



SARA SAE ENGINEERING SPECIFICATION	
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## PROCEDURE FOR RECERTIFICATION /UPGRADATION OF CHOKE MANIFOLD

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## 1.0 PURPOSE

- 1.1 To describe the methods to be employed, the personnel responsible for verifying, controlling, documenting and processing recertification / up gradation of Choke Manifold to verify:
  - a) The specific functions are operationally ready
  - b) The pressure integrity of the installed equipment
  - c) Compatibility of the system

## 2.0 SCOPE

- 2.1 This procedure applies to periodic recertification / up gradation or modification of all customers supplied Choke Manifold need to be upgraded to meet API Standards.

## 3.0 Frequency of Recertification

- 3.1 SARA recommends recertification of Choke Manifold at least once in three years.

## 4.0 RESPONSIBILITIES

- 4.1 Maintenance and testing shall be performed or supervised by the competent person(s)

## 5.0 TYPES OF TESTS

### 5.1 General

5.1.1 The process includes, striping of individual components (Gate Valves, Studded Blocks, Spools, DSA, Manual and Hydraulic Chokes), cleaning, visual inspection, NDT tests, dimensional report, repair (if repairable), Hydrotest of individual components, re-assembly, test, paint and tagging

5.1.2 Test program will incorporate visual inspection, function and pressure tests, maintenance practices.

5.1.2.1 Visual Inspection should be performed to verify:

- A. The actual equipment matches design and operates as originally designed.
- B. Complies to API 16C, API 6A Specs
- C. Any up gradation or modification conducted after delivery have not compromised the design or operation.
- D. Modifications done if any are documented and reviewed for compliance.
- E. Serialization of traceability of components to the OEM data book.
- F. Any modification found out of compliance will require removal of modification and to be restored to its original configuration.

### 5.1.3 : Pressure Tests

5.1.2.1 Choke Manifolds and their sub- assemblies shall be pressure



tested as per SARA Procedure Nos: SARA/QAD/DOC322

5.1.2.2 The manifold assembly shall be subjected to a low-pressure test and high-pressure test. The low-pressure test shall test the manifold assembly with the valves in the open position. The low-pressure test shall be conducted by applying 200 psig–300 psig. Hold the pressure for 5 minutes.

Test results shall be acceptable if the following criteria are satisfied during each entire hold period:

- There shall be no visible leakage.
- Pressure shall remain within 5 % of the specified test pressure at the start of the hold period or within 500 psi (3.45 MPa) of the specified test pressure, whichever is less.
- Pressure shall not drop below the specified test pressure

5.1.2.3 The high-pressure test shall be conducted as the hydrostatic body test in conformance with 5.12.4. For manifolds assembled entirely with equipment that has been previously subjected to a hydrostatic body test, the test pressure shall be rated working pressure. For manifolds with untested components, other than loose connectors, the test pressure shall be as specified in 5.1.2.4 (A.3).

NOTE Loose connectors, as defined in API 6A, do not require hydrostatic testing.

5.1.2.4 Hydrostatic and Function Testing

A) Hydrostatic Body Testing

A.1) General

Choke Manifold shall be subjected to a hydrostatic body test and function test prior to final acceptance. Water, or water with additives, shall be used as the testing fluid. Any additives shall be documented.

NOTE Tests may be completed prior to or after painting or coating.

A.2) Hydrostatic Body Test Method

Hydrostatic body test for complete assemblies shall consist of the following steps:



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- the initial pressure-holding period of not less than three minutes;
- the reduction of the pressure to zero;
- the second pressure-holding period of not less than 15 minutes.

The pressure-holding period shall not start until the test pressure has been stabilized within the manufacturer's specified test range and the external assembly surfaces are dry.

#### A.3) Test Pressure

The hydrostatic body test pressure shall be determined by the rated working pressure of the equipment. The hydrostatic body test pressure shall be a minimum of 1.5 times the maximum rated working pressure.

#### A.4) Acceptance Criteria

Test results shall be acceptable if the following criteria are satisfied during each entire hold period:

- There shall be no visible leakage.
- Pressure shall remain within 5% of the specified test pressure at the start of the hold period or within 500 psi (3.45 MPa) of the specified test pressure, whichever is less.
- Pressure shall not drop below the specified test pressure.

#### 5.1.4 Pressure Test Frequency:

Choke Manifold when fitted on the well control equipment shall be conducted:

- A. Upon Installation
- B. After the disconnection or repair of any pressure regulating valve(s) / Choke
- C. At least once in six months

#### 5.1.5 Measuring Devices

##### 5.1.4.1 Type and Accuracy

Test pressure-measuring devices shall be accurate to  $\pm 2\%$  or less of full-scale



range. If pressure gauges are used in lieu of pressure transducers, they shall be selected such that the test pressure is indicated within 20 % and 80 % of the full-scale value.

#### 5.1.4.2 Calibration Procedure

Pressure-measuring devices shall be recalibrated with a master pressure-measuring device or a dead weight tester to at least three equidistant points of full scale (excluding zero and full scale as required points of calibration).

#### 5.1.4.3 Calibration Intervals

Calibration intervals shall be established based on repeatability and degree of usage. Intervals may be lengthened and shall be shortened based on recorded calibration history.

Calibration intervals shall be a maximum of three months until a recorded calibration history can be established by the manufacturer.

#### 5.1.6 Test Documentation:

Results of all pressure and function tests shall be documented.

#### 5.1.7 General Testing Considerations:

5.1.6.1 All personnel shall be alerted when pressure test operations are to be conducted.

5.1.6.2 Only designated personnel shall enter the test area to inspect for leaks

5.1.6.3 Tightening, repair or any other work shall be done only after Depressurization of the system.

5.1.6.4 All lines and connections that are used while testing shall be adequately secured.

5.1.6.5 Verification test of the remote-control panels shall include a simulated loss of primary power to the control unit and to the control panel(s).

#### 5.2 Inspections

##### 5.2.1 Periodic Maintenance

5.2.1.1 Periodic Maintenance shall address inspection (internal/external, Visual, dimensional, NDE) and pressure integrity testing.

5.2.1.2 Inspection shall be performed every 90 days in accordance with relevant SARA procedures and check lists.

##### 5.2.2 Inspection for Repair or up gradation

5.2.3.1 Choke Manifold and its sub-assemblies when repaired or upgraded shall be inspected in accordance with SARA procedures detailed at 5.1.2.1



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5.2.3.2 Replacement assemblies shall be designed for their intended use by SARA SAE.

5.2.3.3 If replacement assemblies are acquired from other than SARA the assemblies shall meet or exceed the original SARA Spec and shall be fully tested as per SARA procedure and shall be supported by traceable documentation in accordance with SARA procedure OP-27-2.

5.2.3.4. For repair /up gradation of controls of OEMs other than Sara full details & complete assessment report will be intimated to Engg. Sara for seeking necessary guidance to proceed with repair/up gradation task.

### 5.2.3 Weld Repairs

All welding shall be performed in accordance with SARA approved weld procedures (WPS & PQR)

### 5.2.4 Records and Documentation

5.2.5.1 Equipment owner shall be responsible to maintain records along with the supplied product for a period of not less than Five years.

5.2.5.2 A maintenance / repair / up gradation historical file shall be retained by serial number / unique identification number.

5.2.5.3 The maintenance and historical file shall follow the equipment when it is transferred.

5.2.5.4 Equipment malfunctioning or failures shall be reported in writing to the repair facility / SARA.

## 6.0 REFERENCES

6.1	OP-27-7	Control of Quality Records
6.2	OP-27-2	Identification and Traceability
6.3	SDP-24	Preservation of Product
6.4	OP-27-1	Monitoring and Measurement of Product
6.5	OP-27-3	Control of Nonconforming Product
6.6	SSF-27-006	Nonconformance Report

