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| **PHASED ARRAY ULTRASONIC TESTING REPORT** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **JOB DETAILS** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Client: | | | **NCOC N.V.** | | | Project: | | | | **ESKENE WEST** | | | | | | | | | | Work Location: | | **Gas 1 Tr 1** | | | |
| **JOB DESCRIPTION** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brief Description of Job: | | | | | | **Encoded Thickness Measurement Survey of A1-321-VS-101.** | | | | | | | | | | | | | | | | | | | |
| Tag No.: | | | | | | **A1-321-VS-101** | | | | | | | | Location: | | | | | | **Unit 321** | | | | | |
| Material: | | | | | | **SA 516 GR 70** | | | | | | | | Surface Condition: | | | | | | **Coated** | | | | | |
| Nominal thickness | | | | | | **Shell - 19.0 mm** | | | | | | | | Diameter | | | | | | **I.D. 2400 mm** | | | | | |
| Part temperature | | | | | | **45°C** | | | | | | | |  | | | | | |  | | | | | |
| **INSPECTION PROCEDURE** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procedure No: | | | | **QP-11-PAUT-CM-Q01 REV 03** | | | | | | | In accordance with: | | | | | **ASME sec V** | | | | In accordance with: | | | | **Client Specification** | |
| **INSPECTION EQUIPMENT** | | | | | | | | | | | | | | | | | | | | | | | | | |
| S. No | Equipment/  Material Name | | | | | | | Manufacturer | | | | Serial No | | | | | Calibration certificate No | | | | | | Calibration Expiry date | | |
|  | OmniScan MX2 | | | | | | | Olympus | | | | 103488 | | | | | BK-01-2826 | | | | | | 26.12.2020 | | |
|  | Step wedge calibration blocks 5-10-20-40 mm | | | | | | | Fizpribor | | | | 3255-20 | | | | | C285-20 | | | | | | 09.06.2021 | | |
| **EQIPMENT PARAMETERS** | | | | | | | | | | | | | | | | | | | | | **CALIBRATION BLOCK DETAILS** | | | | |
| Mode | | | | **Tx/Rx** | | | Filter | | | **BP 8 MHz** | | | Points quantity | | | | | **640** | | | Cal block | | | **Step wedge** | |
| Frequency | | | | **7.5 MHz** | | | Rectifier | | | **FW** | | | No of elements | | | | | **64** | | | Material | | | **CS** | |
| Energy | | | | **40 V** | | | Video filter | | | **On** | | | Element pitch | | | | | **1 mm** | | | Range | | | **(10.0-40.0) mm** | |
| Pulse width | | | | **100 ns** | | | Averaging | | | **1** | | | Ref sensitivity | | | | | **10 dB** | | | Temperature | | | **25°C** | |
| PRF | | | | **Auto** | | | Velocity | | | **5890 m/s** | | | Scan sensitivity | | | | | **+2 dB** | | | Correction | | | **n/a** | |
| Probe | | | | **Olympus Hydroform** | | | Wedge | | | **n/a** | | | Couplant | | | | | **Water** | | | Accuracy | | | **±0.1 mm** | |
| **SCAN PLAN** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Ref | | Scan type | | | Beam type | | | | Index offset | | | | Start element | | Active elements | | | | First Element | | | Last Element | | | Element Step |
|  | | Linear | | | Compression | | | | 30.5 | | | | 1 | | 64 | | | | 1 | | | 64 | | | 1 |
| **CALIBRATION DETAILS** | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Calibration on (10.0-20.0-40.0) mm step wedge block (CS):** C:\Users\nk11018685\Desktop\Slug Cather\cal 30.09.20 (40mm).JPG  20,00  39.96  10,07 | | | | | | | | | | | | | | | | | | | | | | | | | |

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| **DETAILS AND RESULTS** |
| Phased Array inspection was carried out on tank **A1-321-VS-101**. The scanning areas are mentioned below for each location. All areas were scanned in increments of 50 mm giving an overlap of approx. 11 mm and varied in length and shape to maximise the area covered around the restrictions. The datum points are shown in schemes for clarity. These areas were clearly marked with permanent marker to ensure accurate repeatability. The surface condition was good with Minimal loss of Data due to paint peel off on the surface. |
| **A1-321-VS-101**  **(KE01-A1-PPGM929-F01-0007-001)**      **C:\Users\nk11018685\Desktop\A1-321-VS-101 (2) PAUT.png** |

|  |  |
| --- | --- |
| **DETAILS AND RESULTS** | |
| **Location-1 (A1-321-VS-101)** | |
| C:\Users\nk11018685\Desktop\Gas 1 tr 1\Unit 321\IMG_20201004_152135.jpg  (+)X  (-)X  0  Y | Data collected with (-950 to +950 mm) on X-axis, (0-150 mm) on Y-axis. Datum point is situated on 20 mm from corner weld joint position half reinforcing pad and scanned performed from top side from east to west (Y). |
| C:\Users\nk11018685\Desktop\Gas 1 tr 1\Unit 321\Loc 1.JPG | |
| The minimum thickness of the location-1 | |
| C:\Users\nk11018685\Desktop\Gas 1 tr 1\Unit 321\Loc 1 (C).JPG | |
| Full scan view with the minimum thickness area of the location-1 | |

**Results**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Tag No | Location number | Description | Size, mm | Nominal  thickness, mm1 | Date | Minimum thickness, mm1 | Maximum thickness, mm | Area of maximum thickness loss, mm | | | | Average thickness, mm |
| Start X | End X | Start Y | End Y |
| A1-321-VS-101 | Loc 1 | Shell | 1900х150 | 19.0 | 04 Oct 2020 | 16.97 | 19.50 | -170 | 170 | 0 | 150 | 18.23 |

*Notes:*

1. *All measurements include coating.*

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| Examined by  PAUT Level II cert. No 1A 416/20 | Name: Aliaksandr Skhodkin  expiry date: 30.06.2025 | Signature: .......................... | Date: 06 October 2020 |
| Approved by  PAUT Level II cert. No 1A 354/18 | Name: Barsukou Raman  expiry date 31.07.2023 | Signature: .......................... | Date: 06 October 2020 |
| Client Representative: | ………………………….…. | Signature: ..................... | Date: .................. |

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