



CERTIFICATE OF APPROVAL

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

Date of Approval: 16/8/2011

Cert/NS-1™ Approval Number: 0053/11-2

Valid Until: 15/8/2013

Reviewed Against: AA.03.30.00.1110 Rev. 09

Review Number: FP FZE 455

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

Procedure: OTW-12 Hardbanding applied over OTW-12

Candidate: Castolin Eutectic – Hardbanding Division, PO Box 178, Hammaren 13, 4056, Tanager, Norway

FEARNLEY PROCTER NS-1™ LEVEL 2 PROCEDURE APPROVAL (OTW-12 Alloy Hardbanding – Re-Application for Tool Joints Only)

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 OTW-12 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 Castolin Eutectic to Fearnley Procter Norway, for this approval.

1. Hard-banding Adhesion Test Results, 2. Welding Procedures/Guidelines, 3. Inspection Guidelines, 4. Acceptance/Rejection Criteria, 5. Hardness Test Results, 6. Field use data

Re-application was performed by applying OTW-12 and then grinding down to 1/32 and applying a further banding of OTW-12.

Reference Documents: Castolin Eutectic Hardbanding Manual Version 1.2 June 2010

As a result of the review Castolin Eutectic OTW-12 Alloy Hardbanding has been granted approval and is listed as an NS-1™ Level 2 approved product 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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