|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Ultrasonic Thickness Measurement report**  **Протокол по результатам проведения ультразвуковой толщинометрии** | | | | | | | | | | | | | | | |
| **JOB DETAILS / РАБОЧАЯ ИНФОРМАЦИЯ** | | | | | | | | | | | | | | | |
| **Client**  Клиент | | | **NCOC N.V.** | | | | | **Project**  Проект | | | | | **ESKENE WEST** | | |
| **Work location**  Место работы | | | **OSF Unit 334** | | | | | **Control object**  Объект контроля | | | | | **According to table** | | |
| **Material**  Марка стали | | | **SA516 Gr.70**  **SA333 Gr.6** | | | | | **Dimension**  Размер | | | | | **According to table** | | |
| **Calibration Temperature**  Температура калибровочного блока | | | **+15°C** | | | | | **Object Temperature**  Температура объекта контроля | | | | | **+10°C** | | |
| **Surface condition**  Состояние поверхности | | | **Coated** | | | | | **Couplant**  Контактная среда | | | | | **UT Gel** | | |
| **Correction factors**  Поправочные факторы | | | **n/a** | | | | | **Roughness**  Шероховатость | | | | | **-** | | |
| **INSPECTION PROCEDURE / НОРМАТИВНЫЕ ДОКУМЕНТЫ** | | | | | | | | | | | | | | | |
| **Procedure**  Процедура | | **QP-11-UTT-Q01 Rev 04** | | | | **Standard for testing**  Стандарт по контролю | | | | **GOST 28702-90** | | **Standard for item**  Стандарт для ОК | | | **ASME B31.3** |
| **EQIPMENT PARAMETERS / ПАРАМЕТРЫ ОБОРУДОВАНИЯ** | | | | | | | | | | | | | | | |
| **Probe, S/N**  Датчик, № | | | | | **D790 / 1306596** | | | **Size**  Размер | | | | | **11 mm** | | |
| **Angle**  Угол ввода | | | | | **0º** | | | **Crystal**  ПЭ | | | | | **Dual** | | |
| **Frequency**  Частота преобразователя | | | | | **5 MHz** | | | **Accuracy**  Точность | | | | | **± 0,1 mm** | | |
| **CALIBRATION BLOCK DETAILS / ПАРАМЕТРЫ КАЛИБРОВОЧНОГО БЛОКА** | | | | | | | | | | | | | | | |
| **Calibration Block**  Калибровочный блок | | | | | **Step wedge** | | | **Calibration Block Range**  Диапазон толщин калибровочного блока | | | | | **5.0-20.0 mm** | | |
| **INSPECTION EQUIPMENT / ОБОРУДОВАНИЕ ИНСПЕКЦИОННОГО КОНТРОЛЯ** | | | | | | | | | | | | | | | |
| **№** | **Equipment**  Оборудование | | | **Manufacture** Изготовитель | | | **Serial number**  Серийный номер | | | | **Certificate**  Сертификат поверке | | | **Expire date**  Дата истечения поверки | |
|  | 45 MG | | | OLYMPUS | | | 191332001 | | | | KZ-01-22-Ж-0207 | | | 02.02.2023 | |
|  | Step wedge calibration block  5-10-20-40mm | | | Fizpribor | | | 3256-20 | | | | - | | | - | |
| **Job description**   1. UT measurements were conducted for thickness monitoring of pipelines. 2. Echo-to-echo UT technique was used. 3. UT spot check was performed on North, South, East, West, Top, Bottom and Extrados sides related to object position. | | | | | | | | | Flow direction  1 | | | | | | |

|  |  |
| --- | --- |
| Flow direction | 1  Flow direction |
| **Notes** / Примечания: | |

| **INSPECTION RESULTS / РЕЗУЛЬТАТЫ КОНТРОЛЯ** | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Details and Results from 30 December 2020** | | | | | | | | | | | | |
| **Section number/**  **Номер сечения** | **Drawing number/**  **Номер чертежа** | **Line / Tag N / Номер** | **Item description/**  **Участок контроля** | **Diameter, inch /**  **Диаметр, дюйм** | **Nominal thickness, mm/**  **Номинальная толщина, мм** | **South, mm/**  Юг, мм | **North, mm /**  Север, мм | **West, mm /**  Запад, мм | **East, mm /**  Восток, мм | **Top, mm /**  Верх, мм | **Bottom, mm /**  Низ, мм | **Extrados, mm /** Внешний радиус, мм |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 3  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.34 | 8.37 | - | - | 7.98 |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 7  Straight | 2 | 5.54 | - | - | 5.10 | 5.43 | 5.23 | 5.10 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 9  Elbow | 2 | 8.74 | - | - | - | - | 7.46 | 7.03 | 6.15 |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 13  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.44 | 8.66 | - | - | 8.04 |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-3340-CM-095-2"-A21-BP | Loc 17  Straight | 2 | 5.54 | - | - | 5.09 | 5.14 | 5.18 | 5.11 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 19  Tee | 2 | 8.74 | 8.41 | - | - | - | 7.23 | 7.48 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 20  Elbow | 2 | 5.54 | - | - | - | - | 7.01 | 7.07 | 6.10 |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 1  Bottom  Head | 24 | 13.0 | 12.11 | 12.22 | 12.21 | 12.46 | - | - | - |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 11  Bottom  Head | 24 | 13.0 | 12.27 | 12.28 | 12.20 | 12.12 | - | - | - |

| **INSPECTION RESULTS / РЕЗУЛЬТАТЫ КОНТРОЛЯ** | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Details and Results from 18 March 2021** | | | | | | | | | | | | |
| **Section number/**  **Номер сечения** | **Drawing number/**  **Номер чертежа** | **Line / Tag N / Номер** | **Item description/**  **Участок контроля** | **Diameter, inch /**  **Диаметр, дюйм** | **Nominal thickness, mm/**  **Номинальная толщина, мм** | **South, mm/**  Юг, мм | **North, mm /**  Север, мм | **West, mm /**  Запад, мм | **East, mm /**  Восток, мм | **Top, mm /**  Верх, мм | **Bottom, mm /**  Низ, мм | **Extrados, mm /** Внешний радиус, мм |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 3  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.34 | 8.37 | - | - | 7.98 |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 7  Straight | 2 | 5.54 | - | - | 5.10 | 5.43 | 5.23 | 5.10 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 9  Elbow | 2 | 8.74 | - | - | - | - | 7.46 | 7.03 | 6.15 |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 13  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.44 | 8.66 | - | - | 8.04 |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-3340-CM-095-2"-A21-BP | Loc 17  Straight | 2 | 5.54 | - | - | 5.09 | 5.14 | 5.18 | 5.11 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 19  Tee | 2 | 8.74 | 8.41 | - | - | - | 7.23 | 7.48 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 20  Elbow | 2 | 5.54 | - | - | - | - | 7.01 | 7.07 | 6.10 |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 1  Bottom  Head | 24 | 13.0 | 12.11 | 12.22 | 12.21 | 12.46 | - | - | - |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 11  Bottom  Head | 24 | 13.0 | 12.27 | 12.28 | 12.20 | 12.12 | - | - | - |

| **INSPECTION RESULTS / РЕЗУЛЬТАТЫ КОНТРОЛЯ** | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Details and Results from 15 December 2021** | | | | | | | | | | | | |
| **Section number/**  **Номер сечения** | **Drawing number/**  **Номер чертежа** | **Line / Tag N / Номер** | **Item description/**  **Участок контроля** | **Diameter, inch /**  **Диаметр, дюйм** | **Nominal thickness, mm/**  **Номинальная толщина, мм** | **South, mm/**  Юг, мм | **North, mm /**  Север, мм | **West, mm /**  Запад, мм | **East, mm /**  Восток, мм | **Top, mm /**  Верх, мм | **Bottom, mm /**  Низ, мм | **Extrados, mm /** Внешний радиус, мм |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 3  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.34 | 8.37 | - | - | **7.98** |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 7  Straight | 2 | 5.54 | - | - | 5.10 | 5.43 | 5.23 | **4.99** | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 9  Elbow | 2 | 8.74 | - | - | - | - | 7.46 | 7.03 | **6.15** |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 13  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.44 | 8.66 | - | - | **8.04** |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-3340-CM-095-2"-A21-BP | Loc 17  Straight | 2 | 5.54 | - | - | **5.09** | 5.14 | 5.18 | 5.11 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 19  Tee | 2 | 8.74 | 8.41 | - | - | - | **7.23** | 7.35 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 20  Elbow | 2 | 5.54 | - | - | - | - | 7.01 | 7.07 | **6.10** |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 1  Bottom  Head | 24 | 13.0 | 12.11 | 12.22 | **11.91** | 12.46 | - | - | - |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 11  Bottom  Head | 24 | 13.0 | 12.27 | 12.28 | 12.20 | **12.12** | - | - | - |

| **INSPECTION RESULTS / РЕЗУЛЬТАТЫ КОНТРОЛЯ** | | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Details and Results from 08 April 2022** | | | | | | | | | | | | |
| **Section number/**  **Номер сечения** | **Drawing number/**  **Номер чертежа** | **Line / Tag N / Номер** | **Item description/**  **Участок контроля** | **Diameter, inch /**  **Диаметр, дюйм** | **Nominal thickness, mm/**  **Номинальная толщина, мм** | **South, mm/**  Юг, мм | **North, mm /**  Север, мм | **West, mm /**  Запад, мм | **East, mm /**  Восток, мм | **Top, mm /**  Верх, мм | **Bottom, mm /**  Низ, мм | **Extrados, mm /** Внешний радиус, мм |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 3  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.34 | 8.37 | - | - | **7.98** |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 7  Straight | 2 | 5.54 | - | - | 5.10 | 5.43 | 5.23 | **4.99** | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 9  Elbow | 2 | 8.74 | - | - | - | - | 7.46 | 7.03 | **6.15** |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 13  Elbow nozzle N4 | 2 | 8.74 | - | - | 8.44 | 8.66 | - | - | **8.04** |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-3340-CM-095-2"-A21-BP | Loc 17  Straight | 2 | 5.54 | - | - | **5.09** | 5.14 | 5.18 | 5.11 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 19  Tee | 2 | 8.74 | 8.41 | - | - | - | **7.23** | 7.35 | - |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-3340-CM-094-2"-A21-BP | Loc 20  Elbow | 2 | 5.54 | - | - | - | - | 7.01 | 7.07 | **6.00** |
| 1 | TR01-M2-334-WK-P-DI-0010-001 | M2-334-ZY-002A | Loc 1  Bottom  Head | 24 | 13.0 | 12.11 | 12.22 | **11.91** | 12.46 | - | - | - |
| 1 | TR01-M2-334-WK-P-DI-0011-001 | M2-334-ZY-002B | Loc 11  Bottom  Head | 24 | 13.0 | 12.27 | 12.28 | 12.20 | **12.10** | - | - | - |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Examined by / Контроль провёл: | | Approved by / Протокол утвердил: | | Client representative /  Представитель клиента | |
| Name / ФИО | Morgulets Ivan | Name / ФИО | Kuryanau Dzmitry | Name / ФИО |  |
| Signature / Подпись |  | Signature / Подпись |  | Signature / Подпись |  |
| Date / Дата | 08.04.2022 | Date / Дата | 08.04.2022 | Date / Дата |  |
| Cert. № /  № серт-та | UT L II cert. No. 33436-2017  expire date: 02.06.22 | Cert. № /  № серт-та | UT L II cert. No 2B 230/20  expiry date 31.05.2025 | Cert. № /  № серт-та |  |

|  |
| --- |
| Annex 1 / Приложение 1  Inspection Drawing / Схема контроля  Sec. 1  Sec. 1 |
|  |
| **TR01-M2-334-WK-P-DI-0010-001 / M2-3340-CM-094-2"-A21-BP** |

|  |
| --- |
| Annex 2 / Приложение 2  Inspection Drawing / Схема контроля  Sec. 1  Sec. 1 |
|  |
| **TR01-M2-334-WK-P-DI-0011-001 / M2-3340-CM-095-2"-A21-BP** |