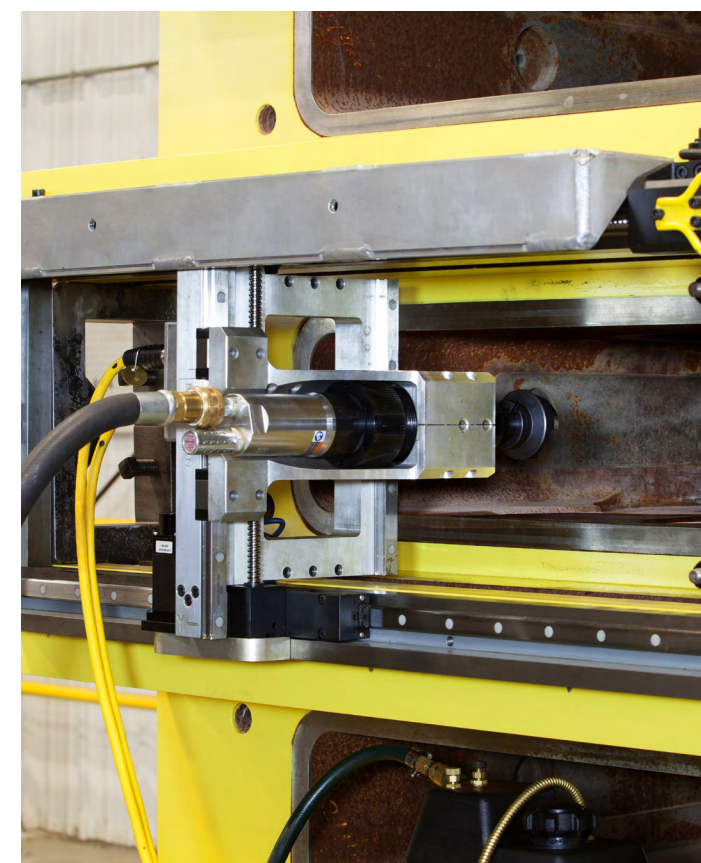


## Field inspection and remediation tools



Blowout preventer door face machining tool



Riser main tube flange pocket inspection tool



Riser pin honing tool



Riser main tube phased array UT inspection tool



Riser auxiliary line pulse echo UT inspection tool

A variety of in-situ inspection and remediation tools have been designed to reduce the amount of time and money required to inspect and repair your subsea equipment. Our aim is to lower the total cost of ownership for our customers. Reducing the need to transport large assets to a shorebased repair facility brings us one step closer to achieving that goal.

We're not talking about field inspection and remediation. We're actually doing it.

### Existing in-situ inspection or remediation tools:

- BOP bore seal seat machining
- BOP door face machining
- BOP phased array stud inspection tool
- BOP ring groove machining
- Riser UT wall thickness corrosion mapping for auxiliary lines
- Riser UT wall thickness corrosion mapping for main tube
- Riser main tube phased array flange pocket inspection tool
- Riser main tube phased array UT inspection tool
- Riser auxiliary line pulse echo UT inspection tool
- Riser hydraulic seal sub removal tool
- Riser box honing tool
- Riser pin honing tool



Blowout preventer bore seal seat machining tool

# Pressure Control Inspection & Repair



### USA Service

5100 N. Sam Houston Pkwy W.  
Houston, Texas 77086  
USA  
+1.281.569.3050

### Singapore Service

29 Tuas Bay Drive  
Singapore, 637429  
Singapore  
+65.6594.1222

### Norway Service

Dvergsnesbakken 25  
Kristiansand, NO 4639  
Norway  
+47.3819.2000

### Dubai Service

R/A #13, Plot MO 0682  
Daimler Chrysler Street  
Jebel Ali, Dubai  
United Arab Emirates  
+971.56.6862184

### UK Service

Ainslie Street Pitkerro  
Road Dundee, DD5 3RR  
United Kingdom  
+44.7739.170.079

### Brazil Service

Avenida Amaral Peixoto, KM 146.5  
Macaé, Rio de Janeiro  
Brazil  
+55.22.99882.7591

### South Africa Service

8 Kendle Street  
Neave Township, Port Elizabeth, 6001  
South Africa  
+27.41.405.1605

### Corporate Headquarters

7909 Parkwood Circle Drive  
Houston, Texas 77036  
USA

### Rig Systems Headquarters

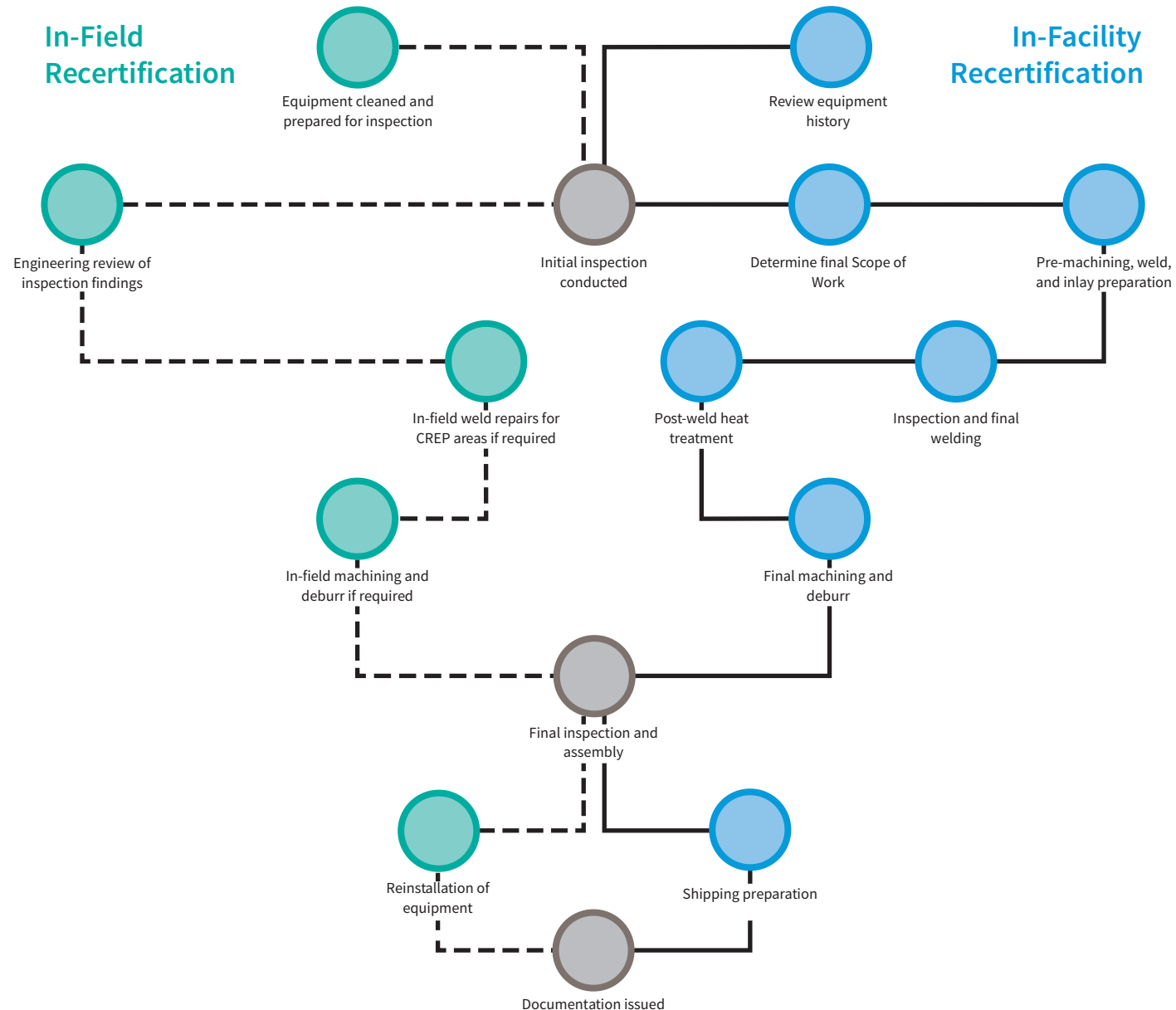
10000 Richmond Avenue  
Houston, Texas 77042  
USA

# Inspection process

We hold our repairs and service personnel to the highest recertification and quality assurance standards. As part of our commitment to delivering high quality repairs and service, we ensure that our personnel, replacement parts, and tools are held to the following:

- NDE inspectors are Level II certified in accordance with ASNT-TC-1A and NOV QC Specifications
- All welders are qualified for the various welding processes in accordance with ASME BP&V Section IX
- All replacement parts are documented and supported with all applicable traceability information to support the product history file in accordance with API 16AR
- Pre-Weld inspections are completed by an ASNT Level II inspector to verify that the surface condition is acceptable for welding
- Inspection equipment is calibrated on a routine basis in accordance with API standards

For in-field repairs, it is important to note that only a working pressure test is required, removing the need for a dedicated test bunker. If your equipment fails an in-field inspection, we work with you to discuss the options for replacement equipment or to schedule an in-facility repair to correct the issue. During our in-facility repair process, care is taken to pre-machine and inspect parts to ensure that satisfactory surface conditions are achieved before beginning the welding or inlay process. All equipment is machined to precise dimension according to our engineering prints and then checked by our qualified Quality Control personnel. All documentation is then reviewed by the Quality Assurance department to verify that all required information has been included in your final documentation package.



# Remediation

Our Certification of Conformance (COC) and Statement of Fact inspection (SOF) processes are designed to help you navigate through the repair and remediation process. From the initial engagement with our Aftermarket Service team, to preparing a work packet, and issuing a SOF or COC, our goal is service above all.

To ensure your product is returned to its optimal condition, all inspections are carried out using the latest revisions of the OEM bill of materials and engineering drawings. It is recommended that the re-certification and inspection of NOV equipment be performed by our authorized service centers throughout the working life of the equipment.



## Process overview

To start the process of obtaining a COC/SOF, simply engage our NOV Aftermarket Service team with a tentative schedule and work plan. We will work with you to complete the following process:

- Prepare the COC/SOF Work Packet: your work packet will contain maintenance records, repair history, service history, data book, and a written scope of work
- Agree on schedule, terms and conditions: after agreeing upon a scope of work and a schedule for executing the COC/SOF, terms and conditions are reviewed
- Gather COC work packet, review Product Information Bulletins (PIB's), and engage engineering: to work through the COC process, we will review all PIB's and the equipment's service history to determine the full scope of work needed to bring the equipment up to the latest OEM configuration and standards. The service team will engage our pressure control engineering group to work through the gap analysis process
- For a SOF, the work scope is mostly driven by your current requirements.
- Work packet review, detailed scope of work, quote, complete the COC process: sub-tasks include equipment verification, dispositioning, developing the quote, customer review of the quoted SOW, and executing on the scope of work
- Issue the COC/SOF

# In-situ inspection

A series of in-situ inspection processes have been designed to identify equipment health without moving your asset to a shorebased inspection facility. In-situ inspection processes for the following equipment are established:

## Riser Equipment

- N-Line Split Tension Ring Assy
- FT / DT Riser Tension Ring
- FT / DT Riser Joint
- FT / DT Riser Telescopic Joint
- FT / DT Spider
- FT / DT Gimble
- FT / DT Riser Adaptor
- FT / DT Riser Fill up valve
- FT Keel Joint Bumper
- FT Test & Lift Flange
- FT / DT Ball Joint Adaptor
- FT / DT Diverter or Intermediate Flex Joint
- FT Automated Gooseneck Assy
- FT / DT Mud Line Termination Joint
- Riser Hydraulic & Test Running Tool
- DT Manual Handling & Test Tool
- Riser Tensioners

## BOP Door Assemblies

- Ultralock Door Assembly
- Poslock Door Assembly 14" / 22"
- Manual Lock Door Assembly
- Ram Blocks
- NDE, Hardness, Visual and Dimensional:
  - NXT Door Assembly
  - SLX Door Assembly
  - LWS Door Assembly
  - LXT Door Assembly

## Controls

- Mux Control System
- Conventional Control System
- Land Rig/Surface Control System

## Diverter, Connectors & Spools

- Acoustic Stabs
- Choke & Kill Mini Connectors
- Diverter Assembly
- Diverter Running Tool 150K lbs / New Style
- Spools
- Test Stump 27" H4 profile
- NOV Wellhead Connector

## Blowout Preventers (BOP's)

- Studs & Nuts
- SBOP Wedge
- SBOP Bolted
- SBOP Dual
- RAM BOP NXT
- RAM BOP SL & SLX
- RAM BOP LWS
- RAM BOP LXT

