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/103271/18-06

Report No: BFTT/RT-29/18

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 :	Frames Separation Technologies B.V / SBM Offshore - Liza Destiny - FPSO EPCI	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-638	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 240 UNS S31803	Source to Object Distance :	1500mm
		Source Side of Object to Film Distance:	(15+3)mm
Welding Process :	SMAW / SAW	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 :	SWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	19 March 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
124-VESE-0210								
CS - 4 (WN-009/008)	18	3	3000	15	0 - 1	NRI	Accept	
					1 - 2	NRI	Accept	
					2 - 3	NRI	Accept	
					3 - 4	NRI	Accept	
					4 - 5	NRI	Accept	
					5 - 6	NRI	Accept	
					6 - 7	NRI	Accept	
					7 - 8	NRI	Accept	
					8 - 9	NRI	Accept	
					9 - 10	NRI	Accept	

Continue Next Page

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: 20 March 2018

Client Representative:

Name:

Date:

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

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NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103271/18-06
Job No: BFTT 17-638

Radiographic Examination Result

Weld Reference (Welder No)	WT (mm)	RT (mm)	Pipe Diameter (mm)	Material Thickness (mm)	Film Position	Film Interpretation	Result	Remarks
124-VESE-0210								
CS - 4 (WN-009/008)	18	3	3000	15	10 - 11	NRI	Accept	
					11 - 12	NRI	Accept	
					12 - 13	NRI	Accept	
					13 - 14	NRI	Accept	
					14 - 15	NRI	Accept	
					15 - 16	NRI	Accept	
					16 - 17	Sur	Accept	
					17 - 18	Por	Accept	
					18 - 19	NRI	Accept	
					19 - 20	Por	Accept	
					20 - 21	NRI	Accept	
					21 - 22	NRI	Accept	
					22 - 23	NRI	Accept	
					23 - 24	NRI	Accept	
					24 - 25	NRI	Accept	
					25 - 26	NRI	Accept	
					26 - 27	NRI	Accept	
					27 - 28	NRI	Accept	
					28 - 29	NRI	Accept	
					29 - 30	NRI	Accept	
					30 - 31	NRI	Accept	
					31 - 32	NRI	Accept	
					32 - 33	NRI	Accept	
					33 - 0	NRI	Accept	

End Of Report

NUSANTARA TECHNOLOGIES SDN BHD (187753-D) NDT Division

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103271/18-06

Report No: BFTT/RT-30/18

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 1A
Project :	Frames Separation Technologies B.V / SBM Offshore - Liza Destiny - FPSO EPCI	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-638	Sensitivity:	0.20mm(2 wires visible)
Material:	SA 182 F51 / SA 790 UNS S31803	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(60.3)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:	19 March 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
124-CPHY-0110								
N4 - JT1	8.54	3	60.3	5.54	X	NRI	Accept	
(WN-005)					Y	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: 20 March 2018

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

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/103271/18-06

Report No: BFTT/RT-31/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd
Project :	Frames Separation Technologies B.V / SBM Offshore - Liza Destiny - FPSO EPCI
Job No:	BFTT 17-638
Material:	SA 182 F51 / SA 790 UNS S31803
Welding Process :	GTAW
Examination Code :	ASME V
Acceptance Code:	ASME Sect. VIII Div.1 2015 Ed.
Examination Date:	19 March 2018

Procedure No:	NT/RT/ASME Rev 6.0
IQI type :	ASTM 1A
Film Manufacturer/Type :	FUJI 100/class II
Density :	2.0 - 4.0
Sensitivity:	0.20mm(2 wires visible)
Source to Object Distance :	400mm
Source Side of Object to Film Distance:	(60.3)mm
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 :	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
124-CPHY-0110								
N5 - JT1 (WN-005)	8.54	3	60.3	5.54	X	Por	Accept	
					Y	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: 20 March 2018

Client Representative:

Name:

Date:

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

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103271/18-06

Report No: BFTT/RT-32/18

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 1A
Project :	Frames Separation Technologies B.V / SBM Offshore - Liza Destiny - FPSO EPCI	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-638	Sensitivity:	0.20mm(2 wires visible)
Material:	SA 182 F51 / SA 790 UNS S31803	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(60.3)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:	19 March 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
124-CPHY-0110								
N6 - JT1 (WN-005)	8.54	3	60.3	5.54	X	NRI	Accept	
					Y	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: 20 March 2018

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

Client Representative:

Name:

Date:

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103271/18-06

Report No: BFTT/RT-33/18

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 1A
Project :	Frames Separation Technologies B.V / SBM Offshore - Liza Destiny - FPSO EPCI	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-638	Sensitivity:	0.20mm(2 wires visible)
Material:	SA 182 F51 / SA 790 UNS S31803	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(60.3)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:	19 March 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
124-CPHY-0110								
N3B - JT1	8.54	3	60.3	5.54	X	Uc	Accept	
(WN-005)					Y	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: 20 March 2018

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

Client Representative:

Name:

Date:

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103271/18-06

Report No: BFTT/RT-34/18

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 1A
Project :	Frames Separation Technologies B.V / SBM Offshore - Liza Destiny - FPSO EPCI	Film Manufacturer/Type :	FUJI 100/class II
		Density :	2.0 - 4.0
Job No:	BFTT 17-638	Sensitivity:	0.20mm(2 wires visible)
Material:	SA 182 F51 / SA 790 UNS S31803	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(60.3)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:	19 March 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
124-CPHY-0110								
N3A - JT1 (WN-005)	8.54	3	60.3	5.54	X	AR		Reshoot
					Y	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:	20 March 2018	Date:	

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