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Revision Number C

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# **Calico Resources USA Corp. Grassy Mountain Project**

## **Project Quality Plan - Processing May 2019**

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14 May 2019

## Revision Status

| Revision | Date          | Description                   | Author             |                  | Approver           |                 |
|----------|---------------|-------------------------------|--------------------|------------------|--------------------|-----------------|
|          |               |                               | FirstName LastName | Position Title   | FirstName LastName | Position Title  |
| A        | April 15 2019 | Issued for Internal Review    | Thomas Mills       | Project Engineer | Stephen Gregor     | Project Manager |
| B        | April 16 2019 | Re-Issued for Internal Review | Thomas Mills       | Project Engineer | Stephen Gregor     | Project Manager |
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|          |               |                               |                    |                  |                    |                 |
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## 1 Introduction

The Project Quality Plan forms an integral part of the Project Execution Plan and is the principal document in the Quality Assurance and Quality Control document hierarchy. The plan is intended as a live document and is reviewed and updated as the project evolves. It will be reviewed as a minimum of every 6 months and at the following stages:

- Prior to award of each major contract package
- Commencement of site construction to cover Construction and Commissioning.

The Project refers to the Grassy Mountain underground gold mine located in Oregon, USA.

## 2 Purpose and Scope

The purpose of this plan is to define the Quality requirements for the Project. This includes Management of Design, Supply of Materials, Mechanical and Electrical Equipment, Fabricated items, Construction and Commissioning activities to be undertaken for the Grassy Mountain project.

The overall goal of this Quality Assurance Plan as related to Construction and Installation is to ensure that proper construction techniques and procedures are used, and equipment is installed in accordance with the design drawings and specifications. Quality Control for the works will be performed by the Contractor in conjunction with the EPCM Contractor Quality or Engineering representative.

## 3 Terms and Definitions

In the context of this plan, the following words, phrases or abbreviations shall be deemed to have the meaning assigned to them:

|                      |   |
|----------------------|---|
| As-built drawings    | Accurate and approved records of all deviations between works as designed and works as installed.   |
| Certification Record | Documents summarising the predefined inspection, checks and testing that have been performed and signed off as acceptable. This includes Drawings, as-built calculations, traceability, and third party data reports. |
| Contractor           | Consultant or Supplier providing goods and/or services under contractual Terms and Conditions to the EPCM Contractor or the Owner under EPCM Contractor management.   |
| EPCM Contractor      | Engineering Procurement Construction Management Contractor  |
| Hold Point           | A stage in the sequence of the manufacture/construction process beyond which work may not proceed without release being granted by the nominated party. A minimum of 5 working days notification is required.         |
| Inspection           | Activities such as measuring, examining, testing, gauging one or more characteristics of a product or service and comparing these with specified requirements to determine conformity.                                |

|   |  |
|---|--|
| Inspection and Test Plan (ITP)                  | A formalised plan describing how, when and where the characteristics of products/works will be inspected, tested or measured to provide evidence that design, regulatory and contractually specified requirements have been met.   |
| Inspection Register                             | A register that states the supplier location, inspection and criticality levels, pre-inspection meeting dates, estimated inspection visits and costs vs actual visits and costs, and any other criteria as required by the Project Management.                               |
| Manufacturer's Data Record (MDR)                | A volume or number of volumes compiled by vendors and/or the EPCM Contractor, containing records, certification and objective evidence of compliance with requirements appertaining to material, equipment or installation work for the Project.                             |
| Material  | Stock-in-trade items such as lengths of steel, piping, grating, handrails and bolts.   |
| Material Test Certificate                       | Document issued and authenticated by the material manufacturer defining the chemical composition and mechanical properties of a material item.   |
| Non-conformance Report (NCR)                    | A report raised in relation to a deficiency in characteristics, documentation or process implementation which renders an item or process indeterminate or outside that required by the relevant contract, technical specification, code, drawing and/or process requirement. |
| Non Destructive Examination (NDE)               | Examination of welds by various techniques that have no damaging effect on the item being examined in order to confirm compliance with a specified code or standard.   |
| Owner/Client                                    | Calico Resources USA Corp.   |
| Package   | A definable portion of work performed by the EPCM Contractor or sub-contractor to a technical specification, code, drawing and/or process requirement.   |
| Plant System                                    | Part of the facility containing, or associated with, a particular product and/or medium.   |
| Plant System Handover                           | The point in time at which responsibility for and control of a plant system is passed from one entity to another.  |
| PQP   | Project Quality Plan – this plan.  |
| Project   | Grassy Mountain  |
| Project Execution Plan (PEP)                    | A plan to carry out the Project.   |
| Punch list                                      | A list of items in the Contractor work scope to be completed for practical completion, or in the case of minor items that do not prevent the Owner from utilising the equipment and can be completed after Plant System Handover.  |
| Quality Assurance (QA) and Quality Control (QC) | Quality Assurance (QA) is focused on providing confidence that quality requirements will be met, whereas Quality Control (QC) is focussed on the actual fulfilment of those quality requirements.  |
| Request for Information (RFI)                   | An RFI will be generated when additional information, or clarification, is required from the Contractor, Consultant, Owner, Sub-Contractor, Supplier or Vendor.  |
| Sub-Contractor                                  | Consultant or Supplier providing goods and/or services to a Project appointed Contractor where all parties are functioning under the Project's contractual Terms and Conditions.   |
| Supplier  | Any persons, firm or company, contracted to supply any material or equipment to the Project.   |
| Technical Query (TQ)                            | Any query relating to a design interpretation which requires clarification or confirmation.  |
| Test Pack                                       | Documentation compiled progressively during site construction and commissioning that verifies compliance to the codes and specifications.  |

|               |  |
|---------------|--|
| Traceability  | The ability to trace the history, application or location by means of recorded identification. That is, the systematic, planned and documented approach to produce records to provide trails back from a completed product to the sources of materials, details of batches or lots, the equipment used, the operators involved, dates, times, details of conditions and other pertinent information. |
| Vendor        | Any persons, firm or company, contracted to supply any material or service relating to the Project. This terminology includes Suppliers, Sub-Suppliers, Contractors or Sub-Contractors.  |
| Witness Point | A stage in the sequence of the manufacture/construction process where a nominated party is given the option of formally witnessing the actions of another party in carrying out inspection and test activities. A minimum of 5 working days notification is required.  |

## **4 Quality Policy, Objectives, Continual Improvement**

### **4.1 Policy**

The EPCM contractor will operate under the Management System based on the requirements of International Quality, Environmental and Safety Standards:

- ISO9001 Quality Management Systems Requirements
- ISO 14001 Environmental Management
- OHSAS 18001 Health and Safety Management

### **4.2 Quality Objectives**

It is the responsibility of the EPCM contractor Project team to ensure that the quality outcomes on the Project are in line with the objectives of Calico Resources USA Corp. These objectives may include:

- Provided services meet or exceed clients' expectations for quality, reliability, safety, value for money, productivity and timely execution.
- Products and services will comply with the agreed specifications and appropriate laws and regulations, as well as satisfying contractual and commercial conditions.
- Implementation and continually improvement of a formal quality management system that is consistent with the requirements of Standard ISO 9001:2008, and that fosters prevention rather than detection.
- The EPCM Contractor will provide a working environment that supports the philosophy of teamwork and encourages employee involvement in continuous improvement activities.
- All employees will receive relevant training and communications to enable their effective participation in the EPCM quality management program.
- The EPCM Contractor will seek to develop and nurture relationships with our suppliers that emphasise continuous improvement in product quality and cost.
- The EPCM Contractor will communicate and implement these quality objectives by example.

Key performance indicators, for overall scope defined in the contract, are developed between the Owner and EPCM contractor at the onset of the Work and are monitored during all phases of the projects.

#### **4.3 Continual Improvement**

The EPCM Contractor Senior Management will engage the Project team in a culture of continual improvement and will create a working environment that encourages innovation and improvement.

The EPCM contractor will strive to improve performance through innovation and the streamlining of their work methods to assist in performing tasks in the most expedient and value adding manner without compromising Quality.

All team members are encouraged to participate in this process and offer any suggestions as to how this may be achieved best. All ideas for improving performance will be evaluated and credit will go to the party that made the suggestion. The implementation of the idea will be monitored and the resultant improvements will be brought to the attention of the team.

Continual improvement will be an agenda item at all Project team meetings and meetings conducted on site. Continual improvement will, as a minimum, be addressed in:

- engineering design
- project controls
- contract management
- procurement
- quality management
- commercial
- construction
- Health, Safety and Environmental Management

Refer to Appendix 1 – Continual Improvement Cycle.

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## **5 Responsibilities and Authority**

### **5.1 Responsibilities and Authority**

Resources for this Project have been identified by the Project Manager will be detailed in the Project Organisation Chart which will be referenced to in the Project Execution Plan. The Organisation Chart shall be regularly reviewed to reflect any changes to the Project Team members or structure.

The responsibilities and authorities of the personnel are defined in job descriptions. The specific responsibilities of staff in relation to Quality are detailed below. A person can act in more than one role on a project however the following descriptions define the scope and responsibility of each of these roles.

### 5.1.1 Project Manager

The Project Manager has the overall authority in the determination of all matters affecting the implementation and operation of Quality practices on the Project. The Project Manager is responsible for:

- identifying resources and equipment for Project Quality purposes
- ensuring training is provided to improve awareness of Quality issues
- incorporating Quality Management aspects in Project Planning
- ensuring Project Operations are performed in accordance with Project requirements
- reviewing the effectiveness of the Project related systems for continuous improvement and enforcing the implementation of systems updates in relation to continuous improvement
- ensuring that all Contractors fulfil their contractual obligations.

### 5.1.2 Engineering Manager

The Engineering Manager, in conjunction with the Project Manager, is responsible for ensuring that Engineering personnel are fully aware and understand the Quality requirements of the Project. The Engineering Manager is responsible for:

- overseeing preparation of Design Drawings and Technical Documents
- ensuring the Design is prepared in accordance with the Project Scope and Governing Code/Standards
- ensuring that applicable Code/Standards and Quality requirements are included in the technical documentation
- incorporating Quality Management aspects into engineering activities
- ensuring engineering targets and programmes are achieved
- ensuring capture of data in accordance with engineering procedures and checklists

### 5.1.3 Construction Manager

The Construction Manager, in conjunction with the Project Manager, is responsible for ensuring that Project construction personnel are fully aware and understand the Quality requirements of the Project. The Construction Manager is responsible for:

- ensuring that adequate resources and equipment are available for carrying out the work on site
- incorporating Quality Management aspects into construction activities
- reviewing the effectiveness of the Site Quality System for continuous improvement in conjunction with the Project Quality Manager, and assisting the implementation of updated systems in relation to continuous improvement
- ensuring construction targets and programmes are achieved
- ensuring capture of data in accordance with ITPs/checklists etc
- ensuring all procedures on the project are complied with and specific personnel have defined Quality Assurance duties specified within their duty statements/position descriptions.

#### 5.1.4 Project Engineers

Project Engineers shall report to the Project Manager and shall take ownership and accountability for the delivery of an allocated Project Scope.

- Scope of Works/Services/Materials/Products to be provided
- Technical requirements (Specification, Standards, Codes, Testing)
- Quality requirements for products, equipment and services
- Documentation requirements (e.g. as-builts, warranties, technical data etc.)
- Contractual obligation (terms and conditions, delivery milestones, vendor design approval, change management process)
- handling, storage, packaging and delivery requirements
- coordination with third parties (e.g. inspections, freight forwarder, customs agent)
- progress reporting requirements during the fabrication/manufacturing process.

#### 5.1.5 Project Quality Manager

The Project Quality Manager (PQM) reports directly to the Project Manager. The PQM may allocate tasks to the Project Engineers, Quality Inspector (or 3rd party inspectors), and any other Project Quality personnel, but remains responsible for:

- ensuring that the Project Quality Plan is implemented to meet the requirements for the Project
- reviewing quality aspect of tenders submitted to Project from suppliers and contractors and being involved with Pre-Qualification of suppliers and contractors as directed by Package Engineers
- reviewing quality requirements of tender packages prior to issuing to Suppliers and Contractors
- conducting Criticality Assessments to establish appropriate Supplier and Contractor surveillance levels
- reviewing and approving Supplier's and Contractor's quality documentation prior to commencement of work, and at the completed MDR stage
- consulting with Project, Engineering, Procurement, Contracts, Construction and Commissioning Managers on Quality matters
- approving 3rd party inspection agencies and scheduling inspections
- ensuring that vendor inspections are carried out as planned, and recorded on appropriate inspection plans and assignments
- conducting both internal and external Quality System audits
- liaising with the Client to ensure satisfactory completion of Quality Conformance checks
- inspection of incoming material for compliance in accordance with Codes, Standards and Specifications
- ensuring the quarantine of non-complying product
- ensuring Non-Conformances are reported and corrective/preventative actions taken, and recorded in a Project NCR Register

- reviewing inspection reports and ensuring any actions required are initiated and closed out or resolved
- ensuring that all contractors fulfil their contractual Quality Management obligations
- preparing and submitting Project Quality Reports
- attending meetings on Quality issues
- ensuring that products' traceability requirements are met
- on and off site inspection of fabricated items for the Project as directed by the Project Manager
- reviewing and approval of NDE requirements, welders' qualifications, welding procedures, weld maps and material traceability drawings; and provide welding information to Supervisors
- liaising with Engineering, Construction and Inspection personnel during the execution of the Project to ensure that all contractual and statutory records requirements are understood and reflected in Inspection and Test Plans and associated documentation
- ensuring progressive compilation of the MDRs, including setting up of filing requirements as defined in the MDR Index, and ensuring that all records of Inspection and Test are in compliance with the Project specified Codes, Standards and Specifications. With the assistance from engineering personnel and Document Controllers, consolidation of all records for inclusion and final handover to the client
- reviewing Supplier Performance at close out stage and reporting accordingly
- final review and handover of the MDRs to the Client.

#### **5.1.6 QA Inspectors/Site Engineers**

QA Inspectors/Site Engineers shall report directly to the Construction Manager and/or Project Quality Manager, and shall be responsible for the following:

- Overseeing completion of Work in accordance with project documentation
- tracking of ITPs, Quality forms and checklists
- performing Quality Inspections including visual inspection of fit up and/or installation works and verifying on checklists
- monitoring, with the Project Quality Manager, the implementation of Construction activities to ensure their adequacy and conformance to Codes, Standards and Specifications
- in conjunction with welding inspectors, ensuring that all required NDE and Test requirements are carried out and complete as specified to Codes, Standards and Specifications
- ensuring all "Hold, Witness and Verification" points are verified
- with the Project Quality Manager, witness inspection and testing
- in conjunction with Project Quality Manager, utilising the Non-Conformance process to identify defective workmanship and materials
- marking out and reporting on unsatisfactory/defective areas for rework or repair
- verifying that corrective and preventive action is taken when required for non-conforming work
- assisting the Project Quality Manager with compilation of the MDRs.

## 5.2 Competence, Awareness and Training

Personnel performing specified assigned tasks are to be qualified on the basis of appropriate education, training and/or experience as required. Competency assessments, identification of training needs and the provision of training for personnel shall be identified by the Project Manager during the Project setup and execution, and revised, as applicable, throughout the life of the Project.

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## 6 Specific Operational Controls

### 6.1 Design Control

Design Control is achieved through the documented Deliverables Verification process to ensure that:

- design input/output requirements are identified, documented and reviewed for adequacy
- design quality requirements are identified, specified and included in the project technical documentation
- the design and drawing activities are properly planned, and milestones at which design documents are to be produced and/or reviewed, are identified and approved by the Engineering Manager or the Lead/Nominated Engineer and, where relevant, the Client
- the milestones at which design verification will be performed are established and identified
- design documents are identified and controlled to record design and safety considerations, analysis, calculations, assumptions, development, feasibility studies and analysis, and decisions made from tender to detail design stage
- design output meets the design input requirements and safety requirements, as verified by means such as design reviews, qualification tests, alternative calculations, and comparison with proven design as applicable
- the design is reviewed prior to release to assure the project that it has been appropriately verified at all key points and that verification records are complete
- evidence of verification is indicated on documents by signature and date

Design changes, whether originated by the Contractor, the Client, or EPCM contractor, shall be processed according to Change Management Protocol approved for the project.

### 6.2 Codes and Standards

Project design will be developed based on the latest edition of applicable Codes, Standards, Laws and Regulations. The specific Codes and Standards used will be included in the Project Design Criteria, Project Specifications, Drawings and Datasheets.

Furthermore, Project Technical documentation specifies any additional inspection and testing requirements where not covered by relevant codes or standards.

Typical technical reference Codes are noted below, however engineering project documents provide detailed Quality requirements and serve as a basis for Quality inspection, testing and acceptance.

**Table 1 – Typical Technical Reference Codes/Standards**

| <b>Code</b>   | <b>Description</b>   |
|---|--|
| ASTM American Society for Testing and Materials           | Various materials and testing standards                                      |
| ASME American Society of Mechanical Engineers, BPVC Codes | Boiler & Pressure Vessels and Welding Codes                                  |
| AWS - American Welding Society                            | D1.1 Structural Welding Steel; D1.4 Reinforcing steel; D 1.6 Stainless steel |
| ISO 12944   | Painting systems and environment classifications                             |
| SSPC – Society for Protective Coatings                    | Steel surface preparation and surface coating inspection standards           |
| ACI – American Concrete Institute                         | Concrete, reinforced concrete standards                                      |

### **6.3 Document/Records Control**

The fundamental purpose of the document and data control procedure(s) is to ensure that all documents and data affecting product quality and final acceptance are reviewed for adequacy, and approved by authorised personnel, prior to release, and that applicable issues of relevant documents are available at all points of use.

Project Documents and Records will be numbered and revision controlled. Naming and Numbering of documents can also be adjusted to meet specific requirements of Client’s filing system as needed.

The project will be using integrated Document Management system for electronic filing and management of documents, records and correspondence. Documentation will be filed in accordance with established Project Filing structure. Critical Email correspondence shall be filed along with other project documentation in the applicable folders of the document control system.

Issue and receipt of the documents externally is accomplished through Document Control function using computer generated and traceable Document Transmittal.

Where required on construction site, a hard copy filing system will also be established. The Document Controller in liaison with the Project Quality Manager shall establish a hard-copy filing index to ensure that records are indexed and filed in a manner to facilitate easy retrieval of information and shall align with the electronic filing index.

### **6.4 Archiving**

Project documents are to be archived for the periods specified by The EPCM Contractor archiving procedure and contractual requirements.

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## **7 Procurement and Contracts Management**

### **7.1 Procurement and Contracts Control**

Procurement and Contracts will be managed in accordance with the respective Strategy and Management Plans.

Based on criticality to the successful completion of the Project, potential Suppliers/Contractors will be pre-qualified using either recommendation by the Client, previous successful experience with EPCM contractor projects, pre-qualification form; visit to the Supplier/ Contractor premises to perform a survey or combination of the above.

When a visit to the Supplier/Contractor premises is required, the Project Engineer, allocated Quality person and other relevant Project team members will make an assessment of the proposed premises and sites and their operations to establish or clarify their capacity and capability to meet Project requirements.

Once the Supplier/Contractor has been selected, and prior to any notification being made of award of the Purchase Order or Contract, the EPCM contractor ensures that the necessary approval level signatures are obtained and establishes whether Client approval is required.

Procurement Manager and Contracts Manager are responsible to ensure that the tender/procurement documents cover all relevant items including:

1. scope of works/services/materials/products to be provided
2. quality standard requirements
3. delivery/services schedule
4. materials/products specifications
5. documentation requirements
6. handling, storage, packaging and delivery requirements
7. coordination with 3rd parties (e.g. inspections, freight forwarder, customs agent)
8. progress reporting requirements during the fabrication/manufacturing process.

Standard Quality Requirements are included in the Contract "Provision of Materials, Equipment or Contract Services". Additional details, specific to each Contract/Package are given in project technical documentation.

## **7.2 Quality Surveillance Level**

The Project Quality Manager will assist the Project Manager (in liaison with the Project Engineering and Procurement Managers) with identification and ranking of equipment and service packages based on their criticality to the successful execution of the Project. Packages will be assessed using the Supplier Quality Surveillance Assessment Form (Appendix 5) and the resulting criticality ranking will determine the level of surveillance and verifying documentation required from each Vendor/Contractor.

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# **8 Construction Quality Management**

## **8.1 Construction Quality Control (QC) and Quality Assurance (QA)**

Contractors and Vendors are responsible for conducting Quality Control of their work and Quality Assurance of their sub-contractors Quality. The Contractor/Vendors shall carry out quality tests in accordance with the requirements of the Scope of Work, Technical Specifications, Engineering Specifications and Drawings.

The EPCM Contractor is responsible for overall Quality Assurance of the project. Construction Quality Assurance will consist of:

- monitoring Quality Control and Quality Assurance processes implemented by contractors/vendors;
- conducting independent Quality Assurance verification testing with frequency determined based on criticality rating for each contract;
- conducting periodic Quality Assurance audits to ensure approved protocols are in use.

The Contractor's Quality Control inspection/testing and EPCM Contractor Quality Assurance verification will form the basis for acceptance of the Work. In case of disagreement between QC and QA testing the discrepancy shall be resolved following protocol noted in Section 8.6.

## 8.2 Contractor/Vendor Quality Control Requirements

The Contractor/Vendor shall be responsible for all aspects of the quality of the Work, and shall put into place a suitable Quality Control Program to ensure that quality standards are met, and that the Work meets the requirements and intent of the Project Documents.

The Contractor/Vendor shall conduct, at its own cost, all necessary quality control testing and sub-contractors quality assurance verification that is required to demonstrate that Work conform to the Project Documents.

The Contractor/Vendor shall provide valid calibrated equipment and qualified personnel to perform all quality control field and laboratory testing necessary to determine and monitor the characteristics of the materials produced and incorporated into the Work.

The EPCM Contractor may carry out Quality Assurance testing and in order to provide assurance that Work is in accordance with the Contract and to verify the Contractor's quality control data. Testing and inspection by The EPCM Contractor will not relieve the Contractor/Vendor of its responsibility to perform quality control testing and inspection.

Kick-off meetings will be conducted by EPCM contractor personnel prior to commencement of each Package and Contract so that Quality Requirements can be reviewed and confirmed with Contractor/Vendor.

## 8.3 Contractor Submittals

The Contractor/Vendor shall submit a Quality Control Plan, Construction Procedures, Inspection and Testing Plan (ITP) and other documentation required by Contract in accordance with Vendor Drawings and Data Requirements (VDDR) as specified for each contract/package prior to commencement of Work for EPCM contractor review and approval.

The Contractor/Vendor Quality Control Plan shall include but not be limited to the following:

- The procedures that will be adopted by the Contractor to ensure conformance with the requirements of the Specifications and Drawings.
- Construction work plans for each phase of the work to be performed
- Qualification statements for all tradespersons.
- The name of QC independent inspection and testing agency, where applicable that will be used to monitor the quality of the Work.
- Welding procedures, qualifications and related requirements.
- Painting, Lining, and Protective Coating procedures.
- Document control procedures

- Non-conformance tracking and remediation.
- Inspection and Testing Plans (ITPs) for the Contractor/Vendor and any Sub-Contractors – detailing frequency of tests, acceptance criteria, responsibilities for review and approval.
- Inspection and testing methods, including testing of materials, soil compaction, concrete strength, welds, protective coating, pipeline leakage, etc., and a description of what methods will be used if not specifically listed in the contract Documents.

ITP shall be provided for each critical construction/installation step noted in the Vendor/Contractor schedule and the following points shall be identified:

- acceptance criteria and records produced
- each stage of the process covered by the ITP
- stages subject to any QC independent examination
- inspections to be carried out by the subcontractor/supplier, or witnessed, by any third party or the contractor
- hold points beyond which work cannot proceed before completion of all verification and related activities.

Refer to Appendix 4 for an example of acceptable ITP format.

#### **8.4 Contractor Quality Control Inspections and Testing**

Minimum testing and inspection requirements shall be in accordance with the requirements of the Project Documentation and all applicable Laws, Regulations, Standards and Codes and approved contractor's ITP.

Upon completion of QC testing, the Contractor/Vendor shall submit copies of quality control test results to the EPCM Contractor within twenty-four (24) hours of them becoming available. The Contractor shall provide copies of inspection and test results to its subcontractors and suppliers where quality assurance tests were performed on materials, products, or work supplied or undertaken by them.

All Supplier and Contractor ITPs are to be reviewed and approved by the Project Quality Manager (or nominee) prior to commencement of the work applicable to the ITP. The Project Quality Manager (or nominee) shall ensure that QC Hold and Witness Points are included in the ITPs at the appropriate stages based on the determination of critical processes in construction/installation.

The EPCM Contractor will impose QA witness and hold points at the critical stages on the Contractor's ITP. The Contractor shall not proceed with the Work until a QA hold point has been released by an EPCM contractor representative. The Contractor shall notify the EPCM contractor representative when areas of work are completed and ready for inspection, testing and approval. The Contractor shall allow adequate time for the EPCM contractor representative's review to be performed.

The Contractor shall report, track, correct, and retest any deficient Work determined by the QC or QA inspection at no additional cost.

Where a section of the Work, or a product, is found to be in non-conformance by quality control (QC) or assurance (QA) testing, the Contractor shall increase the frequency of quality control testing on adjacent areas or similar products.

#### **8.5 EPCM Contractor Quality Assurance**

The EPCM contractor representative shall be granted safe access to the Work at all reasonable times for the purposes of Quality Assurance inspections and/or tests.

EPCM contractor Quality Assurance (QA) will consist of the following:

- The EPCM Contractor will conduct periodic quality audits of Contractor's protocols and documentation to ensure Work is conducted according to approved work plans and procedures and that documentation is maintained in the manner prescribed by the contract. Refer to Appendix 3 for QA Audit schedule template.
- The EPCM Contractor representative will attend to all QA witness and hold points noted on Contractor approved ITPs and sign off QC check lists for all disciplines.
- The EPCM Contractor, directly or using third party agencies will carry out QA inspections, measurements, and testing of the Work in order to assure that the quality of the Work is in accordance with the requirements of the Contractor/Vendor's contract and to check and verify the quality control results and records of the Contractor/Vendor's Quality Control Program.
- The frequency of Quality Assurance verification testing and inspections will be determined for each contract/package and each Trade based on work criticality Refer to Supplier Quality Surveillance Assessment Form in Appendix 4.
- The frequency of QA verification testing and inspection will be adjusted based on the results of the QC and QA tests.

The EPCM contractor will give the Contractor timely notice of the intention to carry out any specific QA inspections and tests. The EPCM Contractor may, however, carry out routine inspections and tests on any part of the Work without notice. Once notice has been given by the EPCM Contractor, the Contractor shall not cover, or permit to be covered, Work that has been selected for specific tests.

All or any part of the Work, and any off-site locations where material or products for the Work are being prepared or stored, may be inspected by the EPCM Contractor when and as often as deemed expedient in order to meet the objectives of quality assurance. Refer to Appendix 2 for the QA inspections register template, which will be used to plan and document QA inspection for fabrication, construction and equipment installation.

Examples of Construction QA activities will include:

- Review the Contractor's QC Program and inspection test procedures.
- Review the Contractor's submittals
- Identify hold points on the Contractor's ITP's
- Review the Contractor's QC test results, reports and certificates
- Review and witness the construction of the Works
- Raise Non-Conformance for deficiencies they identify
- Review and comment on all Non-Conformances identified by the Contractor or the Inspectors
- Confirm acceptance or report Non-Conformances to the PM
- Conduct QA testings (concrete, welding NDE, coating, etc.)
- Identify and request third party material testing and inspections.

- Review third party inspection and testing reports and take appropriate actions if deficiencies are identified.
- Issue Daily and Monthly Construction Reports summarizing QA activities.

## **8.6 QC and QA testing discrepancy resolution**

The Contractor may challenge the results of any Quality Assurance tests indicating non-conformance and differ from the results of QC tests. The section of the Work in question shall be re-tested by an independent testing agency acceptable to both the Contractor and Client. Should the re-test confirm the results of the earlier test, the Contractor shall bear the costs of the additional tests. Should the re-test indicate conformance with the required quality standards, the Client shall cover the costs of the test.

## **8.7 Final Inspection**

The purpose final inspection is to ensure that prior to offering items and/or completed services for acceptance by Client and/or Statutory Authority:

- all inspections and tests have been satisfactorily completed
- all necessary inspection records are available for verification.

Finished items and/or completed services are inspected for:

- compliance with drawings, specification and referenced standards
- functionality
- appearance
- quantity
- correct identification
- conformance with any other final inspection requirements specified on the ITP.

Refer to Appendix 5 for the construction and installation QA checklists which will be used for Final Inspections.

---

# **9 Products, Services and Material Traceability**

## **9.1 Products, Services and Material Traceability**

Each product or service will be appropriately identified and be traceable to the contract and/or technical documentation, at all stages from receipt through to dispatch or in the case of site work, commissioning. Material Traceability levels will be in accordance with the requirements of the design standards for the project.

When, and to the extent, required by a contract, Code or Statutory Authority, each product or service shall have its unique identification recorded on all relevant documents and records, so as to enable traceability from beginning to end.

Identification and traceability requirements in respect of design/drawings/specifications, etc. are set out in EPCM Contractor drawing office procedures.

The Project Quality Manager will ensure that Suppliers and Contractors comply with the relevant traceability requirements applied to items or services in their Scope of Work.

The Traceability Level for off-site fabrication works shall be entered into the Technical and Procurement documentation. If the traceability level varies for different components of a fabricated item, this shall also be noted.

## **9.2 Control of Customer (the Client) Supplied Items**

Where the Client has supplied material or individual loose items for incorporation in the Project, these are appropriately identified as the Client property to avoid possible loss or accidental use on other work. Client supplied products/materials which are not to be immediately incorporated into the works shall be stored.

Client supplied design documentation will be reviewed for adequacy and accuracy and any anomalies or clarifications required will be addressed and resolved at contract review or, where they come to light.

---

## **10 Control of Non-Conforming Products**

### **10.1 Control of Non-Conforming Products**

The EPCM Contractor will be responsible for managing Project Non-conformance log.

All non-conforming products will be identified and controlled to prevent misuse until such time as disposition requirements are identified and project approved is received.

Types of disposition include:

- rework or repair to bring back to a compliant state
- use as is
- scrap

The dispositions may be subject to concession control as defined below.

Any Project personnel (including Client personnel) identifying a potential non-conformance shall notify the EPCM Contractor Project Manager or Discipline Engineer, who shall investigate the issue and confirm a non-conformance (NCR). Where a non-conformance is confirmed, a Non-Conformance Report (refer to Appendix 4) shall be raised detailing the nature of the non-conformance in accordance with the EPCM Contractor NCR Procedure.

The NCR shall be forwarded to the Project Quality Manager or nominee for registering and issuing of a unique number and the electronic copy forwarded to the relevant Discipline Engineer, Supervisor Supplier and/or Contractor. The PQM is responsible for logging of the NCR, review, approval and/or rejection of the proposed remedial action and final close-out of the non-conformance with the assistance of the relevant Supervisor/Lead/Manager.

Corrective and Preventative actions shall be established to address appropriate actions to correct non-conforming product and to assess the reasons for "failure" with a view to prevent re-occurrence. All corrective and preventative actions will be appropriate to the degree and severity of the non-conformity.

## 10.2 Concessions

The EPCM Contractor, in collaboration with suppliers/sub-contractors, may need to raise proposals for concessions for disposition of products that do not exactly meet specified requirements but, in the EPCM Contractor's opinion, are suitable for their intended use.

All proposals for a concession shall be subject to the approval of the design and quality representative, and if specified, the Client Representative(s).

This review/approval shall include specific details of the procedures to be followed to assure suitability.

The Contractor shall keep records of all changes as they occur (mark-ups of drawings and specifications), which will be compiled at the end of the project into Record Drawings.

---

## 11 Commissioning and Client Handover/Test Packs

Site equipment commissioning is supported by Test Packs developed during construction and completed by the addition of commissioning test records. The Test Pack is a compilation of construction and installation QC verification documents and is handed over to commissioning at the completion of pre-commissioning testing by the construction team.

The commissioning team will add commissioning checklists to the Test Packs as each level of testing is completed. The test packs are progressively combined into the integrated system documentation until the Performance Testing, Area Handover to the client and Commissioning Closeout are completed.

The Project Quality Manager will maintain an actively interface with the Commissioning team to ensure that issues with as-built compliance, completions and documentation are expeditiously identified and reconciled.

Commissioning activities will be audited for compliance to the Project Procedures by the Project Quality Manager or authorised delegate.

### 11.1 Manufacturer's Data Record (MDR)

The EPCM Contractor shall be responsible for providing a suite of documentation verifying that all necessary inspections, checks and testing requirements have been met prior to Plant System Handover for all work in the Project scope. The EPCM Contractor Quality Requirements noted in the Vendor/Contractor Contracts shall be used to create MDR Index.

Work shall not be considered as complete without the submission of Certification Records (e.g. inspection/completion reports) to the Client for approval and sign-off. These records shall be formulated and submitted progressively in parallel with construction activities.

Compilation of this documentation together with Manufacturer's records, if applicable, shall be made progressively throughout the Project and will constitute the Project Document and Data Deliverables handover to the client as a set of Manufacturer's Data Records (MDRs).

Certification Records shall be kept current throughout the execution of the Project. The Document Controller/Project Quality Manager shall ensure that the Certification Records are

maintained and compiled in a professional manner and filed on documents and records control system.

Electronic and/or hardcopies formats of MDR shall be prepared as per agreement with the Client.

All documents included in the MDRs shall be written in English, be clear and legible. MDR first volume shall contain an index for the entire set. Every other volume shall include an index for the contents of that specific volume. Each volume shall be clearly labelled.

Completed MDR shall be delivered to the Client no later than 12 weeks after EPCM Project completion of works.

---

## **12 Performance Measurement and Monitoring**

### **12.1 Audits**

The Project Quality Manager (or delegate) will develop QA audit schedule and conduct Internal and External Project QA Audits to ensure that Project approved protocols are implemented and followed. Refer to Appendix 3 – QA Audit Schedule:

- Internal audits are conducted to ensure the management system is operating effectively.
- External audits carried out on suppliers/sub-contractors to ensure that products/services supplied comply with the specified requirements.

### **12.2 Lessons Learnt**

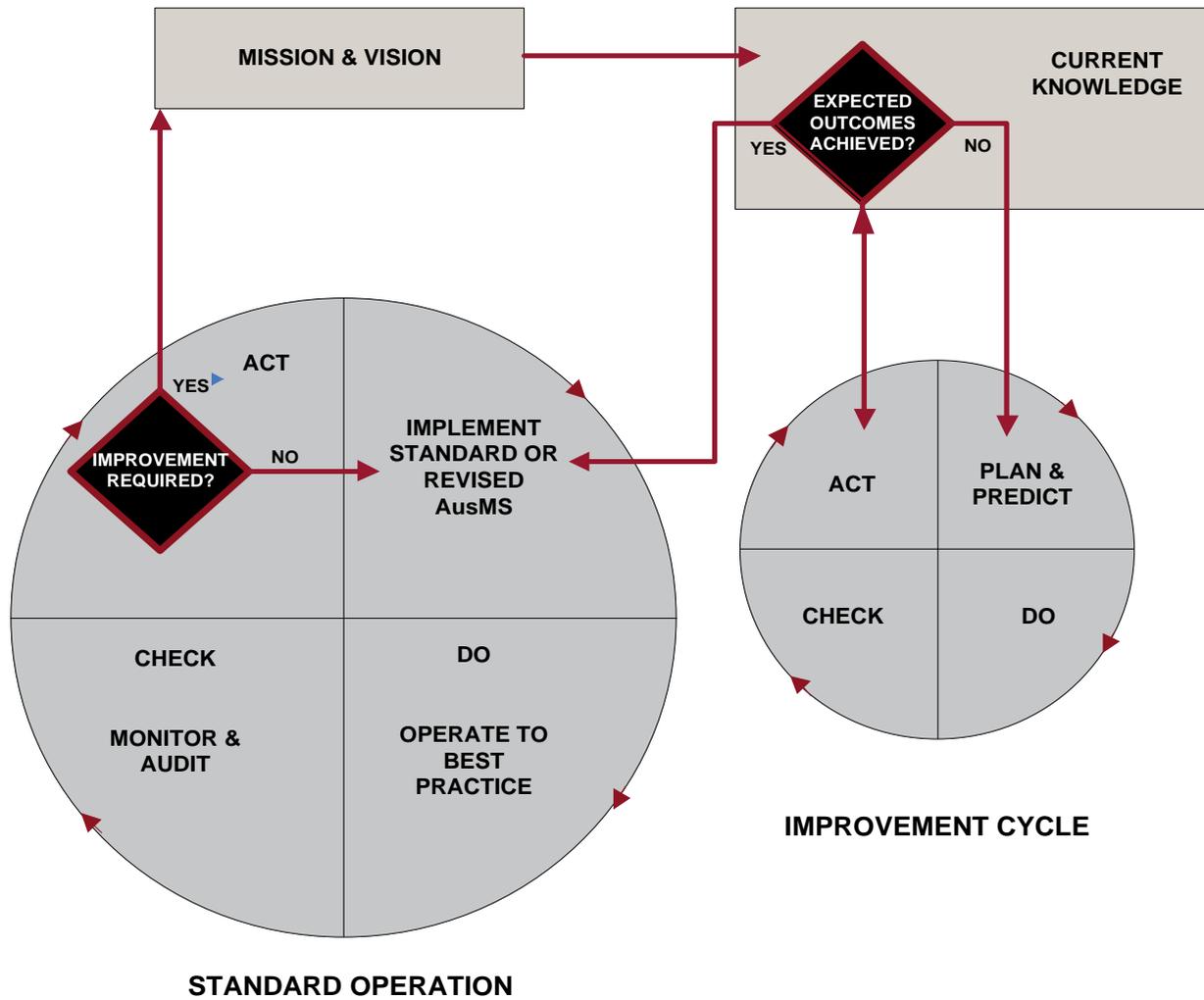
The Project Quality Manager shall collect lessons learnt through the duration of the Project and analyse them to identify opportunities for improvement and to avoid the recurrence of the problems.

Lessons learnt resulting in Process Improvements (as agreed by the Project Manager and other applicable Project team members) will be incorporated into the Project Plan and Procedures and issued to Project Team members for implementation.

As a minimum Lessons Learnt will be recorded at:

- detailed design completion
- commencement of site construction
- project closeout.

**Appendix 1 – Continual Improvement Cycle**







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## Appendix 4 –QA Documentation Examples

1. Suppliers Quality Surveillance Assessment Form
2. Vendor/Contractor ITP format example
3. Construction Daily report template
4. NCR Report template

## Supplier Quality Surveillance Assessment Form

|| Form

### Part A – Supplier Details

Supplier Name: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No: \_\_\_\_\_

Facsimile No: \_\_\_\_\_

P.O/Contract No: \_\_\_\_\_

Description: \_\_\_\_\_

Scope of Supply: \_\_\_\_\_

### Part B – Supplier Quality Surveillance Criteria

The following matrices provide a method for the objective assessment of a surveillance rating based on scoring the Supplier on a set of four criteria.

Additional risk factors to be considered when rating Surveillance are the country of manufacture and the extent of subcontracting that will be used. (e.g. if manufacture is in a country or from a supplier where problems have been encountered previously, the rating score may need to be adjusted and the next level of surveillance applied).

A. Safety and/or Quality Significance of the products and services to be supplied.

- Rating:  Low criticality  
 Medium criticality  
 High criticality

B. Cost Value of products/services to be supplied.

- Rating:  Low cost value  
 Medium cost value  
 High cost value

C. Scope of products/services to the Project programme.

- Rating:  Low potential to impact Project programme  
 Medium potential to impact Project programme (long lead items or availability)  
 Critical path items

D. Complexity of the scope of products/services to be supplied.

- Rating:  Low complexity, standard or simple items of supply  
 Medium complexity  
 Highly complex scope of supply

## Part C – Supplier Quality Surveillance Scoring

Rate surveillance on all criteria and position score on the matrix correspondingly (e.g. 2x3=6, 1x2=2)

Safety/Quality versus Cost Value  
(A versus B)

A. Safety/Quality  
Criticality

|   |   |   |   |
|---|---|---|---|
| 3 |   |   |   |
| 2 |   |   |   |
| 1 |   |   |   |
| 0 | 1 | 2 | 3 |

B. Cost Value

Score:

Programme Impact versus Complexity  
(C versus D)

C. Programme  
Impact

|   |   |   |   |
|---|---|---|---|
| 3 |   |   |   |
| 2 |   |   |   |
| 1 |   |   |   |
| 0 | 1 | 2 | 3 |

D. Complexity

Score:

## Part D – Supplier Quality Assessment & Surveillance Level

Determine final rating based on the score achieved in either matrix in Section C (i.e. use the highest score achieved. If two and four are scored, then assume four).

| Rating             | Score | SQ Level | Quality Assessment Action   |
|--------------------|-------|----------|---|
| Non-critical       | 0     | 0        | No inspection required  |
| Low criticality    | 1     | 1        | Final Inspection/release by appropriate third party.<br>Usually indicates visits at end of the assignment, but may include an initial inspection.   |
| Medium criticality | 2     | 2        | Witness & Hold Points, and Final Inspection/release by Ausenco appointed inspector.<br>Visits include those indicated on ITP as Witness and Hold Points, and Final inspection/release.                                |
| Highly criticality | 3-4   | 3        | Includes the same as SQ Level 2, but includes frequent stipulated visits (e.g. fortnightly or weekly).  |
| Extremely critical | 6-9   | 4        | Resident Ausenco appointed inspector.<br>Audit and review against specific scope and consider scheduling a multi-discipline review/audit and release. Continuous inspection for the full allocated assignment period. |

SQ Surveillance Assessment Completed By: \_\_\_\_\_

(Name & Position)

Date: \_\_\_\_\_







# Non-Conformance Report || Form

Ausenco procedures require that anomalies are recorded with a corrective action. This report is a permanent record of corrective and preventive actions taken to address non-conformance(s).

| Section One: General Information  |  |                  |  |
|---|--|------------------|--|
| NCR #:  |  | Date:            |  |
| Initiated by:   |  | Project #:       |  |
| Client:   |  | Project Title:   |  |
| Business Process:   |  | Project Manager: |  |
| Business Process Owner:   |  | Advisory Date:   |  |
| Manager Assigned:   |  | Advisory Date:   |  |
| Section Two: Description of Non-Conformance   |  |                  |  |
| <b>Initiator completes this section:</b>  |  |                  |  |
| Type (tick one): <input type="checkbox"/> Non-Conformance <input type="checkbox"/> Non-Conforming Product <input type="checkbox"/> Client Complaint |  |                  |  |
| Description (include requirement reference and clause):   |  |                  |  |
|   |  |                  |  |
| Immediate Actions Taken to Correct:   |  |                  |  |
|   |  |                  |  |
| Assigned to:  |  | Completion date: |  |
| Section Three: Investigate Root Cause and Plan Action   |  |                  |  |
| <b>Assignee completes this section:</b>   |  |                  |  |
| Root Cause Investigation:   |  |                  |  |
|   |  |                  |  |
| Type (tick applicable): <input type="checkbox"/> Corrective Action <input type="checkbox"/> Preventive Action                                       |  |                  |  |
| Action Plan:  |  |                  |  |
|   |  |                  |  |

|   |  |                         |  |
|---|--|-------------------------|--|
|   |  |                         |  |
| Name of Actionee:                                       |  | Target Completion date: |  |
| Name of Assignee:                                       |  | Date:                   |  |
| <b>Section Four: Action Completed</b>                   |  |                         |  |
| <b>Actionee completes this section:</b>                 |  |                         |  |
| Details of Action Completed:                            |  |                         |  |
|   |  |                         |  |
| Name of Actionee:                                       |  | Date:                   |  |
| Approved by Assignee:                                   |  | Date:                   |  |
| <b>Section Five: Verify Effectiveness and Close Out</b> |  |                         |  |
| <b>Quality completes this section:</b>                  |  |                         |  |
| Proposed follow-up date:                                |  | Assigned to:            |  |
| Details of Verification:                                |  |                         |  |
|   |  |                         |  |
| Signature:  |  | Date:                   |  |

---

**Appendix 5 – Selected Final Inspection QA Checklists**

## C0 – Pre-Commissioning:

|                          |                                    |
|--------------------------|------------------------------------|
| <b>Tank Installation</b> | <b>Test Report</b><br>C0 – M – 015 |
|--------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | Installation checked against Drawings   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Materials of construction as per Specification and Drawings                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | All debris and waste material removed from Tank and Bund Area                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Drain Valve Installed Correctly and gasket in place and all bolts tight       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Inspection Door/Manhole Covers Gasket in place and bolts tight.               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Sealant in place and not damaged between base of tank and ring bream          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Foam material removed around base of concrete ring bream and sealant in place | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Floor Plate, Handrails and Kick plates installed and secure.                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | All Timber flooring captured within stops welded to the steelwork             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Tank Baffles welded or bolted in place  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Downcomers Installed  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Gaskets correct type, in place and all bolts tight on tank launders           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Laundry Slide Gates installed/ move freely up and down                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Intertank Screen Support Frame in place and secure                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | If Removable Roof Installed, gasket and bolts all in place and tight          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Hydrostatic testing of tank complete (refer to Check Sheet C0-M-05)           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Vent Pipe installed and secure  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Internal Paint spark tested and repairs completed                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | No Damaged External Paint work  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Air Sparges installed/secured and all nozzles fitted and tight                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Cooling Coils installed and secured   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | Bracing supports for Air Sparges and Cooling Coils secure                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | Carbon transfer Pump support frame installed and secure.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | Tank Number visible on side of tank (painted/signage)                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 25. | All rubber lined tanks signage posted stating ( No Welding or Cutting) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. | Seal Pot Installed and filled with water up to drain hole              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. | Punch list completed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
|----------|
|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

# C0 – Pre-Commissioning:

|                |                                    |
|----------------|------------------------------------|
| <b>Welding</b> | <b>Test Report</b><br>C0 – M – 109 |
|----------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

| In Process Inspection/Activity  |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|---|--|--------------------------|--------------------------|--------------------------|
| This checklist is to be filled out at the completion of each work area. |  |                          |                          |                          |
| 1.  | Material complies with specified requirements.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Weld Procedures/welder qualifications. issued and approved.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Pre-fit up/cleanliness, root gap, landing-welding check.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Dimensional checks to drawing acceptable prior to weld out.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Consumable verification as per WPS.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Joint and flange alignment acceptable.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | In process production weld checks.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Root run visual check/as per code requirement.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Hot pass visual check/as per code requirement.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10.   | Capping run visual check/as per code requirement.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11.   | Random WPS parameter check applicable as per code requirement.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12.   | 100 % visual inspection/complies and acceptable.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13.   | Post welding checks.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14.   | PWHT acceptable/register/as per code requirement. After PWHT replace gaskets as required and retighten flange bolts. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15.   | In process NDT conducted/as per code requirement.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16.   | NDT completed and acceptable/register.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
|----------|
|          |

|                        | <b>Completed by</b> | <b>Approved by</b> | <b>Accepted by</b> |
|------------------------|---------------------|--------------------|--------------------|
| <b>Company:</b>        |                     |                    |                    |
| <b>Signature:</b>      |                     |                    |                    |
| <b>Print Name:</b>     |                     |                    |                    |
| <b>Position Title:</b> |                     |                    |                    |
| <b>Date:</b>           |                     |                    |                    |

## C0 – Pre-Commissioning:

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Cathode Winder</b> | <b>Test Report</b><br>C0 – M – 066 |
|-----------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|    |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|----|--|--------------------------|--------------------------|--------------------------|
| 1. | All Manufacturer's requirements complied with.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Design checked against Drawings.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | All debris and waste material removed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Bearings where grease nipples fitted (Shaft) have two full pumps with grease gun.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Frame wheels locking pins in place and clearance between wheel and frame sufficient to stop binding. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Rotating mechanism operates freely with no binding.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | Cathode support frames installed and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | All safety signage installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Punch list completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|                 |
|-----------------|
| <b>Comments</b> |
|                 |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                                |                                    |
|--------------------------------|------------------------------------|
| <b>Centrifugal Slurry Pump</b> | <b>Test Report</b><br>C0 – M – 023 |
|--------------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | All Manufacturer's requirements complied with.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Pump Base Frame bolts in place/Grouting complete.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Installation checked against Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Motor/Pump Shaft locking clamps removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Initial fill of lubricant to shaft housing bath complete/checked.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Bearings where grease nipples fitted (Motor/Shaft/Barrel) have two full pumps with grease gun.                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Grease Packed Bearing Initial fill checked.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | No visible oil leaks.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Ensure no load is transmitted to pump from discharge and suction piping.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | V Belt Pulleys Alignment complete (Attach check sheet C0-M-013).  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Gland seal Packing in place.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Gland Water piping and insulation valve installed and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Manually rotate pump as per directional arrow with V belts removed. If no free movement adjustment of impeller will be required | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Suction and Discharge Pipes installed correctly, right gaskets in place and all bolts tight.                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Suction Scuttle plug seals tight.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Isolation Valve on suction line installed correctly, right gaskets in place and all bolts tight.                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | All Safety Guards Installed and checked for pinch points.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | All safety signage installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Punch list Completed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments                                 |
|--|
| <br><br><br><br><br><br><br><br><br><br> |

|                 | Completed by | Approved by | Accepted by |
|-----------------|--------------|-------------|-------------|
| Company:        |              |             |             |
| Signature:      |              |             |             |
| Print Name:     |              |             |             |
| Position Title: |              |             |             |
| Date:           |              |             |             |

## C0 – Checksheets:

|                             |                                    |
|-----------------------------|------------------------------------|
| <b>Concrete Pour Record</b> | <b>Test Report</b><br>C0 – C – 010 |
|-----------------------------|------------------------------------|

|                                |  |                     |  |
|--------------------------------|--|---------------------|--|
| <b>Project Title:</b>          |  | <b>Contract No:</b> |  |
| <b>Date:</b>                   |  | <b>Weather:</b>     |  |
| <b>Pour Commence Time:</b>     |  |                     |  |
| <b>Concrete Docket Numbers</b> |  |                     |  |
| <b>Cylinders Take:</b>         | <input type="checkbox"/> Yes <input type="checkbox"/> No |                     |  |

|  |                                |                    |                             |
|--|--------------------------------|--------------------|-----------------------------|
| <b>Pour Location Details/Description:</b>  |                                |                    |                             |
| 1.   | Pour Reference                 |                    |                             |
| 2.   | Drawing Reference              |                    |                             |
| 3.   | Mix/Code Reference             |                    |                             |
|  |                                | <b>Actioned by</b> |                             |
| 4.   | <b>A Drawing Quantity</b>      | M <sup>3</sup>     | <b>Engineer ^^</b>          |
| 5.   | <b>B Site Measure Quantity</b> | M <sup>3</sup>     | <b>Engineer</b>             |
| 6.   | <b>C Delivered Quantity</b>    | M <sup>3</sup>     | <b>Engineer/Foreman</b>     |
| 7.   | <b>D Placed Quantity</b>       | M <sup>3</sup>     | <b>Engineer/Foreman</b>     |
| 8.   | <b>E Loss on Pour (A-D=E)</b>  | M <sup>3</sup>     | <b>Engineer Calculation</b> |
| ^^ From Weekly Programme.  |                                |                    |                             |
| * If Placed quantity is less than delivered (i.e. does not match C) identify location of used below. |                                |                    |                             |

|  |
|--|
| <b>Record of Concrete used in other Locations:</b> |
|  |

|   |
|---|
| <b>Possible reason for any loss on Pour (E above)</b> |
|   |

|   |  |                    |  |
|---|--|--------------------|--|
| <b>Quality Assurance Report Details</b> |  |                    |  |
| <b>Pour Progress OK</b>                 | <input type="checkbox"/> Yes <input type="checkbox"/> No | <b>NCR?</b>        | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| <b>NCR details (as required)</b>        |  |                    |  |
| <b>Interval between Loads</b>           |  |                    |  |
| <b>Pour Rate Restrictions</b>           |  |                    |  |
|   |  |                    |  |
| <b>Supervisor Responsible</b>           |  | <b>Prepared by</b> |  |

## C0 – Pre-Commissioning:

|                      |                                    |
|----------------------|------------------------------------|
| <b>Concrete Work</b> | <b>Test Report</b><br>C0 – C – 002 |
|----------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

| In Process Inspection/Activity  |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|---|--|--------------------------|--------------------------|--------------------------|
| This checklist is to be filled out at the completion of each work area. |  |                          |                          |                          |
| <b>Pre-Work</b>   |  |                          |                          |                          |
| 1   | Mix design approved by Engineer  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2   | Work area established as per Scope of Work and confirmed by superintendent   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Foundation Preparation</b>   |  |                          |                          |                          |
| 3   | Surveyed and marked-out limit of area  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4   | Excavation completed as per specification (correct batter slope or benching if required)                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5   | Subbase material as per geotechnical specification   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6   | Bearing tests completed, compaction tests completed, compaction levels accepted and within tolerance of specifications | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7   | Water proofing membrane/blinding installed as per drawing and specification  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Reinforcement</b>  |  |                          |                          |                          |
| 8   | Reinforcement fabricated as per drawings   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9   | Sufficient ties and chairs (non-metallic), rebar clearance   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10  | Lap lengths and positions, spliced bars in contact and firmly tied together  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11  | Tie-wire ends turned in to the concrete core   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12  | Starters capped  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13  | Surface condition of reinforcement (free of deep rust, scaling, paint or grease)                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Formwork Installation</b>  |  |                          |                          |                          |
| 14  | Set out/correctly positioned as per design   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15  | Shutters fabricated/assembled as per design  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16  | Forms checked so no potential for grout leaks  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17  | Props and tubes inspected; free from splits, cracks, visible deformations, rusts and dents                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| In Process Inspection/Activity  |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|---|---|--------------------------|--------------------------|--------------------------|
| This checklist is to be filled out at the completion of each work area. |   |                          |                          |                          |
| 18  | Propped and braced as per design, formwork signed off (greater than 2 m high)   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Embedment</b>  |   |                          |                          |                          |
| 19  | Block outs as per drawings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20  | Services installed as per drawings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21  | Hold down bolts - number, size and position as per drawing, exposed threads protected   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Concrete Pour</b>  |   |                          |                          |                          |
| 22  | Concrete finished as per specification and drawings (steel trowel, etc.)  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23  | Concrete cured as per specification and drawings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24  | Concrete joined to existing structure as per specification and drawings (surfaces cleaned and scabbled, construction joints, water stops, bonding paints) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 25  | Concrete finished to required level, shape, thickness, falls, etc - Confirmed by survey   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26  | Concrete finished as per specification and drawings (steel trowel, etc.)  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Formwork Stripping</b>   |   |                          |                          |                          |
| 27  | Stripping of formwork completed to specification  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 28  | Retardants washed off concrete surface  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29  | Inspection of concrete completed for spalling, significant blowholes, honeycombing, etc.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 30  | Formwork ties cut off and grout applied to cut-out location   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Backfilling</b>  |   |                          |                          |                          |
| 31  | Backfill material inspected and approved for use as per Scope of Work and specification   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 32  | Backfill placed and compacted as per specifications and drawings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Post-Work</b>  |   |                          |                          |                          |
| 33  | "As-Built" Drawings Completed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 34  | All items completed as per Scope of Work  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |  |  |  |  |
|----------|--|--|--|--|
|          |  |  |  |  |

|                        | <b>Completed by</b> | <b>Approved by</b> | <b>Accepted by</b> |
|------------------------|---------------------|--------------------|--------------------|
| <b>Company:</b>        |                     |                    |                    |
| <b>Signature:</b>      |                     |                    |                    |
| <b>Print Name:</b>     |                     |                    |                    |
| <b>Position Title:</b> |                     |                    |                    |
| <b>Date:</b>           |                     |                    |                    |

## C0 – Pre-Commissioning:

|                 |                                    |
|-----------------|------------------------------------|
| <b>Conveyor</b> | <b>Test Report</b><br>C0 – M – 002 |
|-----------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 1.  | Installation checked against drawings                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Location and overall dimensions correct                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Materials of construction as per Specification and Drawings              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | All alignments and levels checked and adjusted, in particular:           |                          |                          |                          |
|     | • Stringers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Pulleys and pulley bearings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Troughing idlers   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Training idlers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Transition idlers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Impact idlers  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Belt   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Feed chutes  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Others   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | All bolted connections checked for tightness, in particular:             |                          |                          |                          |
|     | • Structure  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Idlers   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Pulley bearing holding down and alignment bolts                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | All other connections checked for firmness                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Belt drive pulleys alignment sheet C0-M-13 complete                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Mechanical Coupling Alignment Sheet C0-M-11 or C0-M-12 complete          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Initial fill of lubricant to gear box complete/checked                   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Hydraulic Reservoir initial fill on fluidised coupling complete/checked  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Bearings where grease nipples fitted have two full pumps with grease gun | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | No visible oil leaks   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 13. | Brake Tension adjustment completed/checked to hold when no power to drive/release when power onto drive. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | All rotating components greased and checked for free running, in particular:                             |                          |                          |                          |
|     | • Pulleys  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Idlers   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | All idlers correctly seated in frames  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Freedom of take-up pulley movement checked   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Take-up mass _____ kg  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Screw take-up adjusted   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Holdback on drive checked, in particular:  |                          |                          |                          |
|     | • Arrow on cam face in direction of rotation   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | • Torque arm correctly installed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Belt splice test report C0-M-04 complete   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Belt weigher installation checked  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | Belt weigher calibration weights in place  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | All handrails, safety guards (checked for pinch points) and wind guards in place                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | All belt and personnel safety devices installed and checked  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. | All grouting complete  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. | All safety signs in place  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. | All debris and waste material moved  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. | All moving parts clear of stationary items   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. | Punch list completed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
|----------|
|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                |                                    |
|----------------|------------------------------------|
| <b>Cyclone</b> | <b>Test Report</b><br>C0 – M – 079 |
|----------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 1.  | All Manufacturer's requirements complied with.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Location and overall dimensions correct.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Materials of construction as per Specification and Drawings.       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | All alignments checked in accordance with appropriate test report. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | All bolts tightened to specified torque.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | All pipe work cleaned, treated and correctly installed.            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | All debris and waste material removed.                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Handrails and kickplates in place and secure.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | All Safety signs installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Signage posted on Cyclone stating (No Welding or Cutting).         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Punch list Completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|                 |
|-----------------|
| <b>Comments</b> |
|                 |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                                |                                    |
|--------------------------------|------------------------------------|
| <b>Earthworks Construction</b> | <b>Test Report</b><br>C0 – C – 003 |
|--------------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | Clearing and grubbing completed, rubbish material relocated to waste dump                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Excavations completed to required level   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Subbase material inspected as per geotechnical specification  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Subbase compaction tests completed, compaction levels accepted and within tolerance of specifications           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Placement of geofabric sheets as per drawings and specifications  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Backfill material inspected and approved for use as per Scope of Work and specification                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Backfill compaction tests completed, compaction levels accepted and within tolerance of specifications          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Road constructed as per Scope of Work, signage, guiderails and safety bunds installed, finished levels achieved | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | All areas free draining to sump or outlet, grating on sumps   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Culverts and pipes installed as per drawings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Installation of sediment fences as per drawings   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | All fencing established as per drawings   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | All items in Scope of Work completed  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
|----------|
|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                            |                                    |
|----------------------------|------------------------------------|
| <b>Electrowinning Cell</b> | <b>Test Report</b><br>C0 – M – 064 |
|----------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | All Equipment installed in accordance with Design requirements, Project specifications and Manufacturers instruction.     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Ensure Name Plate data is correct.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Adjustable weir installed and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Check all Stainless Steel Anode plates installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Check all Cathode Plates installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Copper Bus Bar secure, all bolts in place and tight.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Inlet and Discharge Pipes installed correctly, right gaskets in place and all bolts tight.                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Isolation Valves on inlet/outlet and cell drainage lines installed correctly, right gaskets in place and all bolts tight. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | All safety signage installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Punch list completed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
|----------|
|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                                |                                    |
|--------------------------------|------------------------------------|
| <b>Elution/Acidwash Column</b> | <b>Test Report</b><br>C0 – M – 070 |
|--------------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | All Manufacturer's requirements complied with.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Verify that the nameplate data is correct.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Column opened/inspected/any waste material removed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Inspection hatch gasket and all bolts in place/bolts tight.                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Support beams bolts in place/Grouting complete.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Ensure that the earthing boss installed as per drawing standard.                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Isolation Valves-Inlet/Outlet pipe lines installed, right Gaskets in place and all bolts tight. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Non-Return Valves Installed Correctly.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Busting disc inspected and no visible damage .  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Ensure all flanges on Elution Column suitable Class 3 Pressurized Vessel.                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Rubber lining inspected and no visible damage.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Pressure release valve installed and ungagged.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Internal Strainers installed correctly.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Manifold installed correctly, all gaskets and bolts correct type.                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | All thermal and acoustic insulation to Specification.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | All safety signage installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Punch list complete.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|          |

|                        | <b>Completed by</b> | <b>Approved by</b> | <b>Accepted by</b> |
|------------------------|---------------------|--------------------|--------------------|
| <b>Company:</b>        |                     |                    |                    |
| <b>Signature:</b>      |                     |                    |                    |
| <b>Print Name:</b>     |                     |                    |                    |
| <b>Position Title:</b> |                     |                    |                    |
| <b>Date:</b>           |                     |                    |                    |

## C0 – Pre-Commissioning:

|                          |                                    |
|--------------------------|------------------------------------|
| <b>Fire Water System</b> | <b>Test Report</b><br>C0 – M – 041 |
|--------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | All Manufacturer's requirements complied with.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Pressure testing of piping complete (refer to Check Sheet C0-M-08).   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Piping Installation check sheet complete (refer to Check Sheet C0-M-17).  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | All safety signage installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | All Fire Hydrant Cabinets installed correctly and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Water valve opens and closes freely and no pinch points.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Fire Hydrant cabinet contents in particular: <ul style="list-style-type: none"> <li>• Water hose correct type</li> <li>• Hose Couplings secured to hose with clamp and tight</li> <li>• Coupling gaskets in place</li> <li>• Hose Nozzle correct type and gasket in place.</li> </ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | All Hose Reel racks installed correctly and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Manually rotated hose reel cradle to check for binding.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Hose and Nozzle correct type/nozzle clamped to hose and tight.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Hose guide installed and roller moves freely.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Punch list completed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|          |

|                        | <b>Completed by</b> | <b>Approved by</b> | <b>Accepted by</b> |
|------------------------|---------------------|--------------------|--------------------|
| <b>Company:</b>        |                     |                    |                    |
| <b>Signature:</b>      |                     |                    |                    |
| <b>Print Name:</b>     |                     |                    |                    |
| <b>Position Title:</b> |                     |                    |                    |
| <b>Date:</b>           |                     |                    |                    |

## C0 – Pre-Commissioning:

|                             |                                    |
|-----------------------------|------------------------------------|
| <b>Gravity Concentrator</b> | <b>Test Report</b><br>C0 – M – 082 |
|-----------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 1.  | All Punch Lists completed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Location and overall dimensions correct.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Check maintenance access.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Rotor spins freely.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Piping installed (Concentrate, Tailings, Feed, Water), Feed valve installed.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Check ease of lid removal.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Materials of construction as per Specification and Drawings.                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Inspect equipment for signs of damage during installation.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | All moving parts clear or stationary items.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | All bolts tightened to specified torque.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | All grouting complete.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | All pipe work cleaned, treated and correctly installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | All pressure tests complete as Test Report C0-M-008.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | All handrails, pull wires, guards (checked for pinch points) and other safety devices installed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | All drains and sumps free of foreign matter.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | All debris and waste material removed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Initial oil fill and greasing complete.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | All Safety Signs in place.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | All rubber lined tanks/Piping/chutes signage posted stating "No Welding or Cutting).             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | All Manufacturer's requirements complied with.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|                 | Completed by | Approved by | Accepted by |
|-----------------|--------------|-------------|-------------|
| Company:        |              |             |             |
| Signature:      |              |             |             |
| Print Name:     |              |             |             |
| Position Title: |              |             |             |
| Date:           |              |             |             |

## C0 – Pre-Commissioning:

|                       |                                    |
|-----------------------|------------------------------------|
| <b>Heat Exchanger</b> | <b>Test Report</b><br>C0 – M – 073 |
|-----------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | Ensure that all equipment is installed in accordance with Design requirements, Project specifications and Manufacturers instructions. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Check Name plate data is correct.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Verify all transport/storage items have been removed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | All hold down bolts in place and tight/Grouting completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Verify that the heat exchanger position, orientation and level is correct to design requirements and project specification.           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Check sliding end expansion bolts are set correctly.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Verify that the correct type/number of exchanger plates and gaskets have been installed correctly.                                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Inspect all exchanger nozzles and tubes are clear of debris.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Verify that isolation valves /flange gaskets are correct and bolts tight.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Verify shell and head bolts are torque to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Verify inlet and discharge pipe work flanges aligned, gaskets in place and bolts tight.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | All external fittings are correctly installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Check and verify correct relief valve installed and test certificate is available.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Check all thermal and acoustic insulation is correct to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | No visible lubricate/solution leaks.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | All Safety Guards Installed and checked for pinch points.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | No visible damage to heat exchanger unit.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | All safety signage installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Punch list Completed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments                                 |
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| <br><br><br><br><br><br><br><br><br><br> |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|   |                                    |
|---|------------------------------------|
| <b>Hydrostatic Pressure Test - Piping</b> | <b>Test Report</b><br>C0 – M – 008 |
|---|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   |                |                       | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|----------------|-----------------------|--------------------------|--------------------------|--------------------------|
| 1.  | Line Nos. Included in Test:   |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     |   |                |                       |                          |                          |                          |
|     |   |                |                       |                          |                          |                          |
|     |   |                |                       |                          |                          |                          |
|     |   |                |                       |                          |                          |                          |
| 2.  | Testing Data:   |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | Test pressure:  | Test medium:   | Hold time:            |                          |                          |                          |
|     | Approx Vol:   | Inhibitor:     | Freq of data logging: |                          |                          |                          |
|     | Temp.range:   | Flushing time: | Flushing time:        |                          |                          |                          |
| 3.  | Where required ,all instruments and sensitive equipment has been removed from test line |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | All openings in test line sealed with fittings adequate for the test pressure.          |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Vent points are at the highest point  |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Test Line is adequately supported   |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | All Safety signs/tape in place  |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | All valves in line open   |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | System to be filled until fluid exits from high point vent                              |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Pump system up to test pressure and locked in   |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | When pressure stabilises test duration can commence and record pressures.               |                |                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  |              |                   |                        | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------|-------------------|------------------------|--------------------------|--------------------------|--------------------------|
| 12. | Record   |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     | Start time:  | Start date:  | Start temp:       |                        |                          |                          |                          |
|     | End time:  | End date:    | End temp:         |                        |                          |                          |                          |
|     | Gauge No:  | Recorder No: | Calibration date: |                        |                          |                          |                          |
| 13. | <b>Date</b>  | <b>Time</b>  | <b>Pressure</b>   | <b>Ambient Temp °C</b> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|     |  |              |                   |                        |                          |                          |                          |
| 14. | On Completion ensure:  |              |                   |                        |                          |                          |                          |
| 15. | • Pipework is drained and dried  |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | • All instruments, equipment and valves re-installed   |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | • All re-installed instruments, equipment and valve connections have gaskets and seals fitted and all flange bolts tight |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Attach P&ID (Highlight pipe section in Question)   |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Safety Signs/tape removed  |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Punch List completed   |              |                   |                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                         |                                    |
|-------------------------|------------------------------------|
| <b>Hydrostatic Tank</b> | <b>Test Report</b><br>C0 – M – 005 |
|-------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|    |                                 | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|----|---------------------------------|--------------------------|--------------------------|--------------------------|
| 1. | Start Time: ..... Level: .....  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Finish Time: ..... Level: ..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Duration: ..... Hours: .....    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Loss in Level: ..... mm         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Other:                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | Results:                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
|----------|
|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|             |                                    |
|-------------|------------------------------------|
| <b>Mill</b> | <b>Test Report</b><br>C0 – M – 055 |
|-------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|    |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|----|---|--------------------------|--------------------------|--------------------------|
| 1. | Ensure that all equipment is installed in accordance with design requirements, project specifications and manufacturer's instructions.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. | Verify that foundations and footings are correct and level.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. | Verify that the mill position, elevation, orientation and level are correct to drawing specification.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. | Verify that all structures and foundations are in accordance with design spec.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. | Verify that the type of grout, curing agent and setting time has been complied with and recorded.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. | All moving parts clear of stationary objects.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. | Feed End Equipment correctly installed/check in particular: <ul style="list-style-type: none"> <li>• Feed spout fitted and aligned</li> <li>• Feed end seal fitted</li> <li>• Slurry slingers installed</li> <li>• Pedestal support frame and clamps fitted</li> <li>• Seal water lines in installed and secure.</li> </ul>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. | Trunnion Bearings correctly installed/check in particular: <ul style="list-style-type: none"> <li>• Bearing Housing Aligned and bolts torque to manufacturers requirements</li> <li>• Floating bearing positioning checked</li> <li>• Seals and dust covers installed</li> <li>• Hold down bolts torque to manufacturers requirements and grouting completed</li> <li>• Adjustment shims spot welded to baseplate and covered with denso tape</li> <li>• All piping and fittings installed correctly and secure.</li> </ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 10. | Girth Gear correctly installed/check in particular: <ul style="list-style-type: none"> <li>• All support bolts in place and torque to manufacturers requirements</li> <li>• Gear lubrication system piping and fitting secure and unit ready for operation</li> <li>• Jacking screws have been backed off</li> <li>• Sufficient coating of lubricant on all gear teeth</li> <li>• Girth gear guard secured</li> <li>• Girth gear felt seals fitted and adjusted.</li> </ul>  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Pinion Bearing correctly installed/check in particular: <ul style="list-style-type: none"> <li>• Hold down bolts torque to manufacturers requirements and grouting completed</li> <li>• Adjustment shims spot welded to baseplate and covered with denso tape</li> <li>• Sufficient coating of lubricant on all pinion teeth</li> <li>• End cover installed and secure.</li> </ul>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Mill Motor installed correctly/Check in particular: <ul style="list-style-type: none"> <li>• Hold down bolts torque to manufacturers requirements and grouting completed</li> <li>• Motor bearings which have grease nipples fitted (two full pumps with grease gun completed)</li> <li>• Mechanical Coupling Alignment Sheet C0-M-011 or C0-M-012 complete</li> <li>• Coupling safety guard in place and secure.</li> </ul>   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | All bearing, temperature detectors and seals are installed correctly.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Verify rubber backing installed on internal of mill shell.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | All Liners and lifters installed as per manufacturers drawings and bolts torque to spec.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Mill door fitted and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Discharge trommel installed correctly/check in particular: <ul style="list-style-type: none"> <li>• Permatex or sikaflex type sealant inserted in any voids between trommel flange and Mill discharge end liner.</li> <li>• All bolts torque to manufacturers requirements and exposed bolt heads cover with silaflex.</li> <li>• No visible damage to rubber on trommel frame</li> <li>• Screen fitted and secure</li> <li>• Reverse spirals installed and secure</li> <li>• Discharge grate installed and secure.</li> </ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | All safety fences, access platforms and safety signs are installed correctly.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Erecting cradle clear from Mill shell.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  | N/A  | Inspected by Contractor  | Inspected by Engineer  |
|-----|--|--|--|--|
| 20. | Gearbox Installed Correctly/check in particular: <ul style="list-style-type: none"> <li>• Initial fill of lubricant to gear box complete/checked</li> <li>• Hold down bolts torque to manufacturers requirements and grouting completed</li> <li>• Mechanical Coupling Alignment Sheet C0-M-011 or C0-M-012 complete</li> <li>• Coupling safety guard in place and secure</li> <li>• Shaft Seals greased</li> <li>• Breather line installed</li> <li>• Cooling water system all piping and fittings secure</li> <li>• Torque arm fitted and secure.</li> </ul> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> | <input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/><br><input type="checkbox"/> |
| 21. | Punch list Completed.  | <input type="checkbox"/>   | <input type="checkbox"/>   | <input type="checkbox"/>   |

| Comments |
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|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                                  |                                    |
|----------------------------------|------------------------------------|
| <b>Pipework-Final Inspection</b> | <b>Test Report</b><br>C0 – M – 095 |
|----------------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 1.  | Materials Correct.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Supports, Anchors Correct.                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Cold Spring/Expansion items Correct 'Where Applicable'.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Flange Connections Free of Stress.                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Correct Studs/Gaskets Installed.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Bolts Correctly Tensioned and Identified (X).            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Welding Completed.                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Stress Relieving Complete.                               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Pressure Test Complete and Correct.                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Flushing Complete and Correct.                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Drying Out/Blowing Out Complete.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | All Quality Requirements Met (NDT/Verification Records). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Check Valve Orientation/Flow Direction Correct.          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Valve Ease of Operation Confirmed.                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Orifice Plates Correctly Orientated.                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Instrument Connections Correct and Secure.               | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Insulation Correct and Completed 'Where Applicable'.     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Temporary Supporting Removed.                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Painting Completed.                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Services Banding and Flow Codes Applied.                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|                        | <b>Completed by</b> | <b>Approved by</b> | <b>Accepted by</b> |
|------------------------|---------------------|--------------------|--------------------|
| <b>Company:</b>        |                     |                    |                    |
| <b>Signature:</b>      |                     |                    |                    |
| <b>Print Name:</b>     |                     |                    |                    |
| <b>Position Title:</b> |                     |                    |                    |
| <b>Date:</b>           |                     |                    |                    |

## C0 – Pre-Commissioning:

|                        |                                    |
|------------------------|------------------------------------|
| <b>Primary Crusher</b> | <b>Test Report</b><br>C0 – M – 037 |
|------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | All Manufacturer's requirements complied with.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | All debris and waste material removed in particular the crusher jaw chamber and discharge chute.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | All moving parts clear of Stationary items.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | All Shipping Locks removed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Grouting complete.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | All bolted connections checked for tightness, in particular: <ul style="list-style-type: none"> <li>• Foundation bolts</li> <li>• Bearing housing Studs</li> <li>• Electric Motor</li> <li>• Flywheel</li> <li>• Tension Rods</li> <li>• Jawface Retainer bolts</li> <li>• Toggle Block.</li> </ul> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Toggle block/adjusting cylinder hand pump valve fully open and toggle block is hard up against frame of shim.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | .Jaw CSS setting checked (should be no less than 100mm).  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Initial fill of lubricant to unit complete/checked.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Manual lubricant pump checked.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | No damage to grease lines/grease is through to all points that are centrally lubricated (Jawholder and Main Bearings).  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Electric Motor Bearings have two full pumps with grease gun completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | No visible lubricate leaks.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | V Belt Pulleys Alignment complete (Attach check sheet C0-M-13).   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Floor grid mesh, Floor Plate in place and secured by welding or clamps, except grating panels nominated as removable.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 17. | All Safety Guards Installed and checked for pinch points.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | All safety signage installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | Punch list Completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | All Manufacturer's requirements complied with.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Installation checked against Drawings.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | All debris and waste material removed in particular the crusher jaw chamber and discharge chute. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | All moving parts clear of Stationary items.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | All Shipping Locks removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                          |                                    |
|--------------------------|------------------------------------|
| <b>Pump Installation</b> | <b>Test Report</b><br>C0 – M – 099 |
|--------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

| In Process Inspection/Activity  |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|---|---|--------------------------|--------------------------|--------------------------|
| This checklist is to be filled out at the completion of each work area. |   |                          |                          |                          |
| 1.  | Foundations complete, level and accepted.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Pump and driver level base anchor bolts tight.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Grouting complete and accepted/coupling set and jacking screws tight.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Piping connections with no strain on connections/flanges.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Verify pressure test acceptance before final alignment/coupling checked and accepted.                                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Rotate driver and pump with the coupling open/coupling document number required (Mechanical Shaft Alignment Check Sheet). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Jacking Screws removed/mechanical seals or packing installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Shafts turn freely by hand/coupling lubricated and closed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Accessories installed and ready for service i.e. gauges, guards, vents, drains, oil rings in and free.                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10.   | Aux systems complete i.e. seal, flush, etc./temp suction screens in place.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11.   | Cleanliness checked/coupling guard secured.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12.   | Ground/earth strap installed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13.   | Insulation completed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|  |                                    |
|--|------------------------------------|
| <b>Steel Frame Building Inspection</b> | <b>Test Report</b><br>C0 – M – 116 |
|--|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|                              |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|------------------------------|--|--------------------------|--------------------------|--------------------------|
| <b>Preliminaries</b>         |  |                          |                          |                          |
| 1.                           | Equipment checked for suitability                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.                           | Erection sequence established                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Steel Erection</b>        |  |                          |                          |                          |
| 3.                           | Steel erection checklists                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.                           | Structure level, aligned and plumbed                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.                           | Bolts tightened (Bolting checklist completed)                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.                           | Earthing completed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.                           | Grout correct (Grout mixing and placement checklist completed) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.                           | Ventilation installation complete                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Cladding</b>              |  |                          |                          |                          |
| 9.                           | Correct purlins and girts (Bolting checklist completed)        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10.                          | Sheeting correct colour and placed                             | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11.                          | Fastening completed  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12.                          | Ventilation installation complete                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13.                          | Gutters and downpipes completed                                | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14.                          | Doors, fixtures and furnishings complete                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Associated Structures</b> |  |                          |                          |                          |
| 15.                          | Stairs and hand railing complete (Bolting checklist complete)  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16.                          | Crane rail alignment complete                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17.                          | Crane rail deflection test complete                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18.                          | Flooring correctly fixed and clipped                           | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19.                          | Overhead crane installed                                       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Records</b>               |  |                          |                          |                          |
| 20.                          | Installation records complete                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21.                          | Fabrication records completed                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments                                 |
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|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                              |                                    |
|------------------------------|------------------------------------|
| <b>Strip Solution Heater</b> | <b>Test Report</b><br>C0 – M – 072 |
|------------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | Ensure that all equipment is installed in accordance with Design requirements, Project specifications and Manufacturer's instructions.        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Check Name plate data is correct.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | All debris and waste material removed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | All hold down bolts in place and tight/Grouting completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Ensure that all boiler tubes are complete and tested to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Check all tube sheets.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Check fire tubes and heated tubes guides, supports and anchors are correct to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Check Nozzle location, installation and orientation of burner is correct to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Ensured burner pipe work is installed correctly and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Ensure that the refractory lining are installed in accordance to design requirements, project specifications and manufacturer's instructions. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | All piping connections aligned correctly to prevent pipe loads on equipment.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | All gaskets fitted to flange joints are correct rating to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Ensure that ductwork, flue, expansion joints and air seals installed correctly, secure and tight.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Check ductwork dampers installed and operate correctly.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Check all relief devices installed correctly and discharge to a safe area.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Check all thermal and acoustic insulation is correct to specification.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | No visible lubricate leaks.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | All Safety Guards Installed and checked for pinch points.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | No visible damage to heater unit.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |                               | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|-------------------------------|--------------------------|--------------------------|--------------------------|
| 20. | All safety signage installed. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Punch list Completed.         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                         |                                    |
|-------------------------|------------------------------------|
| <b>Structural Steel</b> | <b>Test Report</b><br>C0 – M – 016 |
|-------------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 1.  | All Punch Lists completed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Location and overall dimensions correct.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Materials of construction as per Specification and Drawings.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Handrails and kickplates in place and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Floor grid mesh, Floor Plate in place and secured by welding or clamps, except grating panels nominated as removable                              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Stairway threads in place and secure.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Timber Flooring properly captured within stops welded to steel work   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | All bolts in place and correct length.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | All Bolts welds nominated as per the drawings complete (not tack welded).   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Any damaged bolts or fully tensioned bolts that have slackened replaced.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | All bolts marked and tightened to specified torque  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Bolts fully tensioned around Vibrating/Dynamic Equipment (Mill Platforms, Screen Platforms, etc.)   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Random check of bolts with spanner.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Bolt ends projecting into trafficable walkways limited to a projection of one thread minimum, three threads maximum and curtailed where required. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Support columns and Steel Baseplates grouting complete.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Vertical ladders secure and Safety cage installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | All Bracing Members in place and secure.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | All Steel Members welded to cast in plates (in concrete) nominated as per the drawings.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. | Pipe Racks and Cable Trays secure.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Remedial work has all burrs, slag or weld spatter removed and undercut areas filled with weld metal and ground smooth.                            | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 22. | Steel Packers installed as per the drawings.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | Chemical Anchors in place, including stair base slabs as per the Drawing.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | Light Pole supports on tank top steelwork as per the drawings in place. (n.b. BIOX light pole supports off pipe rack top of tank). | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. | No damaged Paint Work.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. | All Temporary false work and bracing used in construction removed.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. | Roof and Wall Cladding and Gutters in place.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 28. | All Safety Guards in place and checked for pinch points.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 29. | SWL Sign visible on Monorails.   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 30. | All safety signs installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|          |

|                        | Completed by | Approved by | Accepted by |
|------------------------|--------------|-------------|-------------|
| <b>Company:</b>        |              |             |             |
| <b>Signature:</b>      |              |             |             |
| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |

## C0 – Pre-Commissioning:

|                      |                                    |
|----------------------|------------------------------------|
| <b>Tank Agitator</b> | <b>Test Report</b><br>C0 – M – 018 |
|----------------------|------------------------------------|

|                               |  |                    |  |
|-------------------------------|--|--------------------|--|
| <b>Project Title:</b>         |  | <b>Project No:</b> |  |
| <b>Equipment Description:</b> |  |                    |  |
| <b>Equipment No:</b>          |  |                    |  |
| <b>Plant Area:</b>            |  |                    |  |
| <b>TPK No:</b>                |  |                    |  |

|     |  | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|--|--------------------------|--------------------------|--------------------------|
| 1.  | All Manufacturer's requirements complied with  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2.  | Installation checked against Drawings  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3.  | Shipping Stops Removed   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4.  | Bolts torque to the correct setting as per vendors manual for blades to Shaft Hub (submit separate sheet with final torque settings)                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 5.  | Shaft Cap Screws torque to the correct setting as per vendors manual (submit separate sheet with final torque settings)                                      | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6.  | Bolts attaching blades to Shaft Hub covered with proxy   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7.  | Agitator Alignment Sheet C0-M-009 Complete   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 8.  | Initial fill of lubricant to gear box complete/checked   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 9.  | Mechanical Seal Lubricated   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. | Grease Packed Bearing Initial fill checked   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. | Hoses and filters installed and tight on gearbox Lubricant system  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. | Gear Box Electric Motor bearing where grease nipples fitted have two full pumps with grease gun completed  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. | Agitator Gear Box checked for four point bolting pad contact to mounting structures  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. | Bolts torque to the correct setting as per vendors manual for gear box to base frame. (submit separate sheet with final torque settings)                     | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. | Electric Motor torque to the correct settings as per vendor's manual for instalment to Pedestal or mounting bracket  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. | Electric Motor with Pedestal or Mounting bracket fitted installed correctly to gear drive housing and bolts torque to correct settings as per vendors manual | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 17. | Mechanical Coupling Alignment Sheet C0-M-011or C0-M-012 Complete   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. | Dipstick/Breather and Sight Gauges installed.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. | No visible damage to Agitator Unit   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

|     |   | N/A                      | Inspected by Contractor  | Inspected by Engineer    |
|-----|---|--------------------------|--------------------------|--------------------------|
| 20. | Manually rotate to check for any for binding, roughness or cyclic torque variations.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. | Agitator blades leading edge installed to run in direction of rotation  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 22. | Lower shaft attachment to half coupling bolts torque to correct settings as per vendors manual (Submit separate sheet with final torque settings) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 23. | Base frames bolted to steel structure and torque to correct setting as per vendors manual.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 24. | No Visible lubricant leaks  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 25. | Coupling safety guard in place and checked for pinch points.  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 26. | Lubricant drain to grade  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 27. | Punch list completed  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Comments |
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|                        | Completed by | Approved by | Accepted by |
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| <b>Print Name:</b>     |              |             |             |
| <b>Position Title:</b> |              |             |             |
| <b>Date:</b>           |              |             |             |