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/103098/18-16

Report No: BFTT/RT-51/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
N2C - JT1 (WN-090/078)	24.44	3	273.1	21.44	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. NDT Division (187753-D)	Name:
Date:	01 March 2018		Date:

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/103098/18-16

Report No: BFTT/RT-52/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
N2B - JT1 (WN-090/078)	24.44	3	273.1	21.44	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	Name:
Date:	01 March 2018		Date:

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-53/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
N2A - JT1 (WN-090/302)	24.44	3	273.1	21.44	0 - 1	NRI	Accept	
					1 - 2	NRI	Accept	
					2 - 0	Por	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

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

Date: 01 March 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/103098/18-16

Report No: BFTT/RT-54/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
N1A - JT1 (WN-090/302)	24.44	3	273.1	21.44	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

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

Date: 01 March 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/103098/18-16

Report No: BFTT/RT-55/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
N1B - JT1 (WN-090/302)	24.44	3	273.1	21.44	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:	01 March 2018	Date:	

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

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-56/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd	Film Manufacturer/Type :	FUJI 100/class II
	Fabrication Of Reactor Effluent Cooler Bundle.	Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
N1C - JT1 (WN-090/302)	24.44	3	273.1	21.44	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

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

Date: 01 March 2018

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

Client Representative:

Name:

Date:

NUSATEK

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-57/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(11.07+3)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.	Radiographic Technique :	DWDI
		Film Viewing Technique :	Double Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
D - JT1 (WN-302)	14.07	3	60.3	11.07	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:	01 March 2018	Date:	

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

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-58/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(11.07+3)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.	Radiographic Technique :	DWDI
		Film Viewing Technique :	Double Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B4 APWHT								
V - JT1 (WN-302)	14.07	3	60.3	11.07	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

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

Date: 01 March 2018

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

Client Representative:

Name:

Date:

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
No. 5, Jalan Anggerik Mokara 31/45, Seksyen 31, Kota Kemuning, 40460 Shah Alam, Selangor Darul Ehsan, Malaysia.
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-59/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	IQI type :	ASTM 1B
Job No:	BFTT 17-640	Film Manufacturer/Type :	FUJI 100/class II
Material:	SA 333 GR.6 / SA 105N	Density :	2.0 - 4.0
Welding Process :	GTAW	Sensitivity:	0.33mm(5 wires visible)
Examination Code :	ASME V	Source to Object Distance :	400mm
Acceptance Code:	ASME Sect. VIII Div.1 2015 Ed.	Source Side of Object to Film Distance:	(11.07+3)mm
Examination Date:	28 February 2018	No of Radiograph(exposure) :	Single Exposure
		No. of Film Each Cassette :	1 FIlm
		Radiographic Technique :	DWDI
		Film Viewing Technique :	Double Wall Viewing
		Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
V - JT1 (WN-302)	14.07	3	60.3	11.07	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

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

Date: 01 March 2018

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

Client Representative:

Name:

Date:

NUSATEK

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/103098/18-16

Report No: BFTT/RT-60/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(11.07+3)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.	Radiographic Technique :	DWDI
		Film Viewing Technique :	Double Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
D - JT1 (WN-302)	14.07	3	60.3	11.07	X	NRI	Accept	
					Y	Por	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:	01 March 2018	Date:	

NUSATEK

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-49/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
N2A - JT1 (WN-090/078)	24.44	3	273.1	21.44	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 : Arc Strike*	*Sur : Surface*	

Personnel Particulars

Radiographer :	Emirsham - NDT Lev. II	Client Representative:	
Interpreted & Evaluated By:	Amat Hamidi - NDT Lev.II	Name:	
Date:	01 March 2018	Date:	

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

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-48/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
N2B - JT1 (WN-090/302)	24.44	3	273.1	21.44	0 - 1	NRI	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*
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: 01 March 2018

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

Client Representative:

Name:

Date:

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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-47/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
N1C - JT1 (WN-090/302)	24.44	3	273.1	21.44	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

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

Date: 01 March 2018

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

Client Representative:

Name:

Date:

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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-46/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd	Film Manufacturer/Type :	FUJI 100/class II
	Fabrication Of Reactor Effluent Cooler Bundle.	Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
N1B - JT1 (WN-090/078)	24.44	3	273.1	21.44	0 - 1	Por	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

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

Date: 01 March 2018

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

Client Representative:

Name:

Date:

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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-45/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
N1A - JT1 (WN-090/078)	24.44	3	273.1	21.44	0 - 1	NRI	Accept	
					1 - 2	NRI	Accept	
					2 - 0	NRI	Accept	

End Of Report

Legend:

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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: 01 March 2018

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

Client Representative:

Name:

Date:

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Our Ref. : NT/103098/18-16

Report No: BFTT/RT-50/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd	Procedure No:	NT/RT/ASME Rev 6.0
		IQI type :	ASTM 1B
Project :	Petronas Chemicals MTBE Sdn Bhd Fabrication Of Reactor Effluent Cooler Bundle.	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-640	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 333 GR.6 / SA 105N	Source to Object Distance :	273.1mm
		Source Side of Object to Film Distance:	(21.44+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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	28 February 2018	Source Type/Size :	Iridium192 (3.2mm)
		Location Markers :	Source Side

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
E-2003.1 B3 APWHT								
N2C - JT1 (WN-090/078)	24.44	3	273.1	21.44	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*
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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:	01 March 2018	Date:	