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| **PHASED ARRAY ULTRASONIC TESTING REPORT** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **JOB DETAILS** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Client: | | | **NCOC N.V.** | | | | Project: | | | | **ESKENE WEST KARABATAN** | | | | | | | | | | Work Location: | | | | **FG-02** | | | |
| **JOB DESCRIPTION** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brief Description of Job: | | | | | | | **Encoded Thickness Measurement Survey of 6" Line.** | | | | | | | | | | | | | | | | | | | | | |
| Line No.: | | | | | | | **D7-4200-FG-065-6”-C57** | | | | | | | | | Location: | | | | | **FG-02** | | | | | | | |
| Material: | | | | | | | **Carbon steel** | | | | | | | | | Surface Condition: | | | | | **Painted** | | | | | | | |
| Nominal thickness | | | | | | | **10.97 mm** | | | | | | | | | Diameter | | | | | **6 inch** | | | | | | | |
| Part temperature | | | | | | | **30 °C** | | | | | | | | |  | | | | |  | | | | | | | |
| **INSPECTION PROCEDURE** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Procedure No: | | | | | **QP-11-PAUT-CM-Q01 REV 01** | | | | | | | 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 | | | | | **+8 dB** | | | Temperature | | | | | **30 °C** | | |
| PRF | | | | **auto** | | | | Focus depth | | **4 mm** | | | Scan sensitivity | | | | | **0 dB** | | | Correction | | | | | **n/a** | | |
| Probe | | | | **Olympus Hydroform** | | | | Wedge | | **n/a** | | | Couplant | | | | | **water** | | | Accuracy | | | | | **±0,04 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:    18,71 mm  25,01 mm  6,28 mm  12,52 mm |
| **DETAILS AND RESULTS** |
| Phased Array inspection was carried out on 6 inchLine **D7-4200-FG-065-6”-C57**. 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. |
| **D7-4200-FG-065-6”-C57** |
| Inspection area |
| 0 datum from nozzle |
| Location general view |

|  |  |
| --- | --- |
| **DETAILS AND RESULTS** | |
| **Location 0-1000** | |
|  | Data collected with (0-540) mm on X-axis, (0-1000) mm on Y-axis. Datum 0 in scan axis started at 1200 mm from nozzle and scanned in clockwise direction related to flow. Refer image above. |
|  | |
| The minimum thickness of the location 0-1000 | |
| ***X axis***  ***Y axis*** | |
| Full scan view with the minimum thickness area of the location 0-1000 | |

***Y axis***

|  |  |
| --- | --- |
|  | Full scan of location 0-1000 |
|  |
| ***X axis***  ***Datum*** |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Location | Description | Ø, inch | Nominal thickness, mm | Location number | Date | Minimum thickness, mm | Maximum thickness, mm | Area of maximum thickness lose | | | | Average thickness, mm |
| Start X | End X | Start Y | End Y |
| D7-4200-FG-065-6”-C57 | Pipe | 6 | 10.97 | Loc-01 | 06.08.18 | 10,40 | 11,57 | 230 | 350 | 100 | 360 | 10,98 |

*Notes: According to PA UT corrosion mapping including coating.*

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| --- | --- | --- | --- |
| Examined by:  PAUT Level II | Dhanapal Sabariselvan | Signature: ........................... | Date: 05 Aug 2018 |
| Approved by:  UT Level III cer.No.282671 | Arul Vignesh  cer.exp date: 01.05.2021 | Signature: ........................... | Date: 05 Aug 2018 |
| Client Representative: | ………………………….…. | Signature: ........................... | Date: ........................... |