



CERTIFICATE OF APPROVAL

This is to certify that the following product has been reviewed and approved by Fearnley Procter Inc. and an NS-1™ Technical Review Committee.

Date of Approval: 20/04/2011

Cert/NS-1™ Approval Number: 0069/11-2

Valid Until: 19/04/2012

Reviewed Against: AA.03.30.00.1110 Rev. 09

Review Number: FPI 429

NS-1™ Quality and Inspection Requirements for New and Refurbished Drilling and Well Completion Equipment, Edition 2 – January 2006

Product Description: Tri*Tanium Hardbanding

Candidate: Knight Oil Tools Tri*Drill Services – 1001, Briar Patch Road, Broussard, Louisiana 70518

FEARNLEY PROCTER NS-1™ LEVEL 2 PRODUCT APPROVAL
TRI*TANIUM HARDBANDING APPLICATION ON NEW DRILL PIPE TOOL
JOINTS

Scope: The procedure followed has been to compare the specific requirements of the relevant Fearnley Procter NS-1™ documentation with the submitted information, and to perform certain testing on the product.

The evaluation of the application procedures for Tri*Tanium Alloy Hardbanding on drill pipe has been performed in compliance with the general requirements and recommendations as stipulated in NS-1™ Supplementary Requirements, AA.03.30.00.1110 (Rev. 09) Section 5.0, and Sub-Specification 90.1, 90.3 and 160.

The following data was supplied and tests performed by Tri*Drill Services for Fearnley Procter Inc., under this approval.

- 1) Tensile and Charpy Impact test (base metal)
- 2) Micro Hardness test (across weld metal, HAZ plus base metal)
- 3) Hard Banding Adhesion Test Results
- 4) Welding Procedures/Guidelines
- 5) Inspection Guidelines
- 6) Acceptance/Rejection Criteria
- 7) Casing Wear Results

Reference Documents: Work Procedure: Tri*Tanium Hardbanding Initial Application Rev 3 11th April 2011

As a result of this review, Tri*Tanium Hardbanding has been granted approval for new application on drill pipe tool joints, and deemed suitable for service when applied as per the processes and procedures reviewed and the requirements of NS-1™.

Approved By:

A handwritten signature in black ink, appearing to read "Kevin Fearnley", is written over a dotted line.

Kevin Fearnley
(Chairman NS-1™ Technical Review Committee)

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