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/103090/18-04

Report No: BFTT/RT-01/18

RADIOGRAPHIC EXAMINATION REPORT

Client and Testing Particulars

Client :	Bukit Fraser Thermal Technology Sdn Bhd
Project :	PT M3 Ketapang Sejahtera Ratu Nusantara FPSO
Job No:	BFTT 17-644
Material:	SA 240 GR 316L
Welding Process :	GTAW / SMAW
Examination Code :	ASME V
Acceptance Code:	ASME Sect. VIII Div.1 2015 Ed.
Examination Date:	27 February 2018

Procedure No:	NT/RT/ASME Rev 6.0
IQI type :	ASTM 1B
Film Manufacturer/Type :	FUJI 100/class II
Density :	2.0 - 4.0
Sensitivity:	0.33mm(5 wires visible)
Source to Object Distance :	400mm
Source Side of Object to Film Distance:	(12+3)mm
No of Radiograph(exposure) :	Single Exposure
No. of Film Each Cassette :	1 FIlm
Radiographic Technique :	SWSI
Film Viewing Technique :	Single 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-2110								
LS - 1 (WN-009)	15	3	–	12	0 - 1	Sur	Accept	
					1 - 2	NRI	Accept	
					2 - 3	NRI	Accept	
					3 - 4	NRI	Accept	
					4 - 5	NRI	Accept	
					5 - 6	Inc	Reject	

_____ 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: 28 February 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.
Tel: 03-5122 9766/7/8 Fax: 03-5122 8766/7 E-mail: info@nusatek.com

Our Ref. : NT/103090/18-04

Report No: BFTT/RT-02/18

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 :	PT M3 Ketapang Sejahtera	Film Manufacturer/Type :	FUJI 100/class II
	Ratu Nusantara FPSO	Density :	2.0 - 4.0
Job No:	BFTT 17-644	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 403 WP 316L / SA 182 F 316L	Source to Object Distance :	355.6mm
		Source Side of Object to Film Distance:	(11.13+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 :	SWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	27 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-2110								
CS - 1 (WN-009)	14.13	3	355.6	11.13	0 - 1	NRI	Accept	
					1 - 2	NRI	Accept	
					2 - 3	NRI	Accept	
					3 - 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: 28 February 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/103090/18-04

Report No: BFTT/RT-03/18

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 :	PT M3 Ketapang Sejahtera	Film Manufacturer/Type :	FUJI 100/class II
	Ratu Nusantara FPSO	Density :	2.0 - 4.0
Job No:	BFTT 17-644	Sensitivity:	0.33mm(5 wires visible)
Material:	SA 182 F 316L / SA 312 TP 316L	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.	Radiographic Technique :	DWSI
		Film Viewing Technique :	Single Wall Viewing
Examination Date:	27 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-2110								
N3 - JT1 (WN-009)	10.11	3	168.3	7.11	0 - 1	NRI	Accept	
					1 - 2	NRI	Accept	
					2 - 0	NRI	Accept	AR

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: 28 February 2018

NUSANTARA TECHNOLOGIES SDN. BHD. NDT Division

Client Representative:

Name:

Date:

NUSANTARA TECHNOLOGIES SDN. BHD. (187753-D)
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Our Ref. : NT/103090/18-04

Report No: BFTT/RT-04/18

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 :	PT M3 Ketapang Sejahtera	Film Manufacturer/Type :	FUJI 100/class II
	Ratu Nusantara FPSO	Density :	2.0 - 4.0
Job No:	BFTT 17-644	Sensitivity:	0.20mm(2 wires visible)
Material:	SA 182 F 316L / SA 312 TP 316L	Source to Object Distance :	400mm
		Source Side of Object to Film Distance:	(5.54+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:	27 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-2110								
N1 - JT1 (WN-009)	8.54	3	60.3	5.54	X	NRI	Accept	
					Y	NRI	Accept	
N2 - JT1 (WN-009)	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	Client Representative:	
Interpreted & Evaluated By:	Amat Hamidi - NDT Lev.II	Name:	
Date:	28 February 2018	Date:	

NUSANTARA TECHNOLOGIES SDN. BHD. NDT Division