

SPECIALIST PACKAGE

PIPE SUPPORT INSPECTION AND REMEDIATION PACKAGE

THE PURPOSE

This document is composed to assist our clients and the supply chain to help them understand the technical capabilities, benefits and services associated with our pipe support inspection and remediation package.



VERTECH



INTRODUCTION

Vertech and our sister company Sonomic provide an innovative and systematic approach to address the unique challenges associated with corrosion under pipe supports. This package was specifically developed to provide a range of solutions to access, inspect, assess and remediate corrosion under supports.

Corrosion at pipe supports is one of the leading causes of process piping failure. There are a number of configurations of pipe supports used in the industry. The beam supports and the saddle clamps have historically caused the majority of issues and failures mostly due to limited accessibility of these areas.

FEATURES IN COMMON

- ❖ **Crevice forming** – A crevice between pipe and support will trap water. Since water cannot escape, it creates corrosion that has potential to rapidly cause wall loss.
- ❖ **Water trapping** – The design allows water to be trapped and held in contact with the pipe surface.
- ❖ **Poor inspectability and maintainability** – These support types make it virtually impossible to paint, remediate or otherwise maintain some areas of the pipe at the support. Visual inspection is often challenging; it is also very difficult to inspect these areas with conventional NDT methods.
- ❖ **Galvanic couple forming** – These support types can develop bi-metallic contact. Even though both the pipe and support are steel, the metallurgical differences can still provide a small potential difference enough to create a corrosion cell.

PIPE SUPPORT INSPECTION AND REMEDIATION STAGES

- ❖ **Engineering**
 - Lift line approval and or inspection method approval and remediation method approval
 - Engineering support to provide solution approval for preferred methodology for the inspection method of pipe and pipe supports as well as approval for preferred remediation solution.
- ❖ **Access Method – Rope Access / Suspended Decking System**
 - Vertech to provide options in relation to the safest, most efficient and cost effective access system to deliver the best overall solution for our clients.
- ❖ **Inspect and Assess Support**
 - Once engineering approval is in place inspection and mechanical teams will provide access and methodology to inspect, assess and report condition of pipe and pipe supports.
- ❖ **Remove & Replace – Shims, Shoes & Brackets**
 - Once inspection has been carried out depending on findings technicians will remove or replace items as required.
- ❖ **Remediate & Reinstate – STOPAQ, Humidor, Mechanical prep ST 2.5**
 - Following inspection of pipe and pipe supports, Vertech's multi-disciplined technicians to provide remediation support to any damaged areas using the client and engineered approved methods.



Beam Support



Saddle Clamp

SOLUTIONS

PIPE RACK JACK SYSTEM MS1

Vertech utilise our MS1 pipe rack jack system in order to deliver significant time, cost and safety improvements over conventional pipe lifting techniques. This system provides our technicians suitable access in order to carry out inspection and remediation of the underside of both live or isolated piping sections, and to replace pipe supports and complete general fabric maintenance, as required.



Pipe Rack Jack System

The jacking system can be rapidly installed into piping racks by a multi-disciplined rope access team allowing them to carry out visual, conventional or advanced NDT inspections, report on findings and provide remediation solutions to entire lines. This approach allows for improved productivity and safety while significantly reducing cost, time and personnel requirements when compared to conventional methods. Our multi-disciplined teams provide both the access, inspection and remediation solutions.

ADVANCED NDT INSPECTION METHODS

Sonomic

Through our partnership with sister company Sonomic, Vertech now leverages their expertise in advanced non-destructive inspection methods and other cutting-edge technologies. This collaboration significantly expands our capabilities, enabling us to offer a broader range of inspection services.

CHIME®, EMAT AND MULTISKIP INSPECTION

Chime® Inspection

CHIME® Inspection can be used on both pipes and plate, and is suitable for inaccessible geometries such as clamps, saddles and pipe supports.



Sonomic inspectors carrying out Chime Inspection

This method provides sufficient information to indicate areas of corrosion, thereby allowing for effective decision making in ensuring long term integrity of assets and equipment. CHIME® offers a very innovative and efficient approach for initial screening, in which regions where degradation is identified can be followed up with detailed wall thickness mapping. Sonomic offers a full service to customers in carrying out CHIME® inspections for a range of situations.

SOLUTIONS (CONTINUED)

CHIME®, EMAT AND MULTISKIP INSPECTION

SH-EMAT Inspection

SH-EMAT, specialised for thin wall material (>12mm), provides a secondary confirmation technique to CHIME® for with potential to provide more refined sizing categories. Somatic's SH-EMAT based technique was developed to allow rapid inspection of pipework and pipelines. Inspection under pipe supports is a major application since it allows the condition of the material to be reliability assessed without the need for lifting the pipe off the support.

Multiskip Inspection

Multiskip can be used on both pipes and plate, and is suitable for inaccessible geometries such as clamps, saddles and pipe supports. The Multiskip technique uses angled shear waves with two transducers in a pitch-catch mode. The transmitter and receiver can be separated by up to 2 m with full investigation of the material condition between the probes. The data can be collected while scanning at reasonably high speeds, allowing for rapid coverage of large areas.

I-ROD ANTI-CORROSION PIPE SUPPORT SYSTEM

I-ROD Material supports the pipe and eliminates moisture. The half round shape of the I-Rod against the round pipe minimises the contact point. I-Rod Material is hydrophobic and exceptionally strong, so it can support the pipe without deforming or creeping over time, repelling moisture and protecting the pipe coating.

- ❖ I-ROD electrically isolates the pipe from metal supports, preventing galvanic corrosion between dissimilar metals.
- ❖ The pipe is supported by Half-round shape which minimises the contact area, ensuring water evaporates before damaging the paint. Nu-Bolts are covered with Polyshrink to protect the paint on the pipe during installation.
- ❖ The proprietary hydrophobic material has high compression strength and will not crack, creep or cold flow and has a guaranteed performance of 25 years.
- ❖ Is designed to mitigate against crevice corrosion.

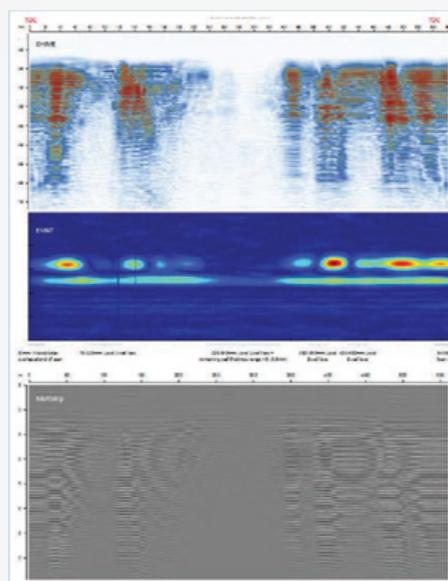


Image showing Scan data from Chime, EMAT and Multiskip for corrosion found on pipe under support.

1. I-ROD MATERIAL

I-Rod Material is a durable half-round thermoplastic.

- ❖ High compressive strength
- ❖ Little to no creep over time

2. POLYSHRINK

Polyshrink is a UV-stable, cross-tin ked polyolefin applied over the shank of the U-bolt to protect the pipe's paint during installation.

- ❖ Standard: up to 110°C
- ❖ High-temp: up to 220°C



3. COATED FASTENERS

Carbon-steel U-bolts and Nuts are available with the following coatings:

- ❖ Hot-dip galvanized
- ❖ SermaGard™

The 316 SS is also available.

4. DOMESTIC STEEL

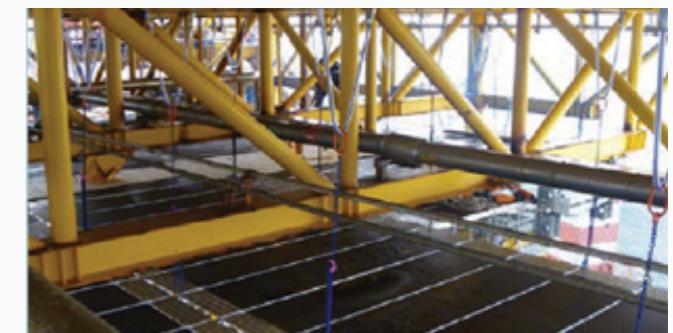
Nu-Bolts are made from only the best quality domestic steel.

- ❖ Non-China
- ❖ Non-India

Full MTRs are provided with every order to verify quality.

V-DECK™ ACCESS SYSTEM

The V-Deck™ is a high strength, low weight engineered modular suspended temporary work platform that provides a strong and stable platform for temporary works access. V-Deck™ is very versatile, easy and quick to install. It is best suited to pipe racks, under deck structures, helidecks, jetty's and flare booms. All the component parts are manufactured in the United Kingdom and meet AS/NZ standards.



KEY CONTACTS

VERTECH

Craig Davies

Group Development Manager

T: +61(8) 6168 7600 | M: +61 429 222 409

E: Craig.Davies@vertech.com.au

Adam Haling

General Manager - Infrastructure

T: +61(8) 6168 7600 | M: +61 475 509 140

E: Adam.Haling@vertech.com.au

Rob Porter

Department Manager - Frontline and Ad Hoc

T: +61(8) 6168 7600 | M: +61 497 327 024

E: Rob.Porter@vertech.com.au

Stephen Brett

Manager - Core Contracts and Offshore Services (WA/NT)

T: +61(8) 6168 7600 | M: +61 407 818 532

E: Stephen.Brett@vertech.com.au

Company Contact Information

T: +61(8) 6168 7600

E: Info@vertech.com.au

SONOMATIC

Jon Millen

Operations Manager - Australia

T: +61(8) 6168 7606 | M: +61 477 030 058

E: Jon.Millen@sonomatic.com.au

Esteban Cesan

President - Americas

T: +1 832 977 0303

E: Esteban.Cesan@sonomatic.com

Ashley Burgess

Project Manager - West Coast

T: +61(8) 6168 7606 | M: +61 456 695 854

E: Ashley.Burgess@sonomatic.com.au

Clayton Webb

Region Manager - Middle East

T: +971 2 6580708 | M: +971 50 313 9254

E: Clayton.Webb@sonomatic.com

Abdul Taqateq

Project Manager - East Coast

T: +61(8) 6168 7606 | M: +61 487 410 390

E: Abdul.Taqateq@sonomatic.com.au

Graham Marshall

Subsea Project Manager - Europe and Africa

T: +44 (0) 1224 823 960

E: Graham.Marshall@sonomatic.com

Zach McCann

Region Manager - South East Asia

T: +60 361 581 185 /1180

M: +60 12 555 1569 / +61 404 797 670

E: Zach.Mccann@sonomatic.com.my

Charles Loader

General Manager - Europe and Africa

T: +44 (0) 1925 414000 | M: +44 (0) 7376 714765

E: Charles.Loader@sonomatic.com