



CPC ENGINEERING SPECIFICATION	
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**PROCEDURE FOR VALIDATION OF
OUTSOURCED/INHOUSE PROCESSES
(HT/NDT/WELDING/PLATING/COATING/PAINTING)**

Rev	Reason of Change	Date	Made By	Reviewed By	Approved By	Status
0	INITIAL RELEASE	13-02-2024	PK	USR	JG	Released





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1.0 PURPOSE

To describe the methods to validate the outsourced processes

2.0 SCOPE

2.1 Following procedures require Validation: -

- A. Heat Treatment
- B. NDT
- C. Welding
- D. Plating/Coating

3.0 METHODOLOGY

3.1 Heat Treatment: -

3.1.1 Equipment

	Calibration	Frequency of Calibration
Furnaces	As per Annex M of API 6A	Yearly
Recorders	As per Annex M of API 6A	Qtly
Temp Indicators	As per Annex M of API 6A	Qtly
Thermocouples	As per Annex M of API 6A	Qtly

3.1.2 Qualification of Personnel: -

- A. Furnace Operators - Trained in HT Processes.
Should be able to operate both
Continuous & Batch Type furnaces.
- B. Production Supervisor - ITI with training on HT process
- C. Inspector – ITI with training on HT process
- D. NDT- SNT-TC-1A Level-2 qualified

3.1.3 Methods: -

As per details covered under relevant CPC Material specifications
Mentioned below: -

- A. CES 26-104

3.1.4 Acceptance Criteria

As per details covered under relevant Material Specification
mentioned at 3.1.





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3.1.5 Records: - Following records will be maintained: -

- A. Material Test Reports (Mill/Independent Lab)
- B. Heat Treatment Graphs
- C. Mechanical Test Reports - Test results of relevant QTC.
- D. Calibration records

3.1.6 Revalidation –

Heat treatment process is re-validated will be done as per any one of following criteria:

- A. Whenever there is change in CPC specified material specification which impact HT process performance

OR

- B. API Specification requirement of Heat Treatment process

OR

- C. Change in supplier equipment qualification

3.2 NDT - (MPT/LPT/& VT)

3.2.1 Equipment

As per details contained in CPC NDT Procedure of relevant practice.

3.2.2. Qualification of Personnel-

SNT-TC-1A Qualified Level 2 of relevant practice in accordance with CPC written practice for training, qualification & certification of NDT personnel.

3.2.3 Methods: -

As prescribed in relevant practice procedures below-

- A. CWI-27-008 for LPT
- B. CWI-27-009 for MPT
- C. CWI-27-011 for VT

3.2.4 Acceptance Criteria

As per PSL based relevant clause of API - 6A/16D acceptance criteria defined in CPC NDT Procedure listed at 3.2.3 above.

3.2.5 Records: - Following records will be maintained

- A. NDE reports traceable to lot.
- B. Level-2 certificate of the technician.
- C. Calibration certs of the Equipment used for production with a copy





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of master used for calibration.

D. For Liquid penetrant test Cert of the chemicals used for Examination.

3.2.6 Revalidation –

NDE process is re-validated will be done as per any one of following criteria:

A. If NDE is not performed within 12 months interval then re-validation shall be performed prior to performing NDE

OR

B. Whenever there will be any changes in NDE codes or API products specification that affects the NDT process performance.

OR

C. When change in essential variables as per NDE procedures

3.3 WELDING

3.3.1 Equipment

SMAW Technique – Arc welding machines & Instruments

GTAW Technique –

- A. Power Source
- B. Torch
- C. Backing System
- D. Protective Equipment
- E. Material based consumables

Calibration frequency – six months

3.3.2 Qualification of Personnel

As per ASME-IX & conformity with relevant API product specification and base material requirement

3.3.3 Method

As per ASME-IX & as per applicable API product specification

3.3.4 Acceptance Criteria

As per ASME –IX & PSL based relevant clause of API 6A/16D

3.3.5 Records : - Following records will be maintained



- A. WPS (as per ASME-IX)
- B. PQR (as per ASME-IX)
- C. WPQ (as per ASME-IX)
- D. Welder continuity Record
- E. Calibration of welding equipment

3.3.6 Revalidation – Requalification of the welding operator/procedure the process is re- validated will be done as per any one of following criteria.

- A. Ref code ASME-IX
OR
- B. Essential variables ASME-XI
OR
- C. Changes in WPS results in Welder qualification records
OR
- D. Equipment Qualification
OR
- E. Operator is out of job for more than six months.

3.4 Plating/Coating

3.4.1 Equipment

- A. Electrolysis Tanks
- B. Tanks – degreasing/ cleaning/coating
- C. Rectifiers
- D. Coating based electrolytes and chemicals
- E. Testing instruments

3.4.2 Qualification of Personnel

Platers/Coater – To be familiar with electroplating/Coating techniques and surface finishes Should be able to recognize deviation and faults in product/process.

3.4.3 Method

As per details contained in CPC Documented Procedure

- A. CES 26-108 - Application Of Zinc Plating On Carbon And Low Alloy Steels.

3.4.4 Acceptance Criteria

As per the details contained in CPC Document mentioned at 3.4.3.

3.4.5 Records:-

- A. Plating/Coating acceptance records
- B. Calibration records of equipment and the instruments used



3.4.6 Revalidation –

Validated will be done as per any one of the following criteria:

- A. If Plating is not performed within 12 months interval then re-validation shall be performed prior to performing Plating/coating process
OR
- B. Whenever there is change in methods which affects the performance of plating/coating process a requalification is required

3.5 Painting**3.5.1 Equipment**

- A. Abrasive blasting
- B. Tanks – degreasing/ cleaning
- C. Spray gun
- D. Testing instruments

3.5.2 Qualification of Personnel

Painters – To be trained on painting techniques and surface finishes should be able to recognize deviation and faults in product/process.

Shot Blaster – To be trained on shot blasting techniques and surface finishes should be able to recognize deviation and faults in product/process.

3.5.3 Method

As per details contained in Sara Documented Procedure

- A. CES 26-130- Surface treatment specification, paint.

3.5.4 Acceptance Criteria

As per the details contained in CPC Document mentioned at 3.5.3. and shall be validated after satisfactory completion of Salt spray test.

3.5.5 Records

- A. Painting acceptance records
- B. Calibration certs of the Equipment used for production with a copy of master used for calibration

3.5.6 Revalidation



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Whenever there is change in methods which affects the performance of painting process a re-qualification is required.

4.0 RESPONSIBILITIES

- 4.1 Assessment of vendors – Materials + QC (CDP-31)
- 4.2 Quality Technicians are responsible for ensuring that all required inspections and/or tests specified above including those given in the relevant specs / drawings and those specified by customer (if any) are performed and items accepted as per criteria laid for acceptance.
- 4.3 Records shall be maintained by Manager QC.
- 4.4 Manager QAD will be responsible for revalidation of the procedure(s)

5.0 Nonconformance – To be handled as per CPC Procedure. (CDP-27)

