NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
No. 5, Jalan Anggerik Mokara 31/45, Seksyen 31, Kota Kemuning, 40460 Shah Alam, Selangor Darul Ehsan, Malaysia.
Tel: 03-5122 9766/7/8 Fax: 03-5122 8766/7 E-mail: info@nusatek.com

Our Ref. : NT/103748/18-06


Report No: NDT/RT/180609-01/18

# RADIOGRAPHIC EXAMINATION REPORT

## Client and Testing Particulars

| | | | |
|---|---|---|---|
| Client : | Tenaga Tiub Sdn Bhd | Procedure No: | NT/RT/ASME Rev 6.0 |
| Project : | Tail Gas Comp. Oil Cooler | IQI type : | ASTM 1B |
| Job No: | TT 17197 | Film Manufacturer/Type : | FUJI 100(classII) |
| Material: | SA 106 GR.B / SA 105N | Density : | 2.2-3.8 |
| Welding Process : | GTAW / SMAW | Sensitivity: | 0.33mm(5 wires visible) |
| Examination Code : | ASME V | Source to Object Distance : | 168.3mm |
| Acceptance Code: | ASME Sect. VIII DIV.1 : 2015 Ed.+Tema 9TH Ed. | Source Side of Object to Film Distance: | (7.11+3)mm |
| Examination Date: | 24 May 2018 | No of Radiograph(exposure) : | Single Exposure |
| | | No. of Film Each Cassette : | 1 Film |
| | | Radiographic Technique : | DWSI |
| | | Film Viewing Technique : | Single Wall Viewing |
| | | Source Type/Size : | Iridium192 (3.2mm) |
| | | Location Markers : | Film Side |

## Radiographic Examination Result

| Weld Reference (Welder No) | WT (mm) | RT (mm) | Pipe Diameter (mm) | Material Thickness (mm) | Film Position | Film Interpretation | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| KD-0801.1-E2A | | | | | | | | |
| N1 - JT2 (WN414/375) | 10.11 | 3 | 168.3 | 7.11 | 0 - 1 | NRI | Accept | |
| | | | | | 1 - 2 | NRI | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |
| N2 - JT2 (WN414/375) | 10.11 | 3 | 168.3 | 7.11 | 0 - 1 | NRI | Accept | |
| | | | | | 1 - 2 | Con | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |

End of Report

*Legend:*

| | | | | |
|---|---|---|---|---|
| *TI : Tungsten Inclusion* | *NRI : No Relevant Indication* | *Uc : Undercut* | *Por : Porosity* | *WT : Weld Thickness* |
| *SI : Slag Inclusion* | *LP : Lack of Penetration* | *Con : Concavity* | *BT : Burn Through* | *RT : Reinforcement Thickness* |
| *LF : Lack of Fusion* | *EP : Excess Penetration* | *AR : Artifact* | *Sur : Surface* | |

## Personnel Particulars

| | | | |
|---|---|---|---|
| Radiographer : | Emirsham - NDT Lev. II | Client Representative: | |
| Interpreted & Evaluated By: | Amat Hamidi - NDT Lev.II | Name: | |
| Date: | 25 May 2018 | Date: | |

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Tel: 03-5122 9766/7/8 Fax: 03-5122 8766/7 E-mail: info@nusatek.com

Our Ref. : NT/103748/18-06


Report No: NDT/RT/180609-02/18

# RADIOGRAPHIC EXAMINATION REPORT

## Client and Testing Particulars

| | | | |
|---|---|---|---|
| Client : | Tenaga Tiub Sdn Bhd | Procedure No: | NT/RT/ASME Rev 6.0 |
| | | IQI type : | ASTM 1A |
| Project : | Tail Gas Comp. Oil Cooler | Film Manufacturer/Type : | FUJI 100(classII) |
| | | Density : | 2.2-3.8 |
| Job No: | TT 17197 | Sensitivity: | 0.20mm(2 wires visible) |
| Material: | SA 106 GR.B / SA 105N | Source to Object Distance : | 114.3mm |
| | | Source Side of Object to Film Distance: | (6.02+3)mm |
| Welding Process : | GTAW / SMAW | No of Radiograph(exposure) : | Single Exposure |
| Examination Code : | ASME V | No. of Film Each Cassette : | 1 Film |
| Acceptance Code: | ASME Sect. VIII DIV.1 : 2015 Ed.+Tema 9TH Ed. | Radiographic Technique : | DWSI |
| | | Film Viewing Technique : | Single Wall Viewing |
| Examination Date: | 24 May 2018 | Source Type/Size : | Iridium192 (3.2mm) |
| | | Location Markers : | Film Side |

## Radiographic Examination Result

| Weld Reference (Welder No) | WT (mm) | RT (mm) | Pipe Diameter (mm) | Material Thickness (mm) | Film Position | Film Interpretation | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| KD-0801.1-E2A | | | | | | | | |
| N3 - JT2 (WN414/375) | 9.02 | 3 | 114.3 | 6.02 | 0 - 1 | NRI | Accept | AR |
| | | | | | 1 - 2 | NRI | Accept | |
| | | | | | 2 - 0 | Por | Accept | |
| N4 - JT2 (WN414/375) | 9.02 | 3 | 114.3 | 6.02 | 0 - 1 | NRI | Accept | |
| | | | | | 1 - 2 | NRI | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |

End of Report

*Legend:*

| | | | | |
|---|---|---|---|---|
| *TI : Tungsten Inclusion* | *NRI : No Relevant Indication* | *Uc : Undercut* | *Por : Porosity* | *WT : Weld Thickness* |
| *SI : Slag Inclusion* | *LP : Lack of Penetration* | *Con : Concavity* | *BT : Burn Through* | *RT : Reinforcement Thickness* |
| *LF : Lack of Fusion* | *EP : Excess Penetration* | *AR : Artifact* | *Sur : Surface* | |

## Personnel Particulars

| | | | |
|---|---|---|---|
| Radiographer : | Emirsham - NDT Lev. II | | Client Representative: |
| Interpreted & Evaluated By: | Amat Hamidi - NDT Lev.II | NUSANTARA TECHNOLOGIES SDN. BHD. * (187753-D) * NDT Division | |
| Date: | 25 May 2018 | | Name: Date: |

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103748/18-06


Report No: NDT/RT/180609-03/18

# RADIOGRAPHIC EXAMINATION REPORT

## Client and Testing Particulars

| | | | |
|---|---|---|---|
| Client : | Tenaga Tiub Sdn Bhd | Procedure No: | NT/RT/ASME Rev 6.0 |
| | | IQI type : | ASTM 1B |
| Project : | Tail Gas Comp. Oil Cooler | Film Manufacturer/Type : | FUJI 100(classII) |
| | | Density : | 2.2-3.8 |
| Job No: | TT 17197 | Sensitivity: | 0.33mm(5 wires visible) |
| Material: | SA 106 GR.B / SA 105N | Source to Object Distance : | 400mm |
| | | Source Side of Object to Film Distance: | (88.9)mm |
| Welding Process : | GTAW | No of Radiograph(exposure) : | Single Exposure |
| Examination Code : | ASME V | No. of Film Each Cassette : | 1 Film |
| Acceptance Code: | ASME Sect. VIII DIV.1 : 2015 Ed.+Tema 9TH Ed. | Radiographic Technique : | DWDI |
| | | Film Viewing Technique : | Double Wall Viewing |
| Examination Date: | 24 May 2018 | Source Type/Size : | Iridium192 (3.2mm) |
| | | Location Markers : | Film Side |

## Radiographic Examination Result

| Weld Reference (Welder No) | WT (mm) | RT (mm) | Pipe Diameter (mm) | Material Thickness (mm) | Film Position | Film Interpretation | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| KD-0801.1-E2A | | | | | | | | |
| N5 - JT2 (WN414) | 10.62 | 3 | 88.9 | 7.62 | X | NRI | Accept | |
| | | | | | Y | NRI | Accept | |
| | | | | | Z | NRI | Accept | |

End of Report

*Legend:*

| | | | | |
|---|---|---|---|---|
| TI : Tungsten Inclusion | NRI : No Relevant Indication | Uc : Undercut | Por : Porosity | WT : Weld Thickness |
| SI : Slag Inclusion | LP : Lack of Penetration | Con : Concavity | BT : Burn Through | RT : Reinforcement Thickness |
| LF : Lack of Fusion | EP : Excess Penetration | AR : Artifact | Sur : Surface | |

## Personnel Particulars

| | | | |
|---|---|---|---|
| Radiographer : | Emirsham - NDT Lev. II | Client Representative: | |
| Interpreted & Evaluated By: | Amat Hamidi - NDT Lev.II | Name: | |
| Date: | 25 May 2018 | Date: | |

NUSANTARA TECHNOLOGIES SDN. BHD. * (187753-D) * NDT Division

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Our Ref. : NT/103748/18-06


Report No: NDT/RT/180609-04/18

# RADIOGRAPHIC EXAMINATION REPORT

## Client and Testing Particulars

| | | | |
|---|---|---|---|
| Client : | Tenaga Tiub Sdn Bhd | Procedure No: | NT/RT/ASME Rev 6.0 |
| | | IQI type : | ASTM 1B |
| Project : | Tail Gas Comp. Oil Cooler | Film Manufacturer/Type : | FUJI 100(classII) |
| | | Density : | 2.2-3.8 |
| Job No: | TT 17197 | Sensitivity: | 0.33mm(5 wires visible) |
| Material: | SA 106 GR.B / SA 105N | Source to Object Distance : | 400mm |
| | | Source Side of Object to Film Distance: | (88.9)mm |
| Welding Process : | GTAW | No of Radiograph(exposure) : | Single Exposure |
| Examination Code : | ASME V | No. of Film Each Cassette : | 1 Film |
| Acceptance Code: | ASME Sect. VIII DIV.1 : 2015 Ed.+Tema 9TH Ed. | Radiographic Technique : | DWDI |
| | | Film Viewing Technique : | Double Wall Viewing |
| Examination Date: | 24 May 2018 | Source Type/Size : | Iridium192 (3.2mm) |
| | | Location Markers : | Film Side |

## Radiographic Examination Result

| Weld Reference (Welder No) | WT (mm) | RT (mm) | Pipe Diameter (mm) | Material Thickness (mm) | Film Position | Film Interpretation | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| KD-0801.1-E2B | | | | | | | | |
| N5 - JT2 (WN414) | 10.62 | 3 | 88.9 | 7.62 | X | NRI | Accept | |
| | | | | | Y | NRI | Accept | |
| | | | | | Z | NRI | Accept | |

End of Report

*Legend:*

| | | | | |
|---|---|---|---|---|
| TI : Tungsten Inclusion | NRI : No Relevant Indication | Un : Undercut | Por : Porosity | WT : Weld Thickness |
| SI : Slag Inclusion | LP : Lack of Penetration | Con : Concavity | BT : Burn Through | RT : Reinforcement Thickness |
| LF : Lack of Fusion | EP : Excess Penetration | AR : Artifact | Sur : Surface | |

## Personnel Particulars

Radiographer : Emirsham - NDT Lev. II

Interpreted & Evaluated By: Amat Hamidi - NDT Lev.II

Date: 25 May 2018

NUSANTARA TECHNOLOGIES SDN. BHD. * (187753-D) * NDT Division

Client Representative:

Name:

Date:

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103748/18-06


Report No: NDT/RT/180609-05/18

# RADIOGRAPHIC EXAMINATION REPORT

## Client and Testing Particulars

| | | | |
|---|---|---|---|
| Client : | Tenaga Tiub Sdn Bhd | Procedure No: | NT/RT/ASME Rev 6.0 |
| | | IQI type : | ASTM 1B |
| Project : | Tail Gas Comp. Oil Cooler | Film Manufacturer/Type : | FUJI 100(classII) |
| | | Density : | 2.2-3.8 |
| Job No: | TT 17197 | Sensitivity: | 0.33mm(5 wires visible) |
| Material: | SA 106 GR.B / SA 105N | Source to Object Distance : | 168.3mm |
| | | Source Side of Object to Film Distance: | (7.11+3)mm |
| Welding Process : | GTAW / SMAW | No of Radiograph(exposure) : | Single Exposure |
| Examination Code : | ASME V | No. of Film Each Cassette : | 1 Film |
| Acceptance Code: | ASME Sect. VIII DIV.1 : 2015 Ed.+Tema 9TH Ed. | Radiographic Technique : | DWSI |
| | | Film Viewing Technique : | Single Wall Viewing |
| Examination Date: | 24 May 2018 | Source Type/Size : | Iridium192 (3.2mm) |
| | | Location Markers : | Film Side |

## Radiographic Examination Result

| Weld Reference (Welder No) | WT (mm) | RT (mm) | Pipe Diameter (mm) | Material Thickness (mm) | Film Position | Film Interpretation | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| KD-0801.1-E2B | | | | | | | | |
| N1 - JT2 (WN414/375) | 10.11 | 3 | 168.3 | 7.11 | 0 - 1 | NRI | Accept | |
| | | | | | 1 - 2 | Por | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |
| N2 - JT2 (WN414/375) | 10.11 | 3 | 168.3 | 7.11 | 0 - 1 | Por | Accept | |
| | | | | | 1 - 2 | Por | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |

End of Report

*Legend:*

| | | | | |
|---|---|---|---|---|
| *TI : Tungsten Inclusion* | *NRI : No Relevant Indication* | *Uc : Undercut* | *Por : Porosity* | *WT : Weld Thickness* |
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| *LF : Lack of Fusion* | *EP : Excess Penetration* | *AR : Artifact* | *Sur : Surface* | |

## Personnel Particulars

| | | | |
|---|---|---|---|
| Radiographer : | Emirsham - NDT Lev. II | Client Representative: | |
| Interpreted & Evaluated By: | Amat Hamidi - NDT Lev.II | Name: | |
| Date: | 25 May 2018 | Date: | |

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Our Ref. : NT/103748/18-06


Report No: NDT/RT/180609-06/18

# RADIOGRAPHIC EXAMINATION REPORT

## Client and Testing Particulars

| | | | |
|---|---|---|---|
| Client : | Tenaga Tiub Sdn Bhd | Procedure No: | NT/RT/ASME Rev 6.0 |
| | | IQI type : | ASTM 1A |
| Project : | Tail Gas Comp. Oil Cooler | Film Manufacturer/Type : | FUJI 100(classII) |
| | | Density : | 2.2-3.8 |
| Job No: | TT 17197 | Sensitivity: | 0.20mm(2 wires visible) |
| Material: | SA 106 GR.B / SA 105N | Source to Object Distance : | 114.3mm |
| | | Source Side of Object to Film Distance: | (6.02+3)mm |
| Welding Process : | GTAW / SMAW | No of Radiograph(exposure) : | Single Exposure |
| Examination Code : | ASME V | No. of Film Each Cassette : | 1 Film |
| Acceptance Code: | ASME Sect. VIII DIV.1 : 2015 Ed.+Tema 9TH Ed. | Radiographic Technique : | DWSI |
| | | Film Viewing Technique : | Single Wall Viewing |
| Examination Date: | 24 May 2018 | Source Type/Size : | Iridium192 (3.2mm) |
| | | Location Markers : | Film Side |

## Radiographic Examination Result

| Weld Reference (Welder No) | WT (mm) | RT (mm) | Pipe Diameter (mm) | Material Thickness (mm) | Film Position | Film Interpretation | Result | Remarks |
|---|---|---|---|---|---|---|---|---|
| KD-0801.1-E2A | | | | | | | | |
| N3 - JT2 (WN414/375) | 9.02 | 3 | 114.3 | 6.02 | 0 - 1 | NRI | Accept | |
| | | | | | 1 - 2 | NRI | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |
| N4 - JT2 (WN414/375) | 9.02 | 3 | 114.3 | 6.02 | 0 - 1 | NRI | Accept | |
| | | | | | 1 - 2 | NRI | Accept | |
| | | | | | 2 - 0 | NRI | Accept | |

End of Report

*Legend:*

| | | | | |
|---|---|---|---|---|
| *TI : Tungsten Inclusion* | *NRI : No Relevant Indication* | *Uc : Undercut* | *Por : Porosity* | *WT : Weld Thickness* |
| *SI : Slag Inclusion* | *LP : Lack of Penetration* | *Con : Concavity* | *BT : Burn Through* | *RT : Reinforcement Thickness* |
| *LF : Lack of Fusion* | *EP : Excess Penetration* | *AR : Artifact* | *Sur : Surface* | |

## Personnel Particulars

| | | | |
|---|---|---|---|
| Radiographer : | Emirsham - NDT Lev. II | Client Representative: | |
| Interpreted & Evaluated By: | Amat Hamidi - NDT Lev.II | Name: | |
| Date: | 25 May 2018 | Date: | |

NUSANTARA TECHNOLOGIES SDN. BHD. NDT Division (187753-D)