

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

Rev	Reason of Change	Date	Made By	Reviewed By	Approved By	Status
0		12-03-2014	KKM	J Gulati	KKD	Released
1	Revalidation clause added	30-05-2014	KKM	J Gulati	KKD	Released
Issue “B” Rev-0	Complied to Q1 9 th Edn	06-12-2015	AS	NS	KKD	Released
Issue “B” Rev-1	To include welder qualification requirement in clause 3.3.2 & 3.3.3	07-07-2016	AS	NS	KKD	Released
2	Clause 3.2.6 revalidation of NDE amended. And Painting process added.	25.11.2019	SK	MN	AS	Released



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
- E. Painting



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

C. Inspector – ITI

D. NDT- SNT-TC-1A Level-2 qualified

3.1.3 Methods:-

As per details covered under relevant Sara Material specifications

Mentioned below:-

- A. SES -26-604 -- Specification for AISI 4130 Low Alloy Steel Forged or Wrought
- B. SES-26-389—ASTM A105 Material Specification For Carbon Steel Forging
- C. SES-26-737 - Low Carbon Steel Forging Bar Stock Or Mill Shapes To Meet ASTM A-350 Gr LF-2 CLASS 1

3.1.4 Acceptance Criteria

As per details covered under relevant Material

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Specification mentioned at 3.1.3

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 –

Once in a year or whenever there is a change in procedure.



3.2 NDT -(MPT/LPT/UT/RT & VT)

3.2.1 Equipment

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

3.2.2. Qualification of Personnel-

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

3.2.3 Methods:-

As prescribed in relevant practice procedures below-

- A. SES-26-701 for LPT
- B. SES-26-702 or SES-26-761 for UT
- C. SES-26-703 for RT
- D. SSE-QAD-MT-1/97 for MPT
- E. SSE/QAD/VE-93 for VT

3.2.4 Acceptance Criteria

As per PSL based relevant clause of API - 6A/16A acceptance criteria defined in Sara 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.
- D. For Liquid penetrant test Cert of the chemicals used for Examination
- E. Radiographic films for RT.

3.2.6 Revalidation –

NDE process re validation will be done once in every 12 months or if NDE not performed for 12 months interval then re validation shall be performed prior to performing NDE or whenever there will be any changes in NDE codes or API products specification or change in essential variables/procedures/ testing media etc.

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/16A/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

Whenever there is a change in –

- A. Ref code
- B. Essential variables
- C. Procedure
- D. Equipment
- E. Operator is out of job for more than six months.

3.4 Plating

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 – to be familiar with electroplating techniques and surface finishes Should be able to recognize

deviation and faults in product/process.

3.4.3 Method

As per details contained in Sara Documented Procedure

- A. SES 26-731B- Application Of Zinc Plating On Carbon And Low Alloy Steels.
- B. SES 26-736 - Silver Palladium/Electro Deposit /Brush Plating Coating.
- C. SES 26-775 – Manganese/Nickel phosphate coating for carbon and low alloy steel parts to decrease friction and galling.
- D. SES 26-787 - Molybdenum Disulfide (MoS2) Coating.
- E. SES 26-730 – Application of Zinc Phosphate Coating to carbon and Low Alloy steels.

3.4.4 Acceptance Criteria

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

3.4.5 Records:-

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

3.4.6 Revalidation –

Once in a year or as when there is change in process

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 familiar with painting techniques and surface finishes should be able to recognize deviation and faults in product/process.

Shot Blaster – to be familiar with 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. SES 26-602- Surface treatment specification, paint.

3.5.4 Acceptance Criteria

As per the details contained in Sara Document mentioned at 3.5.3.



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3.5.5 Records:-

- A. Painting acceptance records
- B. Calibration records of equipment and the instruments used

3.5.6 Revalidation –

Whenever there is change in process.

4.0 RESPONSIBILITIES

- 4.1 Assessment of vendors – Materials + QC (as per Doc SDP-31-003)
- 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 QC
- 4.4 Manager QAD will be responsible for revalidation of the procedure(s)

5.0 Nonconformance – to be handled as per Sara Procedure SDP-27-010

