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| **PHASED ARRAY ULTRASONIC TESTING REPORT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **JOB DETAILS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Client: | | | **NCOC N.V.** | | | | Project: | | | | **ESKENE WEST KARABATAN** | | | | | | | | | | Work Location: | | | | **OSF** | | | |
| **JOB DESCRIPTION** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brief Description of Job: | | | | | | | **Encoded Thickness Measurement** | | | | | | | | | | | | | | | | | | | | | |
| Line No.: | | | | | | | **M2-334-TZ-001** | | | | | | | | | Location: | | | | | **OSF** | | | | | | | |
| Material: | | | | | | | **S235 / S355** | | | | | | | | | Surface Condition: | | | | | **Painted** | | | | | | | |
| Nominal thickness | | | | | | | **No info** | | | | | | | | | Diameter | | | | | **-** | | | | | | | |
| Part temperature | | | | | | | **5 °C** | | | | | | | | |  | | | | |  | | | | | | | |
| **INSPECTION PROCEDURE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procedure No: | | | | | **QP-11-PAUT-CM-Q01 REV 02** | | | | | | | 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 | | | | | | | 103625 | | | | | BK-01-0126 | | | | | 30.01.2019 | | | | |
|  | Step wedge calibration block | | | | | | Olympus | | | | | | | 077314 | | | | | - | | | | | - | | | | |
| **EQIPMENT PARAMETERS** | | | | | | | | | | | | | | | | | | | | | **CALIBRATION BLOCK DETAILS** | | | | | | | |
| Mode | | | | **Tx/Rx** | | | | Filter | | **None** | | | 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 | | | | | **(6,25-25) mm** | | |
| Pulse width | | | | **100 ns** | | | | Averaging | | **1** | | | Ref sensitivity | | | | | **18 dB** | | | Temperature | | | | | **5 °C** | | |
| PRF | | | | **auto** | | | | Focus depth | | **6 mm** | | | Scan sensitivity | | | | | **0 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 | | | Minimum angle | | | Maximum  angle | | | | | Angle Step |
|  | | Linear | | | | Compression | | | 30,5 | | | | | | 1 | | 64 | | | 0 | | | 0 | | | | | 1 |

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| **CALIBRATION DETAILS** |
| Calibration on (6,25-12,5-18,75-25) mm step wedge block: |

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| Phased Array inspection was carried out on **M2-334-TZ-001 (ROW IV).**The scanning areas are mentioned below. 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 scheme 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. |
| **WEST (Row IV)** |
| 7 6 5 4 3 2 1 |

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| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 1)** | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. |
|  | |
| The minimum thickness of the line **M2-334-TZ-001 (Location 1)** | |
| ***X axis***  ***Y axis***  ***Datum 0*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 1)** | |

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| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 2)** | | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. | |
|  | |
| The minimum thickness of the line **M2-334-TZ-001 (Location 2)** | |
| ***Datum 0***  ***X axis***  ***Y axis*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 2)** | |
| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 3)** | | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. | |
|  | |
| The minimum thickness of line **M2-334-TZ-001 (Location 3)** | |
| ***X axis***  ***Y axis***  ***Datum 0*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 3)** | |
| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 4)** | | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. | |
|  | |
| The minimum thickness of the line **M2-334-TZ-001 (Location 4)** | |
| ***Y axis***  ***X axis***  ***Datum 0*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 4)** | |
| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 5)** | | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. | |
|  | |
| The minimum thickness of the line **M2-334-TZ-001 (Location 5)** | |
| ***Y axis***  ***X axis***  ***Datum 0*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 5)** | |
| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 6)** | | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. | |
|  | |
| The minimum thickness of the line **M2-334-TZ-001 (Location 6)** | |
| ***Datum 0***  ***X axis***  ***Y axis*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 6)** | |
| **DETAILS AND RESULTS** | |
| **M2-334-TZ-001 (Location 7)** | | |
| x  y  Dead zone for PAUT  60 mm  60 mm  Scan area  0 | Data collected with (0-350) mm on X-axis, (0-250) mm on Y-axis. Datum point is started on 60 mm from stiffener. Dead zone is 60 mm for PAUT on four ends of plate. | |
|  | |
| The minimum thickness of the line **M2-334-TZ-001 (Location 7)** | |
| ***Datum 0***  ***X axis***  ***Y axis*** | |
| Full scan view with the minimum thickness area of the line **M2-334-TZ-001 (Location 7)** | |

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| RESULTS | | | |
| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Inspection Date | Location | Min (mm) | Max (mm) | X (mm) | Y (mm) | Avg (mm) | | **28.11.2018** | **IV-1** | **6.10** | **7.16** | **300 - 340** | **70 - 130** | **6.43** | | **IV-2** | **6.13** | **6.92** | **90 - 115** | **70 - 140** | **6.25** | | **IV-3** | **6.10** | **6.96** | **170 - 210** | **110 - 140** | **6.41** | | **IV-4** | **6.07** | **7.04** | **180 - 220** | **100 - 145** | **6.29** | | **IV-5** | **6.16** | **7.13** | **100 - 120** | **175 - 200** | **6.49** | | **IV-6** | **6.13** | **6.52** | **150 - 190** | **80 - 140** | **6.25** | | **IV-7** | **6.07** | **7.02** | **180 - 200** | **150 - 200** | **6.19** |   *Notes:*   1. *According to PA UT corrosion mapping including coating.* | | | |
| Examined by  UT Level III cert. No 300400  PA-UT Level II cert. No. 319659 | Name: Kishore kumar.P  expiry date: 30.03.2023  expiry date: 13.09.2020 | Signature: ...................... | Date: 02 Dec 2018 |
| Approved by  UT Level III cert. No 2B189/16  PA-UT Level II cert. No. 1A 110/16 | Name: Klindukhou Viachaslau  expiry date: 31.05.2021  expiry date: 31.12.2020 | Signature: ...................... | Date: 02 Dec 2018 |
| Client Representative: | ………………………….…. | Signature: ...................... | Date: .................. |