



MARINE DIVISION

Certificate number: 24778/A1 BV

File number: ACM 153/1022/01

Product code: 1533H

This certificate is not valid when presented without the full attached schedule composed of 7 sections

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TYPE APPROVAL CERTIFICATE

This certificate is issued to

NOV FGS Singapore (Pte) Ltd
SINGAPORE - SINGAPORE

for the type of product

WATERTIGHT CABLE/PIPE BULKHEAD/DECK PENETRATION DEVICES

GRE Bulkhead Penetration Pieces

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- IMO Resolution MSC.61(67) FTP Code, Resolution A.753 (18)

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 06 Mar 2017

For BUREAU VERITAS,

At BV SINGAPORE, on 11 Feb 2014,

Shivananda Upadhyia



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION

GRE Bulkhead Penetration Pieces

1.1 Description

- The GRE pipe is cast into the bulkhead by means of an epoxy grouting providing a watertight penetration.
- Consists of sleeve pipe with pooring/ventilation holes, rubber ring at each end and a Bondstrand pipe
- Non-conductive

1.2 Product range and rating

Nominal Pipe size (inch / mm)	1" to 40" / 25 to 1000
Min. sleeve length +/-2 (mm)	From 187 to 523
Min. wall thickness sleeve pipe (mm)	From 15 to 25
Design Internal Pressure (bar)	17.2
Design External Pressure (bar)	4
Design Temperature (°C)	Max. 93

1.3 Raw material

Pipes and flanges *	GRE
Saddle blank	GRE
Resin filler	Epoxy resin
O-ring	Buna N, shore A70
Penetration sleeve and plate	Mild steel

* To be of Bondstrand Series type-approved by Bureau Veritas

2. DOCUMENTS AND DRAWINGS

- Bondstrand product data FP 935 04/05
- Technical Bulletin # 659F of Chockfast Orange
- Technical Bulletin # 646D of Phillybond Orange
- Material Safety Data Sheet of Chockfast Orange Parts N° 1010H and N° 1010R
- Material Safety Data Sheet of Phillybond Orange Parts N° 3280H and N° 3280R
- Table N° 69 rev. 3 (1/2 and 2/2) Design for GRE Bulkhead Penetrations from 1" to 40"
- N° PF-32 rev. 0 (pages 1 to 9) Assembly Instruction for 1" - 40" GRE Bulkhead Penetration Spool
- N° TEST- 1" BHD - 2 rev. 0, N° Class A60-02 24" rev. 1 and N° TEST- 40" BHD - 2 rev. 0 Testing Procedures
- N° INS-009B rev. 0 GRE Bulkhead Penetration Installation

No departure from the above documents shall be made without the prior consent of the Society. The manufacturer must inform the Society of any modification or changes to these documents and drawings.

3. TEST REPORTS

- Tests carried out: Internal Pressure test at 26 bar, hold for 15 min. External Pressure test, left and right side, max. 12 bar.
- Pressure testing (1", 24" and 40") witnessed by BV surveyor.
- BV Attestations (1", 24" and 40") N° 390SGP111, N° 390SGP112 and N° 390SGP113 dated 15/08/2011.
- Test reports (1", 24" and 40") Doc. N° E051-11(S)(1), Doc. N° E051-11(S)(2) and Doc. N° E065-11(M)(1) dated 03/08/2011.

4. APPLICATION / LIMITATION

4.1 Ameron GRE bulkhead penetration pieces are approved for pipes and flanges of Bondstrand Series type-approved by the Society with a diameter range from 1" to 40" through watertight bulkheads and decks.

4.2 Approval valid for ships having to comply with SOLAS 74 Convention, as amended, and for units having to comply with MODU Code as amended.

4.3 The resistance of the bulkhead is not to be impaired by the bulkhead penetration.

4.4 Where the bulkhead is required to have specific fire integrity characteristics, arrangements are to be made to maintain the fire integrity of the bulkhead in way of the penetration.

4.5 The installation on board is to be carried out in compliance with manufacturer's assembly instructions and Society's Rules requirements.

4.6 For each ship application, the detailed drawings of penetration pieces are to be submitted at the design stage for review of compliance with Requirements stated on the front page of this certificate.

5. PRODUCTION SURVEY REQUIREMENTS

5.1 The products are to be supplied by **NOV FGS Singapore (Pte) Ltd** in compliance with the type described in this certificate and in compliance with the requirements stated on the front page of this certificate. This type of product is within the category HBV of Bureau Veritas Rule Note NR 320.

5.2 **NOV FGS Singapore (Pte) Ltd** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR 320 for HBV products.

5.3 No Bureau Veritas certificate is required.

Place of Production

1) NOV FGS Singapore (Pte) Ltd
7A, Tuas Avenue 3
Singapore 639407
SINGAPORE

2) NOV FGS Malaysia Sdn Bhd
Plo 202 Senai Industrial Park Phase IV
81400, Senai - Johor
MALAYSIA

6. MARKING OF PRODUCT

The product or packing is to be permanently marked with at least:

- Manufacturer name or trade mark
- Type, designation
- Water technical rating

7. OTHERS

This approval is given on the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the product and of the conditions of this approval.

This certificate supersedes the Type Approval Certificate N° 24778/A0 BV issued on 06/03/2012 by the Society.

***** END OF CERTIFICATE *****