STYRENE PARK OFFSITE

Quality Control Plan for Ru0001A / B-D-02

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REVISION RECORD SHEET

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Purpose:

The purpose of this project quality plan is to document the quality processes that Company will follow in order to effectively manage project quality from planning to delivery. It defines the procedures, processes and management systems to be used for the management of engineering and project management services.

The purpose of this Inspection and Test Procedure is to put together a single document that records all inspection and testing requirements such as standards, procedures and forms references and codes also logic of following chart, ITP and relevant specifications.

An Inspection and Test Plan identifies the items of materials and work to be inspected or tested, by whom and at what stage or frequency, as well as Hold and Witness Points, references to relevant standards, acceptance criteria and the records to be maintained according to ITP.

In other words, this QCP outlines the intended staff training related to the QCP, and the appendices further reference a number of forms, checklists, and tools available to enable the team to reach the objectives of this plan.

Definitions:

Quality is the degree to which a product or service conforms to valid customer's requirements (including laws, rules, procedures, policies and standards).

Quality Assurance (QA) is defined as planned and systematic activities of providing fact-based evidence that quality products and services are being delivered. Essentially, QA describes the process of enforcing quality control protocols.

Quality Control (QC) is defined as the activities of implementing, monitoring and continuously improving processes to ensure delivery of quality products, services, and information. QC includes such activities as providing clear decisions and directions, constant supervision by experienced individuals, immediate review of completed activities for accuracy and completeness, and accurate documentation of all decisions, assumptions, and recommendations.

Quality Control Plan (QCP) is a written set of procedures and activities aimed at delivering products that meet quality objectives for a project as stated in contract documents and other procedures, manuals, and guidance. A quality control plan will identify the organization or individuals responsible for quality control and the specific procedures used to ensure delivery of a quality product. A quality control plan will also detail quality assurance measures and the method of accountability and required documentation.

W: Full Witness inspection/Test –

SW: Witness Inspection /Test –

R: Review the manufacturer’s inspection/test and certificates.

A: Manufacturer's and Vendor's Official Records, Inspection/Test Reports and Certificates required being Reviewed and Approved by Contractor or His Inspection Agency (Third Party).

H: Hold Point-Vendor shall notify inspection two months prior to performing the designated feature.

And other factors that ARKAN SNATAT PAYDAR can be considered for SURGE DRUM EQUIPMENT.

1 – Project Information

This Quality Control Plan is written to meet the requirements for Toase-ehe Park Sanati Gohar Ofogh Petrochemical Co..

The Quality Control Plan has been developed to ensure compliance with the requirements set forth in the contract for this Project.

2 – Quality plan inputs

The requirement for quality control plan:

2-1 - Quality control staff must have the required certificates to perform various quality control tests, such as non-destructive testing certificates.

2-2 - All tools used for measurement, must be calibrated.

2- 3 - The material of the parts entering the factory must be known and their composition and mechanical properties must be acceptable.

3 – Quality objectives

3 –1 – Project overview

The project quality control steps are as follows:

In Order to check raw material chemical analysis and mechanical properties, Inspector reviews the certificate of Sample of Parts material which is issued by laboratory. In the next step Quality Inspector checks all the critical dimensions according to the part drawing for machined Part and decides to send the Part to other stages, if it is approved to be proceeded to other stages or in the cases of deviation or defects, the inspector sends the report to QC department. After analysis of Quality, QC has authority to accept the occurred deviation, otherwise refer it to the engineering department for final decision (Internal NCR Forms). In the next step some tests are performed on parts, if there isn't any discrepancy, Inspection is completed and the part sent for assembly.

3 – 2 – Scope of services

Services included in the project quality plan:

- Control of imported parts and materials
- Serial number traceability code
- Test supervision according to ITP
- QC final book issuance
- Final Book

4 – Responsibilities

Quality Department (QC Manager) is responsible for performing the work in accordance with the requirements of the contract. At a minimum, the QC Manager will follow this Quality Control Plan prepared for the project. The management performs audits and reviews to ensure that the Quality Control Program is effectively implemented. Quality Department Performs complete layout inspection by measuring dimensions, (such as length, height, and distance, between reference

points, using special instruments) and tests according to ITP, to ensure product meets specifications. Quality Department Performs verification on Incoming, In Process, and Outgoing products. Corrective action is taken to resolve quality defects; Maintains record of inspections and prepares list of defects, interacts with other departments to ensure compliance with specification and to facilitate the acceptance of parts. Each project team member is responsible for the overall quality of the project. The Quality Control team will consist of at least the following:

- Project Manager
- Project Quality Manager
- Document Reviewers
- Document Preparers
- Communication
- Interested party communication

The specific responsibilities and duties of these individuals are described as follows:

a) Project Manager

The Project Manager is responsible for implementing the Quality Control Plan. Specifically, the Project Manager will do the following to implement the Quality Control Plan: ·Coordinate and lead the quality control process. ·Assign qualified professionals to perform project tasks and activities. ·Ensure all professionals involved in performing project tasks and activities have a clear understanding of the scope and objectives of the project. ·Ensure all professionals involved in the project are aware of the project schedule. ·Ensure all professionals working on the project have a clear understanding of the project requirements and provisions for work. ·Document the quality control process properly. ·Certify that quality control procedures have been properly followed. Additionally, the Project Manager, in collaboration with the Project Quality Manager, will:

- Ensure sub consultants follow this Quality Control Plan or a similar plan
- Schedule document reviews and ensure all comments from these reviews are resolved prior to submitting the deliverables to the Department
- Evaluate the final products and ensure the deliverables meet the objectives of the project
- Ensure the plans/reports are reviewed for consistency between disciplines and that there is communication among the quality control staff
- Resolve any disagreements between the Document Preparer and originator of the comments (i.e. Document Reviewer)

b) Quality Manager

The primary responsibility of the Quality Manager is to coordinate the Quality Control activities required to achieve the quality requirements. The Quality Manager will liaise with project team leaders and the Project Manager to ensure that the Quality Control Plan is implemented and followed properly. This will include working directly with the Document Preparers and Document Reviewers to facilitate document control workflow, assisting with document formatting, and ensuring proper documentation.

c) Document Reviewers

The Document Reviewers are independent individuals qualified in their specific areas of reviews and are not directly associated with development of the project. Document Reviewers will review draft and final documents prior to submittal to ensure accuracy, completeness, good documentation practices, clear and concise readability, and compliance with project requirements.

This will include providing timely reviews and comments on how to prevent and/or correct errors in the documents prior to their finalization.

d) Document Preparers

Document Preparers are the individuals who are assigned to work on various project tasks and activities on a full-time or part-time basis. Document Preparers will implement Quality Control to ensure that products and services meet or exceed expectations of quality on this project. The Document Preparers are originators of the Quality Control review. This includes providing expertise and adhering to quality objectives of this project. Additionally, Document Preparers will respond to all comments and issues raised by Document Reviewers as part of the overall Quality Control process.

e) Communication

According to ITP if inspection of the parts is Hold point or witness/spot witness, The Quality Control Department is required to email the inspection note. Subsequently, the relevant inspectors must review the parts for quality.

f) Interested party communication

The quality control department is responsible for inspecting parts and delivering parts and responding to the inspector, which is done by a TPA and Contractor, if there are any problems with the parts in terms of quality; refer it to the engineering department for final decision (Internal NCR Forms).

5 – Quality Control Activities

The Quality Control section will perform Quality Control review on all technical documents and other deliverables such as letters, reports, plan sets, and calculations. Quality Control section has authority to accept the occurred deviation, otherwise refer it to the engineering department for final decision (Internal NCR Forms). This section outlines the key Quality Control activities while the actual Quality Control procedures are described in Table 1 (Quality Control plan details). (insert the table named Quality Control plan details here) In the case of Control of nonconforming outputs: Upon detection of any product or process that does not meet the product requirements (specified by the customer, regulations, or otherwise) the problem is immediately reported to the manufacturer (indicated in the header of this documented procedure). Nonconformities may be reported by:

- Any staff/contract personnel working on the manufacturer shop.
- The costumer during inspection or following receipt of the product.

The manufacturer records the details of the nonconformance in the Form Record: Nonconformance Report. This file is considered “active” until the fate of the affected product (determined in steps below) is met. The manufacturer should inform the customer of the problem and submit their justification and Solution the customer according to the manufacturer's solution determines what action will be taken with respect to the handling and final use of the nonconforming product. A plan for such actions will include (if applicable):

- Contacting relevant external authorities if necessary.
- The means of separating the nonconforming product from product that is unaffected.
- Determining the fate of the nonconforming product.
- Communications that are to take place with the affected customers.
- Communications with relevant employees involved in the above steps.

The action plan details are recorded in the active nonconformance report file. Upon agreement among the top management, affected customers, and external authorities (if necessary) the plan is implemented. If the product is corrected and intended for delivery to a customer, the new requirements and/or customer are noted in the Form Record: Customer Requirements. Thus, the product must be retested/re-evaluated against all requirements and its release must be authorized prior to delivery to the customer. The details of the actions taken and final fate of the product are recorded in the in the active nonconformance report file by higher authority.

1) **Abbreviations Legend**

HP (Hold point)

Witness is mandatory,

WP (Witness point)

Witness is non mandatory,

SW (Spot Witness)

Spot Witness denotes to random attendance of inspector and witness is non mandatory,

R/A (Approval)

VENDOR shall submit the required documents to the EMPLOYER/CONTRACTOR for approval.

R (Review)

VENDOR shall submit the certificates, inspection and test documents to the EMPLOYER /TPI for his review.

2) **Quality Control plan details**

Scope of the quality plan:
Quality Plan is depending on several factors including:
a) The requirements of customers and other relevant interested parties;
All tests and Inspections shall be done accordance Inspection and Test Plan (ITP)
b) The types of products and services to be provided;
c) The organization's processes and their quality characteristics;
Pre inspection meeting
Raw Material Check
Dimensional Check of parts
NDT Test
Hydrostatic Test
QC final book issuance
Final Assembly
Package QC and traceability check
Packing
QC Final Book Check
Final Inspection Delivery Release
The resources needed to achieve the intended results; ASME , ASTM Standard and...

ACTIV. NO	ACTIVITY	CHARACTERISTIC TO BE VERIFIED	PROCEDURE REFRENCE	ACCEPTANCE CRITERIA	LOCATION	VERIFYING DOCUMENT	INVOLVED PARTY				
								CO	CL	THP	
ACTIVE NO	**Review of Document**										
1	Drawing	Dwg		SPEC & CODE				H	R	R	
1-2	Material inspection and Material Certificate	Mill certificate check		DWG AND LAB. DOCUMENT		Part list, material certificate, mill sheet		H	H	W/R	
1-3	W.P.S & P.Q.R	Document control		ASME Sec. IX		ASME SEX XI		H	R/A	W/R	
1-4	Welder Certificate	Document control		ASME Sec. IX		ASME SEX XI		R	R	R	
2	**Fabrication & Testing**										
2-1	**vessel**										
2-1-1	MANUFACTURING OF HEADS			DWG/WPS	shop	DWG/WPS		H	SW	R	
2-1-2	MANUFACTURING OF SHELL COURSES			DWG/WPS	shop	DWG/WPS		H	SW	R	
2-1-3	Fit up main body	Fit up inspection		DWG/WPS	shop	WPS & DWG		H	SW	R	
2-1-4	Welding	Visual inspection		ASME SEC VIII.DIV I	shop	WPS		H	W	R	
2-1-5	Welding & NDT Seams	NDT inspection		ASME SEC VIII.DIV I	shop	WPS , NDT table		H	W	R	
2-1-6	FINAL FABRICATION INSPECTION			DWG/WPS	shop	DWG/WPS		H	W	R	
3	HYDROSTATIC TEST	Visual check		HYDROSTATIC TEST PROCEDURE		HYDROSTATIC TEST PROCEDURE		H	SW	H	
4	SURFACE PREPRATION AND PAINTING	Document control		Spec & DWG		Spec , contract		H	R	H	
5	SHIPPING RELEASE NOTE	SPEC		SPEC.		SPEC.		H	R	H	
6	DOCUMENTS FINAL BOOK	REPORTS AND DOCUMENTS		REPORTS AND DOCUMENTS		REPORTS AND DOCUMENTS		H	R	R	

ABBREVIATION:

S.V: SUB VENDOR	S/W:SPOT WITNESS		R : DOCUMENT REVIEW
V:VENDOR	H : HOLD POINT		W : WITNESS POINT
CO:CONTRACTOR	W+ : REVIEW PREVIOUS RECORDS		NO : NO INSPECTION
TPI:THIRD PARTY INSPECTOR NOMINATED BY CONTRATCOR			THP: THIRD PARTY
O:COMPANY			CL:CLIENT