CERTIFICATE NUMBER
17-BK1645325-PDA

DATE
12 Jul 2017

ABS TECHNICAL OFFICE
Busan Engineering Services

CERTIFICATE OF DESIGN ASSESSMENT

This is to certify that a representative of this Bureau did, at the request of

BMT CO., LTD.

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: **Cryogenic Valve**

Model: **Cryogenic Needle Valves: FCNV SERIES**

This Product Design Assessment (PDA) Certificate 17-BK1645325-PDA, dated 12/Jul/2017 remains valid until 11/Jul/2022 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

AMERICAN BUREAU OF SHIPPING

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Tier: 5 - Unit Certification Required

Product: **Cryogenic Valve**
Model: **Cryogenic Needle Valves: FCNV SERIES**
Intended Service:
Cryogenic Liquid and Gas Transportation

Description:
Cryogenic Needle Valves - 1/2" & 1" Class 150

Rating:
Design Pressure: 19 bar, Design Temperature: -196 degree C ~ 65 degree C
Material: Body (ASTM A351 CF8M) & DISC (ASTM A276-316)

Service Restriction:
Unit certification is required for the products intended to be used at a working temperature below -55 degree C and testing specified in section 5C-8-5/13.1.1 of the ABS Steel Vessel Rules is to be carried out in the presence of the Surveyor as required.

Comments:
1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. All valves are to bear permanent identification, such as the manufacturer's name or trademark, standard of compliance, material identify, pressure rating, etc. as required by the standard of compliance and at which the manufacturer guarantees the valve to meet the requirements of the standards. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life in accordance with 4-6-2/5.11.4 and 4-6-1/7.1.4 of the Steel Vessels Rules 2017.
3. Material testing is to be witnessed by an ABS Surveyor in accordance with 5C-8-6/1.3 of 2017 Steel Vessel Rules.

Notes/Drawing/Documentation:
1. DWG. No.: 170217-01-115, Rev. A
2. Proto type test report(Pressure, Cryogenic & Burst test): BK3330442, Dated 25 May 2017
3. Material test report: BK3292171, Dated 09 March 2017
4. Flow test report: TCHPV-17-05-302(1"), Dated 24 May 2017 & TCHPV-17-05-303(1/2"), Dated 15 May 2017

Terms of Validity:
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STANDARDS

ABS Rules:
2017 Steel Vessel Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, 5C-8-5/13.1, 5C-8-6/2.2, 5C-8-6/Table 4 & 4-6-1/7.1.4, 4-6-

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2/5.11.4, 4-6-2/5.15

National:
NA

International:
IGC code (2016 Edition) 5.13.1, 6.2.2, Table 6.4
BS6364 (1984 Edition)

Government:
NA

EUMED:
NA

OTHERS:
NA