystem :
Description :		Dwg / PID :
Task Location :		User Group :
Estimated Time (MH) :		Expend Time (MH) :
Module :		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.	
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.	
3	Check that all punch items are closed.	
4	Check assembly is assembled according to procedure.	
5	Check that Gland plates are secured.	
6	Check that components and cabling are secured.	
7	Check all cable are appropriately tagged.	
8	Supplied correctly according to GA drawing.	
9	Check instrument/power earthing are complete.	
10	Check all cable are appropriately tagged.	
11	Check cabinet interconnecting cables are available.	
12	Check removable units (including SOM, modems...etc) are separately and packed.	
13	Check that envelope interface dimensions are correct.	
14	Check that all weight reports/certificates are complete and available.	
15	Check that Shipping requirements are completed.	
16	Check that paintwork is completed and free from damage.	
17	Check CE marking.	
18	Check that Preservation is complete.	
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted		
Remarks :		
<b style="color: red; font-size: 2em;">TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 TOTAL	<b style="color: red;">Subsea Check List Emergency Disconnect Package (EDP)  Task number <b style="color: red;">C-SX-22	EPC or EPCC CONTRACTOR LOGO																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">TAG Number :</td> <td style="width: 50%;">Subsystem :</td> </tr> <tr> <td>Description :</td> <td>Dwg / PID :</td> </tr> <tr> <td>Task Location :</td> <td>User Group :</td> </tr> <tr> <td>Estimated Time (MH) :</td> <td>Expend Time (MH) :</td> </tr> </table>			TAG Number :	Subsystem :	Description :	Dwg / PID :	Task Location :	User Group :	Estimated Time (MH) :	Expend Time (MH) :																												
TAG Number :	Subsystem :																																					
Description :	Dwg / PID :																																					
Task Location :	User Group :																																					
Estimated Time (MH) :	Expend Time (MH) :																																					
Module :																																						
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore																																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>1</td><td>Check ID markings : S/N, P/N, equipment tag number and weight marked properly.</td><td></td></tr> <tr><td>2</td><td>Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.</td><td></td></tr> <tr><td>3</td><td>Check that all punch items are closed.</td><td></td></tr> <tr><td>4</td><td>Check EDP mechanical assembly - assembled according to latest assembly drawing.</td><td></td></tr> <tr><td>5</td><td>Check EDP from any mechanical damage.</td><td></td></tr> <tr><td>6</td><td>Check EDP control assembly - assembled according to latest assembly drawing.</td><td></td></tr> <tr><td>7</td><td>Check that EDP control lines have been flushed according to specification</td><td></td></tr> <tr><td>8</td><td>Check ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct.</td><td></td></tr> <tr><td>9</td><td>Check that Shipping requirements are completed.</td><td></td></tr> <tr><td>10</td><td>Check that paintwork is completed and free from damage.</td><td></td></tr> <tr><td>11</td><td>Check CE marking.</td><td></td></tr> <tr><td>12</td><td>Check that Preservation is complete.</td><td></td></tr> </table>			1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.		2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.		3	Check that all punch items are closed.		4	Check EDP mechanical assembly - assembled according to latest assembly drawing.		5	Check EDP from any mechanical damage.		6	Check EDP control assembly - assembled according to latest assembly drawing.		7	Check that EDP control lines have been flushed according to specification		8	Check ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct.		9	Check that Shipping requirements are completed.		10	Check that paintwork is completed and free from damage.		11	Check CE marking.		12	Check that Preservation is complete.	
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.																																					
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.																																					
3	Check that all punch items are closed.																																					
4	Check EDP mechanical assembly - assembled according to latest assembly drawing.																																					
5	Check EDP from any mechanical damage.																																					
6	Check EDP control assembly - assembled according to latest assembly drawing.																																					
7	Check that EDP control lines have been flushed according to specification																																					
8	Check ROV interfaces, including Hotstab receptacles and dummy Hotstabs are correct.																																					
9	Check that Shipping requirements are completed.																																					
10	Check that paintwork is completed and free from damage.																																					
11	Check CE marking.																																					
12	Check that Preservation is complete.																																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">☐ NA Not Applicable</td> <td style="width: 33%;">☒ X Checked & not accepted</td> <td style="width: 33%;">☐ O Checked & accepted</td> </tr> </table>			☐ NA Not Applicable	☒ X Checked & not accepted	☐ O Checked & accepted																																	
☐ NA Not Applicable	☒ X Checked & not accepted	☐ O Checked & accepted																																				
Remarks :																																						
TO BE CUSTOMIZED																																						
Signature																																						
Name																																						
Date																																						

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	Subsea Check List		EPC or EPCC CONTRACTOR LOGO
	Lower riser package (LRP)		
			
Task number C-SX-23			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore	
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.		
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.		
3	Check that all punch items are closed.		
4	Check LRP mechanical assembly - assembled according to latest assembly drawing.		
5	Check that LRP is free from any mechanical damage.		
6	Check LRP control assembly - assembled according to latest assembly drawing.		
7	Check that LRP control lines have been flushed according to specification		
8	Check that Shipping requirements are completed.		
9	Check that paintwork is completed and free from damage.		
10	Check CE marking.		
11	Check that Preservation is complete.		
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 TOTAL	<b style="color: red;">Subsea Check List Hydraulic Power Unit (HPU)  Task number <b style="color: black;">C-SX-24	EPC or EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.	
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.	
3	Check that all punch items are closed.	
4	Check that HPU control lines have been flushed and filled according to specification	
5	Check that HPU hydraulic fluids are as per specifications	
6	Check that instrument calibration certificates are valid.	
7	Check that HPU parts are assembled correctly according to the latest assembly drawings.	
8	Check all cable & tubings are appropriately tagged.	
9	Check HPU PLC components and cabling are secured.	
10	Check removable units are appropriately installed.	
11	Check instrument/power earthing are complete.	
12	Check HPU pressure tests are completed.	
13	Check HPU electrical tests are completed.	
14	Check drain are emptied, confirm protective covers and plugs supplied are fitted.	
15	Check Supply and Return reservoir status are according to procedure.	
16	Check Accumulator pressure are according to procedure.	
17	Check that Shipping requirements are completed.	
18	Check that paintwork is completed and free from damage.	
19	Check CE marking.	
20	Check that Preservation is complete.	
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 TOTAL	<b style="color: red;">Subsea Check List Tubing Hanger (TH)  Task number <b style="color: red;">C-SX-27	EPC or EPCC CONTRACTOR LOGO
TAG Number : _____ Subsystem : _____ Description : _____ Dwg / PID : _____ Task Location : _____ User Group : _____ Estimated Time (MH) : _____ Expended Time (MH) : _____ Module : _____		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.	
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.	
3	Check that all punch items are closed.	
4	Check mechanical assembly - assembled according to latest assembly drawing.	
5	Check that Annulus Bore & DH Diamould Connector is free from damage.	
6	Check that all Test Medium is drained from TH.	
7	Check that Shipping requirements are completed.	
8	Check that paintwork is completed and free from damage.	
9	Check CE marking.	
10	Check that Preservation is complete.	
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 TOTAL	Subsea Check List Topside Umbilical Termination	EPC or EPCC CONTRACTOR LOGO
 Task number C-SX-28		
TAG Number :		Subsystem :
Description :		Dwg / PID :
Task Location :		User Group :
Estimated Time (MH) :		Expend Time (MH) :
Module :		
Serial N°: _____ * Part N°: _____ Permanent Subsystem N°: _____ ** Permanent Equip. tag N°: _____ **		* check / update mandatory ** to be updated after installation offshore
1	Check ID markings : S/N, P/N, equipment tag number and weight marked properly.	
2	Check that all documentations are completed and signed off: FAT/EFAT procedures and reports.	
3	Check that all punch items are closed.	
4	Check mechanical assembly - assembled according to latest assembly drawing.	
5	Assembly verified to drawing(s).	
6	Check that flushing is complete and tests fluids are as per specifications	
7	Check that protective covers and plugs are supplied/ fitted.	
8	Check that Shipping requirements are completed.	
9	Check that paintwork is completed and free from damage.	
10	Check CE marking.	
11	Check that Preservation is complete.	
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted		
Remarks :		
TO BE CUSTOMIZED		
Signature		
Name		
Date		

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 Subsea Check List Pre-deployment Checks		EPC or EPCC CONTRACTOR LOGO	
 Task number C-SX-29			
TAG Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
Serial N°: _____* Part N°: _____ Permanent Subsystem N°: _____** Permanent Equip. tag N°: _____**		* check / update mandatory ** to be updated after installation offshore	
1	Check that item numbers and marking/tagging is according to data sheet		
2	Check that all documentations are completed and signed off		
3	Check that assembly is free from mechanical damage.		
4	Check that Thermal insulation is complete.		
5	Check valve status and confirmed correct position (as specified in installation procedure)		
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted			
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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Appendix 13 Subsea typical Static Test Sheets

Type of equipment	Test Sheet reference
Bolt tensioning and torquing index	T-SX-02
Pressure test	T-SX-03
Flooding/Cleaning/Gauging	T-SX-05
Umbilical Integrity test	T-SX-07
Flexible Riser Vacuum test	T-SX-08
Global leak test	T-SX-09
Piping operation (gauging)	T-SX-16

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 TOTAL	Subsea Test Sheet		EPC OF EPCC CONTRACTOR LOGO
	Bolt tensioning & torquing index		
 Task number T-SX-02			
Description :		Subsystem :	
Task Location :		Dwg / PID :	
Estimated Time (MH) :		User Group :	
Module :		Expend Time (MH) :	
Tests/Results to be checked in the QC/installation documentation			
1	Check Initial tension.		
2	Check Final tension.		
3	Check Final torque.		
4	Check that flanges are identified and marked. Greased bolt protection caps fitted after tensioning.		
5	Check that Insulation is re-installed.		
6	Check that Heat tracing is re-installed.		
7	Check that Surface protection is correct.		
8	Check that Marked up test isometric is attached with sub-system number, joint number and bolt tensioning values		
	LIST / FLANGE	RESULTS / COMMENTS	
☐ NA Not Applicable		☒ X Checked & not accepted	
		☐ O Checked & accepted	
Remarks : Ensure installation documents are available			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 TOTAL	Subsea test Sheet		EPC of EPCC CONTRACTOR LOGO
	Pressure test		
	 Task number T-SX-03		
TP Number :		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
TEST PREPARATION			
REFERENCE PROCEDURE:			
ASSOCIATED ITEMS :			
INTERNAL DIAMETER:		LENGTH:	
WATER QUALITY:		INHIBITOR: NO ☐ YES ☐	
		FILTRATION: NO ☐ YES ☐	
REQUESTED PRESSURE TEST DATE:		WITNESSING: NO ☐ YES ☐	
PERMISSION TO TEST	NAME	DATE	
DATA			
DESIGN PRESSURE:	MIN TEST PRESSURE:	MAX TEST PRESSURE:	
ACCEPTANCE CRITERIA:	MIN HOLD PERIOD:	TEST MEDIUM:	
CALIBRATION CERTIFICATE:	BLIND LIST:		
TEST RESULTS			
TEST DATE:	START TIME:	END TIME:	
HOLD PERIOD DURATION:	WITNESSING BY:		
TEST PRESS-START:	TEST PRESS- FINISH:	TEST MEDIUM TEMP:	
MIN PRESSURE RECORDED DURING TEST HOLD PERIOD:			
MAX PRESSURE RECORDED DURING TEST HOLD PERIOD:			
PRESSURE VARIATION DURING HOLD PERIOD COMPARED TO TEST PRESSURE:			
PRESSURE TEST COMPLETED SUCESSFULLY AND APPROVED:			NO ☐ YES ☐
LINE HAS BEEN DEPRESSURISED TO:		AT MAX:	bar/min
Remarks :			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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 TOTAL	Subsea Test Sheet Flooding/Cleaning/Gauging		EPC of EPCC CONTRACTOR LOGO	
	 Task number T-SX-05			
Test Pack:		Subsystem :		
Description :		Dwg / PID :		
Task Location :		User Group :		
Estimated Time (MH) :		Expended Time (MH) :		
Module :				
TEST PREPARATION				
REFERENCE PROCEDURE:				
ASSOCIATED ITEMS :				
FLOODING MEDIUM:				
DATA				
DURATION OF SUBSEA FREE FLOODING:				
DURATION OF SUBSEA FORCED FLOODING:				
TEST RESULTS				
1	Check that test pack has been flooding as per approved procedure.			
2	Check that Pig train is defined and inspected.			
3	Check that pigging operations are completed according to pigging procedures. Check that all pigs are returned.			
4	Check that the gauging pigs have been examined, measured and documented.			
5	Check that pipeline is preserved as required and according to pigging procedure.			
6	Check that Flooding / Gauging Acceptance certificates are filled, signed and approved by parties (Acceptance certificates attached)			
	NA	Not Applicable	X	Checked & not accepted
			O	Checked & accepted
Remarks :				
TO BE CUSTOMIZED				
Signature				
Name				
Date				

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	Subsea Test Sheet		EPC of EPCC CONTRACTOR LOGO
	Umbilical Integrity test		
			
Task number T-SX-07			
TAG Number:		Subsystem :	
Description :		Dwg / PID :	
Task Location :		User Group :	
Estimated Time (MH) :		Expended Time (MH) :	
Module :			
TEST PREPARATION			
REFERENCE PROCEDURE:			
REQUESTED PRESSURE TEST DATE:		WITNESSING: NO ☐ YES ☐	
PERMISSION TO TEST NAME		DATE:	
TEST RESULTS*			
1	Check that Pressure monitoring has been performed successfully as per approved procedure		
2	Check that Pressure monitoring records are approved and signed by all parties (Pressure monitoring Report Attached)		
3	Check that CR monitoring are performed successfully as per approved procedure		
4	Check that CR monitoring records are approved and signed by all parties (CR monitoring Report Attached)		
5	Check that IR test are performed successfully as per approved procedure, prior overboarding		
6	Check that IR test results are approved and signed by all parties (IR Test Report Attached)		
7	Check that TDR test are performed successfully as per approved procedure, if required		
8	Check that TDR test results are approved and signed by all parties (TDR Test Report Attached)		
9	Check that OTDR test are performed successfully as per approved procedure, prior overboarding		
10	Check that OTDR test results are approved and signed by all parties (OTR Test Report Attached)		
	☒ NA Not Applicable	☒ X Checked & not accepted	☐ o Checked & accepted
* to be checked in the QC/installation documentation Remarks : Ensure installation documents are available			
TO BE CUSTOMIZED			
Signature			
Name			
Date			

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		Subsea test Sheet		Flexible Riser Vacuum Test		EPC or EPCC CONTRACTOR LOGO	
				Task number			
				T-SX-08			
TP Number :				Subsystem :			
Description :				Dwg / PID :			
Task Location :				User Group :			
Estimated Time (MH) :				Expended Time (MH) :			
Module :							
TEST PREPARATION							
REFERENCE PROCEDURE:							
ASSOCIATED ITEMS :							
REQUESTED PRESSURE TEST DATE:				WITNESSING:		NO ☐ YES ☐	
PERMISSION TO TEST		NAME		DATE:			
DATA							
MIN VACUUM PRESSURE:				MAX VACUUM PRESSURE:			
ACCEPTANCE CRITERIA:				MIN HOLD PERIOD:		TEST MEDIUM:	
CALIBRATION CERTIFICATE:				BLIND LIST:			
TEST RESULTS							
TEST DATE:				START TIME:		END TIME:	
HOLD PERIOD DURATION:				WITNESSING BY:			
TEST PRESS-START:				TEST PRESS- FINISH:		TEST MEDIUM TEMP:	
MIN PRESSURE RECORDED DURING HOLD PERIOD:							
MAX PRESSURE RECORDED DURING HOLD PERIOD:							
PRESSURE VARIATION DURING HOLD PERIOD COMPARED TO TEST PRESSURE:							
PRESSURE TEST COMPLETED SUCESSFULLY AND APPROVED:				NO ☐ YES ☐			
LINE HAS BEEN RE-PRESSURISED TO:				WITH:			
Remarks :							
Signature							
Name							
Date							

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 TOTAL	<b style="color: red;">Subsea test Sheet Global Leak Test  Task number <b style="background-color: yellow;">T-SX-09	EPC OF EPCC CONTRACTOR LOGO										
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">TP Number :</td> <td style="width: 50%;">Subsystem :</td> </tr> <tr> <td>Description :</td> <td>Dwg / PID :</td> </tr> <tr> <td>Task Location :</td> <td>User Group :</td> </tr> <tr> <td>Estimated Time (MH) :</td> <td>Expended Time (MH) :</td> </tr> <tr> <td colspan="2">Module :</td> </tr> </table>			TP Number :	Subsystem :	Description :	Dwg / PID :	Task Location :	User Group :	Estimated Time (MH) :	Expended Time (MH) :	Module :	
TP Number :	Subsystem :											
Description :	Dwg / PID :											
Task Location :	User Group :											
Estimated Time (MH) :	Expended Time (MH) :											
Module :												
TEST PREPARATION												
REFERENCE PROCEDURE:												
ASSOCIATED ITEMS :												
WATER QUALITY:	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">INHIBITOR:</td> <td style="width: 20%;">NO ☐</td> <td style="width: 20%;">YES ☐</td> </tr> <tr> <td>FILTRATION:</td> <td>NO ☐</td> <td>YES ☐</td> </tr> </table>		INHIBITOR:	NO ☐	YES ☐	FILTRATION:	NO ☐	YES ☐				
INHIBITOR:	NO ☐	YES ☐										
FILTRATION:	NO ☐	YES ☐										
REQUESTED PRESSURE TEST DATE:		WITNESSING: NO ☐ YES ☐										
PERMISSION TO TEST	NAME	DATE										
DATA												
DESIGN PRESSURE:		MIN TEST PRESSURE: MAX TEST PRESSURE:										
ACCEPTANCE CRITERIA:		MIN HOLD PERIOD: TEST MEDIUM:										
CALIBRATION CERTIFICATE:		BLIND LIST:										
TEST RESULTS												
TEST DATE:		START TIME: END TIME:										
HOLD PERIOD DURATION:		WITNESSING BY:										
TEST PRESS-START:		TEST PRESS- FINISH:										
MIN PRESSURE RECORDED DURING HOLD PERIOD:												
MAX PRESSURE RECORDED DURING HOLD PERIOD:												
PRESSURE VARIATION DURING HOLD PERIOD COMPARED TO TEST PRESSURE:												
TEST TEMP-START:		TEST TEMP- FINISH:										
MIN TEMPERATURE RECORDED DURING HOLD PERIOD:												
MAX TEMPERATURE RECORDED DURING HOLD PERIOD:												
TEMPERATURE VARIATION DURING HOLD PERIOD COMPARED TO TEST TEMPERATURE:												
PRESSURE TEST COMPLETED SUCESSFULLY AND APPROVED:	NO ☐ YES ☐											
LINE HAS BEEN DEPRESSURISED TO:		AT MAX: bar/min										
Remarks : TO BE CUSTOMIZED												
Signature												
Name												
Date												

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Appendix 14 Telecom typical Conformity Check List Forms

Type of equipment	Check List reference
PA / GA Loudspeaker + JB	C-IX-01
PA /GA Flashing beacon + JB	C-IX-02
PA access unit / control unit	C-IX-03
PA / GA Central system & Marshalling cabinet	C-IX-05
Telephone Hood Eex w /Telephone beacon & Sounder	C-IX-07
System cabinet	C-IX-12
Indoor radio equipment cabinet	C-IX-13
Meteorological sensor & Cable	C-IX-14
Monitor	C-IX-18
CCTV Control unit	C-IX-19
Radio base station / central unit	C-IX-20
Motorized antenna, feeder & lightning arrestor	C-IX-22
Entertainment distribution network	C-IX-26
Survival craft radio and Beacon	C-IX-27
Antenna, feeder & lightning arrestor	C-IX-34
Radio remote control unit	C-IX-36
Radio handheld, pager & battery charger	C-IX-39
Fibre optic / patch panel	C-IX-42
CCTV camera and housing	C-IX-45
Cabling RJ45	C-IX-46
Connection box-PA/GA tank coverage	C-IX-48
Mobile set-PA/GA tank coverage	C-IX-49
GMDSS circuit breaker	C-IX-50
PC workstation	C-IX-51
Server	C-IX-52
Data network equipment	C-IX-53
PC screen / Keyboard switch	C-IX-54
Outdoor radio cabinet	C-IX-55

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Type of equipment	Check List reference
Radio-Indoor distribution	C-IX-56
Radio-outdoor network	C-IX-57
Antenna Tuning Unit	C-IX-58
Remote station / Portable unit	C-IX-59
GMDSS Console	C-IX-60
Entertainment DVD player	C-IX-61
Oceano sensors	C-IX-62
Gyrocompass: Central / Interface & power supply	C-IX-63
MDF / IDF Cabinet	C-IX-64
Clock Unit	C-IX-65
Non Directional Beacon	C-IX-66
Radar	C-IX-67
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 Telecommunications Check List PA/GA loudspeaker (25 ,8 ,6 W) + JB  Task number C-IX-01		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) : Expended Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check preservation status.						
2	Check that equipment is correctly tagged and located as indicated on layout drawings. Check nameplate details against data sheet.						
3	Check cables tag numbers, including cable tail.						
4	Record type and loop number.						
5	Check that the equipment is in good condition, and that all gaskets, & bolts are present.						
6	Check all cable entries are suitably plugged using certified blanking plugs or cable glands as applicable.						
7	Check earthing & bonding of equipment to project Specs. (Equipment, armour and shield, and cable glands)						
8	Check equipment is certified for the area in which it is located. (ingress protection rating, and equipment classification).						
9	Check accessibility for maintenance (LS & JB).						
10	Check direction of cone (25W and 8 W only).						
11	Check audio power tapping against coverage Study.						
12	Check JB cabling as per interconnection and termination drawings.						
13	Check that all cores are properly terminated and tagged.						
14	Produce a list of detects for punch list issue.						
☐ NA Not Applicable ☒ Checked & not accepted ☐ Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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 Telecommunications Check List PA/GA flashing beacon + JB  Task number C-IX-02		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check preservation status.					
2	Check that equipment is correctly tagged and located as indicated on layout drawings. Check nameplate details against data sheet.					
3	Check cabletag numbers, including cable tail.					
4	Record line number:					
5	Check that the equipment is in good condition, and that all gaskets, & bolts are present.					
6	Check all cable entries are suitably plugged using certified blanking plugs or cable glands as applicable.					
7	Check earthing & bonding of equipment to project Specs. (Equipment, Armour and shield, and cable glands)					
8	Check equipment is certified for the area in which it is located. (ingress protection rating, and equipment classification).					
9	Check accessibility for maintenance (FL & JB).					
10	Check color of the lens.					
11	Check that the beacon view is not obstructed					
12	Check JB cabling as per interconnection and termination drawings.					
13	Check that all cores are properly terminated and tagged.					
14	Produce a list of detects for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Telecommunications Check List P.A. access unit / control unit  Task number C-IX-03		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) : Expended Time (MH) :						
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check preservation status.					
2	Check that the equipment is correctly tagged and located as indicated on layout drawings.					
3	Check that the equipment is in good condition, and that all gaskets, & bolts are present.					
4	Check all cable entries are suitably plugged using certified blanking plugs or cable glands as applicable.					
5	Check earthing & bonding of equipment to project Specs. (Equipment, armour and shield, and cable glands)					
6	Check equipment is certified for the area in which it is located. (ingress protection rating, and equipment classification).					
7	Check type of access unit and note it (AU, CP).					
8	Check accessibility for maintenance.					
9	Check all conductors are terminated & that cables are secured and tagged.					
10	Check cabling as per interconnection and termination drawings.					
11	Verify the accessories : microphone, push-buttons, flaps.					
12	Check type of cable used (IS) as applicable.					
13	Produce a list of detects for punch list issue.					
14	Check PSU breaker identification.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Telecommunications Check List		PA/GA central system and marshalling cabinet						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-05							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check preservation status.								
2	Check that Cabinet is correctly tagged and located as indicated on layout drawings.								
3	Check that equipment is in good condition, and that all bolts are present.								
4	Check earthing of cabinet to project Specs.								
5	Check earthing & bonding of equipment to project Specs.								
6	Check equipment is correctly mounted and tagged in the cabinet as per arrangement drawings.								
7	Check amplifier cards are correctly secured to amplifier rack.								
8	Verify ventilation, air flow.								
9	Check all cables are properly connected, labelled & secured.								
10	Check accessibility for maintenance.								
11	Check cabling as per interconnection and termination drawings.								
12	Check that cabinet is correctly bolted to the floor, or support.								
13	Check that all AC terminals are correctly covered- Check all PSU breaker identification.								
14	Check Precom. Check Lists for all cables connected to equipment.								
15	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Telephone hood Eex w telephone beacon & sounder						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-07							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that Hood/beacon/sounder are installed as shown on layout drawing.								
2	Check that Hood/beacon/sounder location is suitable.								
3	Check that beacon/sounder is easily visible.								
4	Check that Telephone/Hood/beacon/sounder and cables are correctly tagged and labeled according to the project numbering plan.								
5	Check security of fixings and fastenings.								
6	Check all cable entries are suitably plugged using certified blanking plugs or cable glands as applicable.								
7	Check that are clearly labelled on each telephone: extension, location, emergency number.								
8	Check that the telephones are undamaged and mounted as shown on the general arrangement drawing.								
9	Check that there are no missing parts.								
10	Check that there is no mechanical damage.								
11	Check paintwork/finish for cracks and scratches.								
12	Check earthing & bonding of equipment to project Specs (Equipment, armour and shield, and cable glands).								
13	Check equipment is certified for the area in which it is located. (ingress protection rating, and equipment EEX classification).								
14	Check cabling as per interconnection and termination drawings.								
15	Check Precom. Check Lists for all cables connected to equipment.								
16	Produce a list of detects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		Telecom cable						EPC or EPCC CONTRACTOR LOGO	
				Task number C-IX-09					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check cable is as specified in project cable schedule.								
2	Check relevant documents are at the latest revision.								
3	Check cable is routed in accordance with cable layout drawings.								
4	Check cable for any physical damage.								
5	Check cable is adequately supported and correctly fixed to rack according to Project specification.								
6	Check bending radius is within the specified limits.								
7	Check cable is correctly loomed and segregated in accordance with specification.								
8	Check cable and core marking are in accordance with specification.								
9	Check cable labelling is in accordance with specification.								
10	Check glands, shrouds, MCTU and earthing are in accordance with specification.								
11	Check terminations are in accordance with termination diagram, and produce "AS BUILT" terminations drawings.								
12	Check gland plate for single core cables is non ferrous.								
13	Produce a defects list for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		System cabinet  Task number C-IX-12						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that Cabinet is correctly tagged and located as indicated on layout drawings.								
2	Check that cabinet is correctly bolted to the floor, or support.								
3	Check that equipment and all cables are correctly tagged.								
4	Check type, quantity and location of all racks / cards as per arrangement drawings.								
5	Check cable installation / routing.								
6	Check that all racks / cards are securely plugged.								
7	Check correct interconnection of peripherals.								
8	Check paintwork/finish for cracks and scratches.								
9	Check that there is no mechanical damage.								
10	Verify ventilation and air flow.								
11	Check accessibility for maintenance.								
12	Check that rack framework is correctly bonded to Chassis Earth.								
13	Measure Chassis Earth value from equipment to main earth point.								
14	Measure Telecom Earth value from equipment to main earth point.								
15	Check that all AC terminals are correctly covered. Check all PSU breaker identification.								
16	Check Battery, battery charger and associated breaker check sheet, when applicable.								
17	Check cabling as per interconnection and termination drawings.								
18	Check Precom. Check Lists for all cables connected to equipment.								
19	Produce a list of defects for punch list issue.								
20	Check segregation between signal and power cable if applicable.								
21	Check that 30% of power supply sockets remain free in the cabinet.								
22	Produce a list of defects for punch list issue.								
NA Not Applicable		X Checked & not accepted		O Checked & accepted					
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List Indoor radio equipment cabinet  Task number C-IX-13		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that Cabinet is correctly tagged and located as indicated on layout drawings.					
2	Check that cabinet is correctly bolted to the floor.					
3	Check that equipment and cables are correctly tagged.					
4	Check that all equipment are installed as shown on cabinet arrangement drawing.					
5	Check that there are no missing parts.					
6	Check security of fixings and fastenings.					
7	Check paintwork/finish for cracks and scratches.					
8	Check that there is no mechanical damage.					
9	Verify ventilation and air flow.					
10	Check coaxial connector and all electrical connections as per interconnection & termination drawings.					
11	Check cable installation / routing.					
12	Check that minimum bending radius of coaxial feeder is met in cabinet.					
13	Check that equipment is correctly bonded to Chassis Earth.					
14	Measure Chassis Earth value from equipment to main earth point.					
15	Measure Telecom Earth value from equipment to main earth point.					
16	Check that Telecom Earth is insulated from Chassis earth (no earth loops).					
17	Check main AC power supply voltage included cover for protection. Check all PSU breaker identification.					
18	Check Precom. Check Lists for all cables connected to equipment.					
19	Produce a list of defects for punch list issue.					
20	Check that 30% of power supply sockets remain free in the cabinet.					
21	Produce a list of defects for punch list issue.					
☐ NA Not Applicable ☒ Checked & not accepted ☐ Checked & accepted						
Remarks :						
						
Signature						
Name						
Date						

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 Telecommunications Check List		Meteorological sensor / cable equipment / display						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-14							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that sensors are located as shown on layout drawings.								
2	Check that sensors and cables are correctly tagged.								
3	Check that there are no missing parts.								
4	Check that there is no mechanical damage.								
5	Check paintwork/finish for cracks and scratches.								
6	Check security of fixings and fastenings.								
7	Check that sensors are fixed as shown on general arrangement drawings, particularly with regard to vertical mounting.								
8	Check that the windspeed and direction sensors are free to turn and as far from other structure causing wind drafts.								
9	Check all cable connections shown on the interconnection diagrams.								
10	Check that all cables are supported.								
11	Preserve the equipment to prevent damage.								
12	Check Precom. Check Lists for all cables connected to equipment.								
13	Check all PSU breaker identification.								
14	Produce a list of defects for punch list issue.								
☐ NA Not Applicable		☒ X Checked & not accepted		☐ O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Monitor  Task number C-IX-18						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) : Expended Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that monitor is located as shown on layout drawings.								
2	Check that monitor and cables are correctly tagged.								
3	Check that there are no missing parts.								
4	Check that there is no mechanical damage.								
5	Check paintwork/finish for cracks and scratches.								
6	Check security of fixings and fastenings.								
7	Check that monitor is fixed as shown on general arrangement drawings, particularly with regard to support when applicable.								
8	Check that the monitor can be oriented.								
9	Check all cable connections shown on the interconnection diagrams.								
10	Check that all cables are supported.								
11	Preserve the equipment to prevent damage.								
12	Check Precom. Check Lists for all cables connected to equipment.								
13	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		CCTV control unit						EPC or EPCC CONTRACTOR LOGO	
Task number C-IX-19									
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that access unit is located as shown on layout drawings or on rack arrangement.								
2	Check that access unit and cables are correctly tagged.								
3	Check that there are no missing parts.								
4	Check that there is no mechanical damage.								
5	Check paintwork/finish for cracks and scratches.								
6	Check security of fixings and fastenings.								
7	Check that access unit is fixed as shown on general arrangement drawings.								
8	Check that the joystick is free to rotate.								
9	Check all cable connections shown on the interconnection diagrams.								
10	Check that all cables are supported.								
11	Preserve the equipment to prevent damage.								
12	Check Precom. Check Lists for all cables connected to equipment.								
13	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List Radio base station - central unit  Task number C-IX-20		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that Radio Base station or Central Unit, PSU and cables are correctly tagged/labeled.						
2	Check that the equipment is installed as shown on drawings (Layout or arrangement).						
3	Check that there are no missing parts.						
4	Check security of fixings and fastenings.						
5	Check paintwork/finish for cracks and scratches.						
6	Check that there is no mechanical damage.						
7	Check coaxial connector and all electrical connections as per interconnection and termination drawings.						
8	Check that minimum bending radius of coaxial feeder is met depending on Feeder size.						
9	Check presence of jumper flex cable as applicable.						
10	Check accessories as applicable (PTT switch, microphone, handset, headset).						
11	Check earthing & bonding of equipment to project Specs.						
12	Check main AC power supply voltage. Check all PSU breaker identification.						
13	Check Precom. Check Lists for all cables connected to equipment.						
14	Produce a list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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 Telecommunications Check List		Motorized antenna / feeder / lightning arrestor						EPC or EPCC CONTRACTOR LOGO
		Task number C-IX-22						
Task Location :								
User Group :								
Estimated Time (MH) :		Expended Time (MH) :						
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that antenna, feeders and arrestor are correctly tagged/marked.							
2	Check that antenna is correctly and securely installed.							
3	Check antenna elevation and location on tower as per drawings.							
4	Check that antenna is installed as per drawing (support).							
5	Inspect antenna and feeder for mechanical damage.							
6	Check for signs of corrosion on antenna.							
7	Check that transmission line is installed as per construction drawings.							
8	Check that feeder is securely fastened to vertical feeder ladder on tower.							
9	Check that stainless steel cable hangers are used (1m spacing max).							
10	Check that minimum bending radius of feeder is respected depending on size.							
11	Check that a small loop of feeder is properly coiled at antenna end.							
12	Check that feeder is properly grounded at antenna level and at tower base.							
13	Check that grounding kits are properly sealed against water ingress.							
14	Check the free rotation of the antenna. Check rotation stopper to preserve cables if applicable.							
15	Check that the radome is properly sealed.							
16	Check that antenna connector is properly sealed against water ingress.							
17	Check presence of shroud on antenna connector.							
18	Check security of all fixings and fastenings.							
19	Check that lightning arrestor is correctly bonded to Earth.							
20	Check bearing of antenna if applicable							
21	Check that antennas are installed on swivel greased brackets.							
22	Check PSU breaker identification.							
23	Check clear LOS if applicable.							
24	Produce a list of defects for punch list issue.							
☐ NA	Not Applicable	☒ X	Checked & not accepted			☐ O	Checked & accepted	
Remarks :								
								
Signature								
Name								
Date								

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 Telecommunications Check List Entertainment distribution network		EPC or EPCC CONTRACTOR LOGO					
Task number C-IX-26							
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that the equipment is correctly tagged and located as shown on the general arrangement or on the layout drawings (socket, amplifiers...etc).						
2	Check available documents are at the latest revision.						
3	Check coaxial connector and all electrical connections as per interconnection and termination drawings.						
4	Check that the equipment is undamaged..						
5	Check if the rack arrangement is in accordance with drawings (as applicable).						
6	Check security of fixings and fastenings.						
7	Check paintwork/finish for cracks and scratches.						
8	Check Precom. Check Lists for all cables connected to equipment.						
9	Check that the equipment is preserved correctly.						
10	Check that the earthing system of the equipment is as per specification (where applicable).						
11	Check if accessibility and maintenance are possible and safe(where applicable)						
12	Check that the safety devices/protection are installed (where applicable).						
13	Check that all of the commissioning spares and special tools are available in the stores (where applicable).						
14	Check power supply input as applicable. Check all PSU breaker identification.						
15	Review of the FAT punch list. Produce list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Telecommunications Check List Survival craft radio and beacon  Task number C-IX-27		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the equipment is correctly tagged and located as shown on the general arrangement.					
2	Check available documents are at the latest revision.					
3	Check that the equipment is connected as per drawings.					
4	Check that the equipment is undamaged..					
5	Check security of fixings and fastenings.					
6	Check paintwork/finish for cracks and scratches.					
7	Check that the equipment is preserved correctly (where applicable).					
8	Check that the earthing system of the equipment is as per specification (where applicable).					
9	Check if accessibility and maintenance are possible and safe (where applicable).					
10	Check that the safety devices/protection are installed (where applicable).					
11	Check that all of the commissioning spares and special tools are available in the stores (where applicable).					
12	Review of the FAT punch list. Produce list of defects for punch list issue.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Telecommunications Check List Antenna / feeder / lightning arrester  Task number C-IX-34		EPC or EPCC CONTRACTOR LOGO				
Task Location :						
User Group :						
Estimated Time (MH) :						
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that antenna, feeders and arrester are correctly tagged/marked.					
2	Check that antenna is correctly and securely installed.					
3	Check antenna elevation and location on tower.					
4	Check that antenna is installed as per drawings (support).					
5	Inspect antenna and feeder for mechanical damage.					
6	Check for signs of corrosion on antenna.					
7	Check that transmission line is installed as per construction drawings.					
8	Check that feeder is securely fastened to vertical feeder ladder on tower.					
9	Check that stainless steel cable hangers are used (1m spacing max.).					
10	Check that minimum bending radius of feeder is respected.					
11	Check that a small loop of feeder is properly coiled at antenna end.					
12	Check that feeder is properly grounded at antenna level and at tower base.					
13	Check that grounding kits are properly sealed against water ingress.					
14	Check all coaxial connectors.					
15	Check that antenna connector is properly sealed against water ingress.					
16	Check presence of shroud on antenna connector.					
17	Check security of all fixings and fastenings.					
18	Check that lightning arrester is correctly bonded to Earth.					
19	Record all defects on Precommissioning Punchlist.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Telecommunications Check List		Radio remote control unit						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-36							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that all equipment and cables are correctly installed as indicated on layout drawing.								
2	Check that the RCU location is suitable.								
3	Check that all equipment and cables are correctly tagged.								
4	Check security of fixings and fastenings.								
5	Check ease of use and access for operation and maintenance.								
6	Check that RCU is bonded to local protective earth via screen and armour on control cable.								
7	Check all connections as per interconnection and termination drawings.								
8	Check screen continuity in all junction boxes.								
9	Visual inspect equipment for missing parts and damage. Check paintwork / finish for cracks and scratches.								
10	Check that all spare cable entries are plugged using suitable plugs.								
11	Check Precom. Check Lists for all cables connected to equipment.								
12	Produce a list of detects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List Radio handheld / pager / battery charger		EPC or EPCC CONTRACTOR LOGO				
Task number C-IX-39						
Task Location :						
User Group :						
Estimated Time (MH) :		Expended Time (MH) :				
Module :						
Subsystem :						
IT	CHECK LIST					
1	Check that the units are correctly tagged / labelled. <u>No tag on Atex equipment.</u>					
2	Check physical condition of casing for damage such as cracks, etc..					
3	Check external electrical connections for integrity and cleanliness.					
4	Check switches for signs of wear.					
5	Inspect and clean battery contacts.					
6	Check that all units are present complete with antenna.					
7	Check that all units have cases and belts in good condition (if applicable).					
8	Check that all units have correct accessories (microphone, clips, etc..) as applicable.					
9	Ensure physical integrity of each charger.					
10	Check that all charging slots are clean and free of debris.					
11	Check all equipment for sign of corrosion.					
12	Check all units are correctly certified and labelled as ATEX.					
13	Check that batteries are certified correctly.					
14	Record all defects on pre-commissioning punch list.					
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted						
Remarks :						
TO BE CUSTOMIZED						
Signature						
Name						
Date						

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 Telecommunications Check List CCTV camera and housing  Task number C-IX-45		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Ensure equipment is securely mounted and is correctly tagged and labelled.						
2	Check that cameras are installed as shown on layout drawings.						
3	Check that cameras are unrestricted in azimuth and elevation movement.						
4	Check camera mounting and brackets does not allow excessive vibration / movement.						
5	Check cables are correctly terminated as per relevant interconnection diagram. Check all PSU breaker identification.						
6	Check EEx certification label of camera and accessories.						
7	Check that a special Eex barrier gland is used for cable entry.						
8	Check that camera, pan & tilt units, wash tanks cables are correctly tagged and labelled.						
9	Check power and coaxial cables are correctly glanded.						
10	Check presence of shrouds on cable glands.						
11	Check that camera, pan & tilt units cables are correctly earthed.						
12	Check that there are no missing parts.						
13	Measure Chassis Earth value from equipment to main earth point.						
14	Check paintwork / finish for cracks and scratches.						
15	Check that there is no mechanical damage.						
16	Check washer nozzles and wiper blades.						
17	Check Precom. Check Lists for all cables connected to equipment.						
18	Produce a list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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 Telecommunications Check List		Cabling RJ45  Task number C-IX-46						EPC of EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check cables are correctly tagged, and tag number entered on check list.								
2	Check all cables connections and installation.								
3	Check that cable is not pinched by tywraps or other tie downs.								
4	Check installed is not stretched or pinched at bends.								
5	Check that spare lenght does exist at both ends of the cable.								
6	Check cable installation conforms to drawings.								
7	Confirm that all cables connected to equipment conform to cable schedule.								
8	Check cable test result (TIX01) is within specification..								
9	Check that minimum bending radius of cables is met behind each socket.								
10	Check that all sockets are correctly tagged.								
11	Check that all sockets are installed as shown on the layout drawings.								
12	Check that there is no mechanical damage.								
13	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Connection box - PA/GA tank coverage						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-48							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that connection box is correctly tagged and located as indicated on layout drawings.								
2	Check that connection box is correctly bolted to the support.								
3	Check that cables are correctly tagged.								
4	Check that the EEx certification label is affixed on the connection box.								
5	Check internal connections.								
6	Check all gaskets.								
7	Check paintwork/finish for cracks and scratches.								
8	Check that there is no mechanical damage.								
9	Check that connector cover is present.								
10	Check that the connection box is correctly bonded to earth plate.								
11	Check termination of drain wire.								
12	Check Precom. Check Lists for all cables connected to equipment.								
13	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List Mobile set - PA/GA tank coverage  Task number C-IX-49		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) : Expended Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that mobile set is correctly tagged.						
2	Check that connector fit with the connection box socket.						
3	Check that cable is correctly tagged.						
4	Check that the EEx certification label is afixed on the equipment.						
5	Check there is no missing part.						
6	Check all gaskets.						
7	Check paintwork/finish for cracks and scratches.						
8	Check that there is no mechanical damage.						
9	Check that connector cover is present.						
10	Check termination of drain wire.						
11	Check Precom. Check Lists for all cables connected to equipment.						
12	Produce a list of defects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Telecommunications Check List		GMDSS circuit breaker						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-50							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the equipment is correctly tagged and located as shown on the general arrangement.								
2	Check available documents are at the latest revision.								
3	Check that the equipment is connected as per drawings.								
4	Check that the equipment is undamaged..								
5	Check security of fixings and fastenings.								
6	Check paintwork/finish for cracks and scratches.								
7	Check Precom. Check Lists for all cables connected to equipment.								
8	Check that the equipment is preserved correctly (where applicable).								
9	Check that the earthing system of the equipment is as per specification (where applicable)								
10	Check if accessibility and maintenance are possible and safe (where applicable).								
11	Check that the safety devices/protection are installed (where applicable).								
12	Check that all of the commissioning spares and special tools are available in the stores (where applicable).								
13	Review of the FAT punch list. Produce list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		PC workstation  Task number C-IX-51						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that work station is located as shown on layout drawings or cabinet General Arrangement.								
2	Check that workstation and cables are correctly tagged.								
3	Check that there are no missing parts, including specific cables and softwares original CDs when applicable.								
4	Check the hardware configuration against requisition.								
5	Check that there is no mechanical damage.								
6	Check paintwork/finish for cracks and scratches.								
7	Check security of fixings and fastenings.								
8	Check that workstation is fixed as shown on general arrangement drawings, particularly with regard to support when applicable.								
9	Check that the workstation has a free rear acces.								
10	Check power supply voltage.								
11	Check accessories (attached printer, switch, etc) as applicable.								
12	Check all cable connections shown on the interconnection diagrams.								
13	Check that all cables are supported.								
14	Preserve the equipment to prevent damage.								
15	Check Precom. Check Lists for all cables connected to equipment.								
16	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Server  Task number C-IX-52						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) : Expended Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that server is located as shown on layout drawings or cabinet GA.								
2	Check that server and cables are correctly tagged.								
3	Check that there are no missing parts, including specific cables and softwares original CDs when applicable.								
4	Check the hardware configuration against requisition.								
5	Check the server connections to the peripherals.								
6	Check that there is no mechanical damage.								
7	Check paintwork/finish for cracks and scratches.								
8	Check security of fixings and fastenings.								
9	Check that workstation is fixed as shown on general arrangement drawings, particularly with regard to support when applicable.								
10	Check that the server has a free rear acces.								
11	Check all cable connections shown on the interconnection diagrams.								
12	Check that all cables are supported.								
13	Preserve the equipment to prevent damage.								
14	Check Precom. Check Lists for all cables connected to equipment.								
15	Check PSU breaker identification.								
16	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List							
Data network equipment							
							
Task number C-IX-53							
Task Location :							
User Group :							
Estimated Time (MH) :		Expended Time (MH) :					
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that unit is correctly tagged/labelled.						
2	Check that the equipment is installed as shown on cabinet arrangement or layout drawings.						
3	Check that there are no missing parts (including specific cables).						
4	Check security of fixings and fastenings.						
5	Check paintwork/finish for cracks and scratches.						
6	Check that there is no mechanical damage.						
7	Check all connections as per interconnection and termination drawings.						
8	Check bending radius of optical patchcord when applicable.						
9	Check unit is correctly earthed, when applicable.						
10	Check that Telecom earth is insulated from chassis earth (no earth loops).						
11	Check power supply voltage.						
12	Check Precom. Check Lists for all cables connected to equipment.						
13	Check PSU breaker identification.						
14	Produce a list of detects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
TO BE CUSTOMIZED							
Signature							
Name							
Date							

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 Telecommunications Check List PC screen / keyboard switch  Task number C-IX-54		EPC or EPCC CONTRACTOR LOGO					
Task Location :							
User Group :							
Estimated Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
1	Check that unit is correctly tagged/labelled.						
2	Check that the equipment is installed as shown on cabinet arrangement drawing.						
3	Check that there are no missing parts.						
4	Check screen / keyboard connection cables.						
5	Check screen / keyboard connectors.						
6	Check security of fixings and fastenings.						
7	Check paintwork/finish for cracks and scratches.						
8	Check that there is no mechanical damage.						
9	Check all connections as per interconnection and termination drawings.						
10	Check unit is correctly earthed.						
11	Check power supply voltage.						
12	Check Precom. Check Lists for all cables connected to equipment.						
13	Produce a list of detects for punch list issue.						
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted							
Remarks :							
							
Signature							
Name							
Date							

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 Telecommunications Check List		Outdoor radio cabinet						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-55							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the equipment is correctly tagged and located as shown on the general arrangement.								
2	Check available documents are at the latest revision.								
3	Check that the equipment is undamaged..								
4	Check if the cabinet arrangement is in accordance with drawings.								
5	Check connection as per interconnection and termination drawings.								
6	Check the bending radius of the feeder.								
7	Check security of fixings and fastenings.								
8	Check paintwork/finish for cracks and scratches.								
9	Check Precom. Check Lists for all cables connected to equipment.								
10	Check that the equipment is preserved correctly (where applicable).								
11	Check that the earthing system of the equipment is as per specification (where applicable).								
12	Check if accessibility and maintenance are possible and safe (where applicable).								
13	Check that the safety devices/protection are installed (where applicable).								
14	Check that the equipment is certified for the zone it is installed in (IP, EEX, etc).								
15	Check presence of cable glands and correct mounting.								
16	Check all PSU breaker identification.								
17	Review of the FAT punch list. Produce list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Radio / indoor distribution						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-56							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that antenna, feeders and splitters are correctly tagged/marked.								
2	Check that antenna, splitters are correctly and securely installed.								
3	Check antenna elevation as per layout drawings.								
4	Check that antenna is installed as per drawings (support).								
5	Inspect antenna and feeder for mechanical damage.								
6	Check for signs of corrosion on antenna.								
7	Check that transmission line is installed as per construction drawings.								
8	Check that feeder is securely fastened.								
9	Check that minimum bending radius of feeder is respected.								
10	Check that a small loop of feeder is properly coiled at antenna end.								
11	Check that feeder is properly grounded at cabinet level.								
12	Check all coaxial connectors.								
13	Check presence of shroud on antenna connector.								
14	Check security of all fixings and fastenings.								
15	Check that splitters are correctly supported.								
16	Check all PSU breaker identification.								
17	Record all defects on Precommissioning Punchlist.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Radio / outdoor network						EPC or EPCC CONTRACTOR LOGO	
Task number C-IX-57									
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that antenna and feeders are correctly tagged/marked.								
2	Check that antenna is correctly installed on the magnetic support.								
3	Inspect antenna and feeder for mechanical damage.								
4	Check for signs of corrosion on antenna.								
5	Check that transmission line is installed as per construction drawings.								
6	Check that minimum bending radius of feeder is respected.								
7	Check that stainless steel cable hangers are used (1m spacing max).								
8	Check that feeder is properly grounded at connection box level.								
9	Check that grounding kits are properly sealed against water ingress.								
10	Check all coaxial connectors.								
11	Check the connection boxes for mechanical damages.								
12	Check equipment is certified for the area in which it is located (ingress protection rating and equipment classification).								
13	Check earthing & bonding of equipment to the project specs.								
14	Check that all gaskets, bolts are present.								
15	Check that connection boxes are correctly supported.								
16	Record all defects on Precommissioning Punchlist.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		Antenna Tuning Unit						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-58							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that the equipment is correctly tagged and located as shown on the layout drawings,								
2	Check available documents are at the latest revision.								
3	Check that the equipment is connected as per interconnecting and termination drawings.								
4	Check that the equipment is undamaged.								
5	Check if the arrangement is in accordance with drawings.								
6	Check security of fixings and fastenings.								
7	Check equipment is certified for the area in which it is located (ingress protection rating, and equipment EEX classification).								
8	Check paintwork/finish for cracks and scratches.								
9	Check Precom. Check Lists for all cables connected to equipment.								
10	Check that the equipment is preserved correctly (where applicable).								
11	Check that the earthing system of the equipment is as per specification (where applicable).								
12	Check if accessibility and maintenance are possible and safe (where applicable).								
13	Check that the safety devices/protection are installed (where applicable).								
14	Review of the FAT punch list. Produce list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Remote station / portable unit						EPC or EPCC CONTRACTOR LOGO
		Task number C-IX-59						
Task Location :								
User Group :								
Estimated Time (MH) :								
Module :								
Subsystem :								
IT	CHECK LIST							
1	Check that remote station and cables are correctly tagged.							
2	Check that there are no missing parts, including specific cables when applicable.							
3	Check the hardware configuration against requisition.							
4	Check that there is no mechanical damage.							
5	Check paintwork/finish for cracks and scratches.							
6	Check all cables connections shown on the interconnection diagrams.							
7	Preserve the equipment to prevent damage.							
8	Check all PSU breaker identification.							
9	Produce list of defects for punch list issue.							
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted								
Remarks :								
TO BE CUSTOMIZED								
Signature								
Name								
Date								

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 Telecommunications Check List		GMDSS console  Task number C-IX-60						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that units, antenna, cables are correctly tagged/labelled.								
2	Check that the equipment is installed as shown on layout drawings (or rack G.A.).								
3	Check Inmarsat-C data terminals are installed in the console, correctly tagged, connected as per dwgs.								
4	Check Inmarsat-C printers are installed in the console, correctly tagged, connected as per dwgs.								
5	Check Inmarsat-C transceivers are installed in the console, correctly tagged, connected as per dwgs.								
6	Check VHF/DSC transceivers are installed in the console, correctly tagged, connected as per dwgs.								
7	Check HF/SSB control unit is installed in the console, correctly tagged, connected as per dwgs.								
8	Check battery charger is installed in the console, correctly tagged, connected as per dwgs.								
9	Check HF transmitter unit is installed in the console, correctly tagged, connected as per dwgs.								
10	Check fuse boxes are installed in the console, correctly tagged, connected as per dwgs.								
11	Check DC power supply unit are installed in the console, correctly tagged, connected as per dwgs.								
12	Check security of fixings and fastenings.								
13	Check paintwork/finish for cracks and scratches, no mechanical damage.								
14	Check that personnel protection is provided at all antenna locations.								
15	Check all PSU breaker identification.								
16	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ o Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		Entertainment DVD player						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-61							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that DVD / VCR Player is located as shown on layout drawings.								
2	Check that DVD/ VCR Player and cables are correctly tagged.								
3	Check that there are no missing parts.								
4	Check that there is no mechanical damage.								
5	Check paintwork/finish for cracks and scratches.								
6	Check security of fixings and fastenings.								
7	Check that DVD/VCR Player is fixed as shown on general arrangement drawings, particularly with regard to support when applicable.								
8	Check all cable connections shown on the interconnection diagrams.								
9	Check that all cables are supported.								
10	Preserve the equipment to prevent damage.								
11	Check Precom. Check Lists for all cables connected to equipment.								
12	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Oceano sensor  Task number C-IX-62						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that sensors and cables are correctly tagged.								
2	Check that there are no missing parts, including specific cables when applicable.								
3	Check the hardware configuration against requisition.								
4	Check that there is no mechanical damage.								
5	Check paintwork/finish for cracks and scratches.								
6	Check IP rating of each equipment.								
7	Check all cable connections shown on the interconnection diagrams.								
8	Check that equipment is accessible for maintenance in particular for the equipment installed on the buoy.								
9	Preserve the equipment to prevent damage.								
10	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		Gyrocompass : central interface and power supply						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-63							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that all equipment is correctly tagged and located as indicated on layout drawings.								
2	Check that all equipment are correctly bolted.								
3	Check orientation of the Gyro unit.								
4	Check that gyro unit, supports are correctly secured to Hull to avoid false measurements.								
5	Check that all cables are correctly tagged.								
6	Check cable installation / routing.								
7	Check correct interconnection of peripherals (Display unit, etc).								
8	Check paintwork/finish for cracks and scratches.								
9	Check that there is no mechanical damage.								
10	Check accessibility for maintenance.								
11	Check earthing and bonding as per project specification.								
12	Check that all AC terminals are correctly covered. Check PSU breaker identification.								
13	Check cabling as per interconnection and termination drawings.								
14	Check Precom. Check Lists for all cables connected to equipment.								
15	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		MDF / IDF cabinet						EPC or EPCC CONTRACTOR LOGO	
		Task number C-IX-64							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that cabinet and panels are correctly tagged.								
2	Check that field cables are correctly tagged.								
3	Check that cabinet is installed as shown on layout drawing.								
4	Check cabinet equipment against cabinet arrangement drawing.								
5	Check that earth bar (IE, IPE, ISE) are correctly connected to earthing network.								
6	Check earthing and bonding as per Project specifications.								
7	Check segregation of cables (signal vs power supply).								
8	Verify that cables are supported.								
9	Check the RJ45 sockets type (UTP, FTP) are in accordance with specification.								
10	Check protection (perplex) of power supply terminals.								
11	Check security of fixings and fastenings.								
12	Check that there is no mechanical damage and that all bolts are present.								
13	Check paintwork / finish for cracks and scratches.								
14	Ensure that the lock is working and check the key number.								
15	Check accessibility for maintenance.								
16	Check that the cabinet is correctly bolted to the floor.								
17	Check cabling as per interconnection and termination drawings.								
18	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Clock unit  Task number C-IX-65						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that Clock Unit, PSU and cables are correctly tagged/labeled.								
2	Check that the equipment is installed as shown on drawings (Layout or arrangement).								
3	Check that there are no missing parts.								
4	Check security of fixings and fastenings.								
5	Check paintwork/finish for cracks and scratches.								
6	Check that there is no mechanical damage.								
7	Check all electrical connections as per interconnection and termination drawings.								
8	Check earthing & bonding of equipment to project Specs.								
9	Check main AC power supply voltage.								
10	Check Precom. Check Lists for all cables connected to equipment.								
11	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		Non directional beacon						EPC or EPCC CONTRACTOR LOGO	
				Task number C-IX-66					
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that NDB, PSU and cables are correctly tagged/labeled.								
2	Check that the equipment is installed as shown on drawings (Layout or arrangement)								
3	Check that there are no missing parts.								
4	Check security of fixings and fastenings.								
5	Check paintwork/finish for cracks and scratches.								
6	Check that there is no mechanical damage.								
7	Check all electrical connections as per interconnection and termination drawings.								
8	Check earthing & bonding of equipment to project Specs.								
9	Check power supply voltage.								
10	Check Precom. Check Lists for all cables connected to equipment.								
11	Produce a list of defects for punch list issue.								
NA Not Applicable		X Checked & not accepted		O Checked & accepted					
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Check List		Radar  Task number C-IX-67						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) : Expended Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that Radar unit, Display, PSU and cables are correctly tagged/labeled.								
2	Check that the equipment is installed as shown on drawings (Layout or arrangement).								
3	Check interconnection with other systems (dgps, compass, ...).								
4	Check that there are no missing parts.								
5	Check security of fixings and fastenings.								
6	Check paintwork/finish for cracks and scratches.								
7	Check that there is no mechanical damage.								
8	Check all electrical connections as per interconnection and termination drawings.								
9	Check earthing & bonding of equipment to project Specs.								
10	Check power supply voltage.								
11	Check Precom. Check Lists for all cables connected to equipment.								
12	Check upmast transceiver/turning mechanism ON/OFF switch.								
13	Check for distance between transceiver and display, compare with manufacturer recommendations.								
14	Check for cable characteristics, compare with manufacturer recommendations (Impedance, attenuation...etc).								
15	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ Checked & not accepted ☐ Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Check List		Mast  Task number C-IX-68						EPC or EPCC CONTRACTOR LOGO	
Task Location :									
User Group :									
Estimated Time (MH) : Expended Time (MH) :									
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check that all antennas, ODU and cables are correctly tagged/labeled.								
2	Check cable trays to be conform to specifications.								
3	Check lightning arrestors on foot mast.								
4	Check security of fixings and fastenings.								
5	Check paintwork/finish for cracks and scratches.								
6	Check that there is no mechanical damage.								
7	Check for mast Personal Protective Equipment (Fitted vertical safety systems, fall arrestor blocks, safety cage ...).								
8	Check earthing & bonding of equipment to project Specs.								
9	Produce a list of defects for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									



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Appendix 15

Appendix 15 Telecom typical Static Test Sheets

Type of equipment	Test Sheet reference
Cabling RJ45	T-IX-01
Optical Fibre	T-IX-02
PA / GA system / Loudspeaker loop	T-IX-03

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 Telecommunications Test Sheet		Cabling RJ45						EPC or EPCC CONTRACTOR LOGO	
Task number		T-IX-01							
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	To roll up that attenuation complies with specification.								
2	To roll up that measured lenght complies with pulled lenght.								
3	To roll up the cable complies with Cat. 5E performance requirements (250 Mhz).								
4	To roll up the link maximum performance (>250 Mhz).								
5	Attach LAN tester print out to this test sheet.								
6	Produce a list of non compliance for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
TO BE CUSTOMIZED									
Signature									
Name									
Date									

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 Telecommunications Test Sheet		Optical fibre cable						EPC or EPCC CONTRACTOR LOGO	
Task number T-IX-02									
Task Location :									
User Group :									
Estimated Time (MH) :		Expended Time (MH) :							
Module :									
Subsystem :									
IT	CHECK LIST								
1	Check optical fibre type, color code, fibers number, slipcover.								
2	Attach supplier inspection protocol on reception.								
3	Attach reflectometry report for each fibre before installation (nude fiber). OTDR . Optical Time Domain Reflectometer.								
4	Check handling optical fibres.								
5	Attach reflectometry report for each fibers after handling installation (without fiber connectors and splicing).								
6	Check fibre fusion, splicing and cleavers.								
7	Attach reflectometry report for each fibre after installation (with fiber connectors).								
8	Check that measured lenght complies with pulled lenght.								
9	Check visual installation complete.								
10	Check power meters and light sources.								
11	Check that variable attenuation complies with specification described in ITU G650.								
12	Check the fibres scopes complies 10 gigabit Ethernet performance requirements.								
13	Attach LAN tester print out to this test sheet.								
14	Produce a list of non compliance for punch list issue.								
☐ NA Not Applicable ☒ X Checked & not accepted ☐ O Checked & accepted									
Remarks :									
									
Signature									
Name									
Date									

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 Telecommunications Test Sheet PA/GA system loudspeaker loop		EPC or EPCC CONTRACTOR LOGO					
 Task number T-IX-03							
Task Location :							
User Group :							
Estimated Time (MH) : Expended Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
Insulation test (expected > 20 Mohms)							
1	Core 1 to screen						
2	Core 2 to screen						
3	Core 1 to Earth						
4	Core 2 to Earth						
Impedance Test							
5	Core to Core IN						
6	Core to Core OUT						
7	Expected value						
Result							
8	Pass						
9	Fail						
Remarks :							
							
Signature							
Name							
Date							

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 Telecommunications Test Sheet Telecom power and control cable		EPC or EPCC CONTRACTOR LOGO					
 Task number T-IX-09							
Task Location :							
User Group :							
Estimated Time (MH) : Expended Time (MH) :							
Module :							
Subsystem :							
IT	CHECK LIST						
ELECTRICAL TESTS (CABLE DISCONNECTED)							
UPSTREAM CONNECTION ACCORDING CABLE SCHEDULE							
DOWNSTREAM CONNECTION ACCORDING CABLE SCHEDULE							
CROSS SECTION ACCORDING CABLE SCHEDULE							
CONTINUITY							
CORE CONTINUITY		PH 1					
		PH 2					
		PH 3					
ARMOUR CONTINUITY							
PROTECTIVE CONDUCTOR CONTINUITY							
INSULATION							
CORES / EARTH MΩ		PH1/ PH2-PH3-E					
		PH2/ PH1-PH3-E					
		PH3/ PH1-PH2-E					
CORE / ARMOUR MΩ							
CABLE IS CORRECTLY RE-CONNECTED.							
TESTING INSTRUMENTS USED							
TYPE / SERIAL N° :		TYPE / SERIAL N° :					
TYPE / SERIAL N° :							
Remarks:							
TO BE CUSTOMIZED							
Signature							
Name							
Date							