

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)																	
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS) <table><tr><td>نسخه</td><td>سریال</td><td>نوع مدرک</td><td>رشته</td><td>تسهیلات</td><td>صادر کننده</td><td>بسته کاری</td><td>پروژه</td></tr><tr><td>V00</td><td>0007</td><td>PR</td><td>QC</td><td>120</td><td>MF</td><td>GCS</td><td>BK</td></tr></table>	نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه	V00	0007	PR	QC	120	MF	GCS	BK	شماره صفحه : 1 از 19
نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V00	0007	PR	QC	120	MF	GCS	BK											

طرح نگهداشت و افزایش تولید 27 مخزن

WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)

نگهداشت و افزایش تولید میدان نفتی بینک

V00	APR. 2025	IFA	MFS	M.Fakharian	S.Faramarzpour	
Rev.	Date	Purpose of Issue/Status	Prepared by:	Checked by:	Approved by:	CLIENT Approval

Status:

IFA: Issued For Approval

IFI: Issued For Information

AFC: Approved For Construction

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)																	
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نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V00	0007	PR	QC	120	MF	GCS	BK											

REVISION RECORD SHEET

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 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)							
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 3 از 19
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	MF	120	QC	PR	0007	V00

WPS BINAK

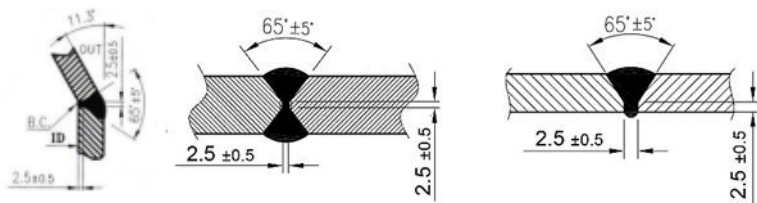
 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 4 از 19	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007		V00

WPS No.	Process	PWHT	PQR No. (Coupon thk.)	WPS qualified Thk. (mm)	Material
W01	SMAW+GTAW	YES	It will be finalized later.	5-25	P Number: 1 to P Number:1
W02	SMAW	YES	It will be finalized later.	5-25	P Number: 1 to P Number:1
W03	SMAW+GTAW	YES	It will be finalized later.	5-50	P Number: 1 to P Number:1
W04	SMAW	YES	It will be finalized later.	5-50	P Number: 1 to P Number:1
W05	SMAW	YES	It will be finalized later.	5-200	P Number: 1 to P Number:1
W06	SMAW	NO	It will be finalized later.	5-200	P Number: 8 to P Number:1
W07	SMAW	NO	It will be finalized later.	5-20	P Number: 8 to P Number:8
W08	SMAW+GTAW	NO	It will be finalized later.	5-20	P Number: 8 to P Number:8

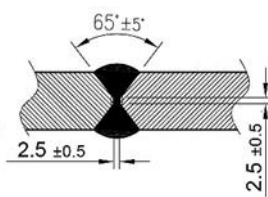
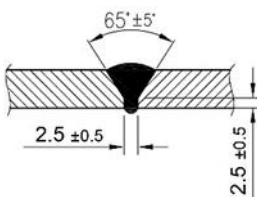
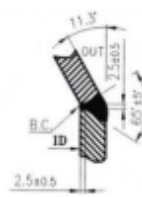
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نسخه	سریال	نوع مدرک	رشته	تسهیلات	صادر کننده	بسته کاری	پروژه											
V00	0007	PR	QC	120	MF	GCS	BK											

W09	GTAW	Yes	It will be finalized later.	5-30	P Number: 8 to P Number:8
W10	GTAW	Yes	It will be finalized later.	5-30	P Number: 1 to P Number:1
W11	GTAW	Yes	It will be finalized later.	5-30	P Number: 1 to P Number:1
W12	SMAW	Yes	It will be finalized later.	5-50	P Number: 1 to P Number:1
W13	SMAW+SAW	Yes	It will be finalized later.	5-50	P Number: 1 to P Number:1

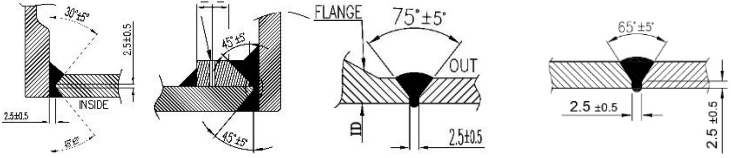
 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 6 از 19	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007	V00	

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]						
WPS No.	W01	Sup. PQR No.	PX			
Welding process: GTAW + SMAW			Type:	Manual	Auto	
JOINT DESIGN (QW-402)						
						
Groove	Single bevel/Double Bevel					
Backing	Yes (for SMAW)			Backing material		Weld metal
BASE METAL (QW-403)						
Material:	SA516 – Gr.70N/ SA106– Gr.B N/ SA182– F 316 L/SA 234 WPB			To	SA516 – Gr.70N/ SA106– Gr.B N/ SA182– F 316 L /SA 234 WPB	
P-No.	1	G-No.	1 / 2	to	P-No.	1
T qualified (mm):		5 – 24	Max. pass thick. (mm)		≤ 13	G-No. 2/1
FILLER METALS (QW-404)						
	Root	Filling & Cap				
SFA No.	5.18	5.1				
AWS No.	ER70S-6	E7018-H4				
F-No.	6	4				
A-No.	1	1				
Size (mm)	2.4	2.5 – 4				
Form	Solid rod	Covered electrode				
Trade name	AMA	AMA				
Max deposit (mm)	10	190				
Baking	N.A.	2 h @ 300 – 350 °C				
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)		
Positions	1~3G, 5G			Temp. rage (°C)	595 – 620	
Progression	All but downhill			Time range (min)	95	
PREHEAT (QW-406)				GAS (QW-408)		
Temp. (°C) (min)	10			Shielding	Gas	Mixture
Inter-pass temp. (°C) (max)	250				N.A.	Flow rate
ELECTRICAL CHARACTERISTICS (QW-409)						
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input (J/mm)
Root (1)	GTAW	DCEN	70 – 120	15 – 22	10 – 25	$\frac{V \times A \times 60}{Travel\ speed}$
Filling & cap (2)	SMAW	DCEP	65 – 190	15 – 45	10 – 25	
TECHNIQUE (QW-410)						
	Root	Filling & cap				
Orifice or gas cap size (mm)	10 – 16			N.A.		
String / weave	Both			Both		
Initial and Inter-pass Cleaning	Brushing / grinding			Brushing / grinding		
Method of back gouging	None			None		
Multiple / single pass (per side)	Multiple			Multiple		
MFS	TPI			Client		

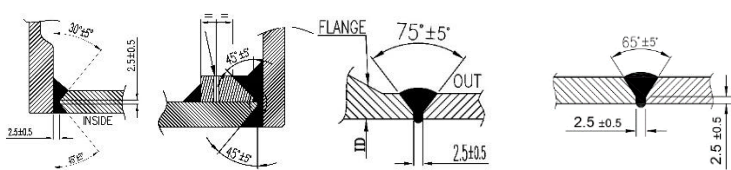
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شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 7 از 19
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	MF	120	QC	PR	0007	V00

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]							
WPS No.	W02	Sup. PQR No.		PX			
Welding process: SMAW				Type:		Manual	
JOINT DESIGN (QW-402)							
							
Groove	Double V/Single Bevel						
Backing	No			Backing material		N.A.	
BASE METAL (QW-403)							
Material:	SA516 – Gr.70N/ SA106– Gr.B N/ SA182– F 316 L /SA 234 WPB			To	SA516 – Gr.70N/ SA106– Gr.B N/ SA182– F 316 L /SA 234 WPB		
P-No.	1	G-No.	2	to	P-No.	1	G-No. 2/1
T qualified (mm):	5-24			Max. pass thick. (mm)	≤ 13		
FILLER METALS (QW-404)							
		Root, filling & cap					
SFA No.	5.1						
AWS No.	E7018-H4						
F-No.	4						
A-No.	1						
Size (mm)	2.5 – 4						
Form	Covered electrode						
Trade name	AMA						
Max deposit (mm)	200						
Flux	N.A.						
Baking	2 h @ 300 – 350 °C						
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions	1~3G & 5G			Temp. rage (°C)	595 – 620		
Progression	All but downhill			Time range (min)	95		
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)	10			Shielding	Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)	250				N.A.	—	—
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input	
Root, filling & cap	SMAW	DCEP	65-190	15 – 30	10 – 25	$\frac{V \times A \times 60}{Tr. speed}$	
TECHNIQUE (QW-410)							
		Root			Filling & cap		
String / weave		Both			Both		
Initial and Inter-pass Cleaning		Brushing / grinding			Brushing / grinding		
Method of back gouging		Arc-air gouging + grinding					
Multiple / single pass (per side)		Multiple			Multiple		
MFS		TPI			Client		

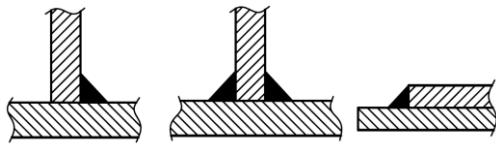
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شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 8 از 19	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007	V00	

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]						
WPS No.	W03	Sup. PQR No.		PX		
Welding process: GTAW + SMAW				Type:	Manual	Auto
JOINT DESIGN (QW-402)						
						
Groove	Single bevel					
Backing	Yes (for SMAW)			Backing material	Weld metal	
BASE METAL (QW-403)						
Material:	SA106 – Gr. B / SA 105 N/ SA234-WPB			To	SA516 – Gr.70/ SA106 – Gr. B/ SA234-WPB/ SA 105 N	
P-No.	1	G-No.	1 / 2	to	P-No.	1
T qualified (mm):	5 – 30			Max. pass thick. (mm)	≤ 13	
FILLER METALS (QW-404)						
	Root	Filling & Cap				
SFA No.	5.18	5.1				
AWS No.	ER70S-6	E7018-H4				
F-No.	6	4				
A-No.	1	1				
Size (mm)	2.4	2.5 – 4				
Form	Solid rod	Covered electrode				
Trade name	AMA	AMA				
Max deposit (mm)	10	190				
Baking	N.A.	2 h @ 300 – 350 °C				
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)		
Positions	1~3G, 5G			Temp. rage (°C)	595 – 620	
Progression	All but downhill			Time range (min)	95	
PREHEAT (QW-406)				GAS (QW-408)		
Temp. (°C) (min)	100			Shielding	Gas	Mixture
Inter-pass temp. (°C) (max)	250				N.A.	Flow rate
ELECTRICAL CHARACTERISTICS (QW-409)						
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input (J/mm)
Root (1)	GTAW	DCEN	70 – 120	15 – 22	10 – 25	$\frac{V \times A \times 60}{Travel\ speed}$
Filling & cap (2)	SMAW	DCEP	65 – 190	15 – 45	10 – 25	
TECHNIQUE (QW-410)						
	Root	Filling & cap				
Orifice or gas cap size (mm)	10 – 16			N.A.		
String / weave	Both			Both		
Initial and Inter-pass Cleaning	Brushing / grinding			Brushing / grinding		
Method of back gouging	None			None		
Multiple / single pass (per side)	Multiple			Multiple		
MFS	TPI			Client		

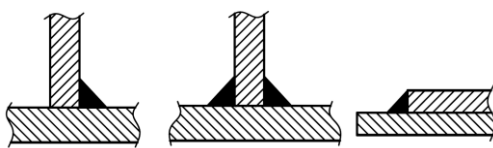
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شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 9 از 19
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	MF	120	QC	PR	0007	V00

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]							
WPS No.	W04	Sup. PQR No.		PX			
Welding process: SMAW				Type:	Manual	Auto	
JOINT DESIGN (QW-402)							
							
Groove	Single bevel						
Backing	Yes (for SMAW)			Backing material		Weld metal	
BASE METAL (QW-403)							
Material:	SA106 – Gr. B / SA 105 N/ SA234-WPB			To	SA106 – Gr. B / SA 105 N/ SA234-WPB/ SA516 – Gr.70		
P-No.	1	G-No.	1 / 2	to	P-No.	1	G-No. 2
T qualified (mm):	5 – 30			Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)							
		Root,Filling & Cap					
SFA No.	5.1						
AWS No.	E7018-H4						
F-No.	4						
A-No.	1						
Size (mm)	2.5 – 4						
Form	Covered electrode						
Trade name	AMA						
Max deposit (mm)	35						
Baking	2 h @ 300 – 350 °C						
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions	1~3G, 5G			Temp. rage (°C)		595 – 620	
Progression	All but downhill			Time range (min)		95	
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)		100		Shielding	Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)		250			N.A.	—	—
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input (J/mm)	
Root (1)	GTAW	DCEN	70 – 120	15 – 22	10 – 25	$V \times A \times 60$ <i>Travel speed</i>	
Filling & cap (2)	SMAW	DCEP	65 – 190	15 – 45	10 – 25		
TECHNIQUE (QW-410)							
		Root		Filling & cap			
Orifice or gas cap size (mm)		10 – 16		N.A.			
String / weave		Both		Both			
Initial and Inter-pass Cleaning		Brushing / grinding		Brushing / grinding			
Method of back gouging		None		None			
Multiple / single pass (per side)		Multiple		Multiple			
MFS		TPI			Client		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 10 از 19	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007	V00	

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]						
WPS No.	W05	Sup. PQR No.	PX			
Welding process: SMAW			Type:		Manual	
JOINT DESIGN (QW-402)						
Fillet						
Backing	Yes	Backing material		Base metal		
BASE METAL (QW-403)						
Material:	SA516 – Gr.70 / SA283 – Gr.C		To	SA516 – Gr.70/ SA283 – Gr.C		
P-No.	1	G-No.	2/1	to	P-No.	1 G-No. 2/1
T qualified (mm):	All		Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)						
		<u>Root, filling & cap</u>				
SFA No.	5.1					
AWS No.	E7018-H4					
F-No.	4					
A-No.	1					
Size (mm)	2.5 – 4					
Form	Covered electrode					
Trade name	AMA					
Max deposit (mm)	N.A.					
Baking	2 h @ 300 – 350 °C					
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)		
Positions	1 ~ 3F			Temp. rage (°C)	595 – 620	
Progression	All but downhill			Time range (min)	95	
PREHEAT (QW-406)				GAS (QW-408)		
Temp. (°C) (min)	10			Shielding	Gas	Mixture Flow rate
Inter-pass temp. (°C) (max)	250				N.A.	— —
ELECTRICAL CHARACTERISTICS (QW-409)						
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input
Root, filling & cap	SMAW	DCEP	65 – 190	15 – 30	10 – 25	$\frac{V \times A \times 60}{Tr. speed}$
TECHNIQUE (QW-410)						
		<u>Root</u>		<u>Filling & cap</u>		
String / weave		Both		Both		
Initial and Inter-pass Cleaning		Brushing / grinding		Brushing / grinding		
Method of back gouging		N.A.		N.A.		
Oscillation		N.A.		Multiple		
Multiple / single pass (per side)		Multiple				
MFS		TPI		Client		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 11 از 19	
	پروژه	بسته کاری	صادر کننده	تمهيلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007	V00	

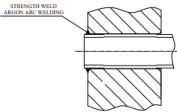
WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX]						
WPS No.		W06		Sup. PQR No.		PX
Welding process: SMAW				Type: Manual		
JOINT DESIGN (QW-402)						
						
Groove		FILLET				
Backing		No		Backing material -		
BASE METAL (QW-403)						
Material:		SA-240 -304		To		SA-516-70/ SA106 – Gr. B/SA 234 WPB N
P-No.		8	G-No.	1	to	P-No. 1 G-No. 2
T qualified (mm):		All		Max. pass thick. (mm)		≤ 13
FILLER METALS (QW-404)						
		Root, filling & cap				
SFA No.		5.4				
AWS No.		E309L-16				
F-No.		5				
A-No.		8				
Size (mm)		2.4~3.2				
Form		Covered electrode				
Trade name		AMA (1464JA)				
Max deposit (mm)		N.A.				
Baking		2 h @ 350 – 400 °C				
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)		
Positions		1 ~3G & 5G		Temp. rage (°C)		N.A.
Progression		All but downhill		Time range (min)		—
PREHEAT (QW-406)				GAS (QW-408)		
Temp. (°C) (min)		N. A		Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)		250		Shielding	N.A.	—
				Trailing	—	—
ELECTRICAL CHARACTERISTICS (QW-409)						
Layer	Process	Polarity	Amp.	Voltage	Travel speed	Heat input
Root, filling & cap	SMAW	DCEP	65-160	15-45	6-12 (cm/min)	$\frac{V \times A \times 60}{Tr. speed}$
TECHNIQUE (QW-410)						
		SMAW				
String / weave		Both				
Initial and Inter-pass Cleaning		Brushing / grinding				
Method of back gouging		N.A.				
Oscillation		N.A.				
Multiple / single Electrode		Single				
Multiple / single pass (per side)		Single				
MFS		TPI			Client	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 12 از 19	
	پروژه	بسته کاری	صادر کننده	تمهيلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007		V00

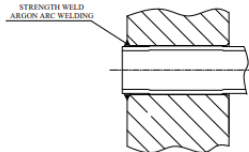
WPS No.		W07		Sup. PQR No.		P0X	
Welding process: SMAW				Type:		Manual	
JOINT DESIGN (QW-402)							
Groove		Single V, bevel, Double V					
Backing		No, yes		Backing material		N.A., Base metal	
BASE METAL (QW-403)							
Material:		SA312-TP316L/SA 182 F316L/SA 240 316L/ SA403-WP316L		To		SA312-TP316L/SA 182 F 316L/SA 240 316L/ SA403-WP316L	
P-No.		8		G-No.		1	
T qualified (mm):		5 – 20		Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)							
		Root, filling & cap					
SFA No.		5.4					
AWS No.		E316L-16					
F-No.		5					
A-No.		8					
Size (mm)		2.4 – 4					
Form		Covered electrode					
Trade name		AMA					
Flux		N.A.					
Baking		2 h @ 300 – 350 °C					
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions		1~3G & 5G		Temp. rage (°C)		N.A.	
Progression		All but downhill		Time range (min)		—	
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)		N.A.		Gas		Mixture	
Inter-pass temp. (°C) (max)		175		Shielding		N.A.	
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input (J/mm)	
Root, filling & cap	SMAW	DCEP	65 – 190	15 – 30	10 – 25	230 – 3400	
TECHNIQUE (QW-410)							
		Root, filling & cap					
String / weave		Both					
Initial and Inter-pass Cleaning		Brushing / grinding					
Method of back gouging		grinding					
Multiple / single pass (per side)		Multiple					
MFS		TPI		Client			

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 13 از 19	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007	V00	

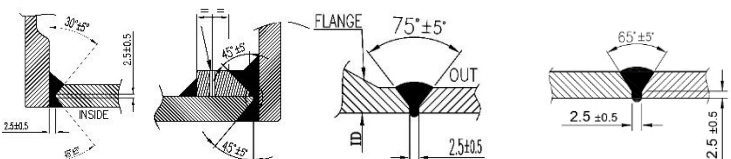
WPS No.	W08	Sup. PQR No.	P0X			
Welding process: GTAW + SMAW		Type:	Manual			
JOINT DESIGN (QW-402)						
Groove	Single V / Single bevel					
Backing	Yes (for SMAW)					
Backing material		Weld metal				
BASE METAL (QW-403)						
Material:	SA 312-TP316L/SA403-WP316L/SA182-F316		To	SA 312-TP316L/SA 403-WP316L /SA182-F316 L		
P-No.	8	G-No.	1	to	P-No. 8 G-No.1	
T qualified (mm):	5-20		Max. pass thick. (mm)	≤ 13		
FILLER METALS (QW-404)						
Root			Filling & cap			
SFA No.	5.9		5.4			
AWS No.	ER316-L		E316L-16			
F-No.	6		5			
A-No.	8		8			
Size (mm)	2.4		2.5 – 4			
Form	Soild		Covered electrode			
Trade name	AMA (30-13M)		AMA			
baking	-		2 h @ 350 – 400 °C			
POSITIONS (QW-405)			POSTWELD HEAT TREATMENT (QW-407)			
Positions	1~3G & 5G		Temp. rage (°C)		N. A	
Progression	For 3G & 5G Up hill		Time range (min)		N. A	
PREHEAT (QW-406)			GAS (QW-408)			
Temp. (°C) (min)	N. A		Shielding	Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)	175		backing	Ar.	99.997%	10-15 l/min
				Ar.	99.997%	10-15 l/min
ELECTRICAL CHARACTERISTICS (QW-409)						
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input
Root (1)	GTAW	DCEN	70-140	10-12	7.5-15	$\frac{V \times A \times 60}{Tr. speed}$
Filling & cap (2)	SMAW	DCEP	65-140	22-26		
TECHNIQUE (QW-410)						
		GTAW (Root)		SMAW (Filling & cap)		
String / weave		Both		Both		
Initial and Inter-pass Cleaning		Brushing / grinding		Brushing / grinding		
Method of back gouging		N.A.		N.A.		
Oscillation		N.A.		N.A.		
Multiple / single Electrode		Single		Single		
Multiple / single pass (per side)		Single		Multiple		
MFS		TPI		Client		

Organization Name				Masnouat Felezi Sangin (MFS) Co.			
WPS No.		W09		Sup. PQR No.		P0X	
Welding process: GTAW				Type:		Manual/ Semi Automate(orbital)	
JOINT DESIGN (QW-402)							
							
Groove		Single bevel					
Backing		N.A.		Backing material		Base Metal	
BASE METAL (QW-403)							
Material:		SA-213 TP316L		To		SA-182 F316L	
P-No.		8		G-No.		1	
T qualified (mm):		1.5-10		Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)							
		GTAW					
SFA No.		5.9					
AWS No.		ER-316L					
F-No.		6					
A-No.		8					
Size (mm)		2.4					
Form		Bare solid rod					
Trade name		AMA (30-13M)					
Flux		N.A.					
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions		1~3G		Temp. rage (°C)		-	
Progression		Uphill		Time range (min)		-	
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)		N.A.		Gas		Mixture	
Inter-pass temp. (°C) (max)		175		Ar.		99.997%	
				Shielding		Flow rate	
				Trailing		10-15 l/min	
				Backing		—	
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer		Process		Polarity		Amp.	
Voltage		Travel speed		Maximum Heat input (J/mm)			
All		GTAW		DCEN		70 – 120	
15 – 22		10 – 25 cm/min		(V×A×60)/(Travel speed)			
TECHNIQUE (QW-410)							
		GTAW					
Orifice or gas cap size (mm)		4 – 10					
String / weave		Both					
Initial and Inter-pass Cleaning		Brushing / grinding					
Single/multiple electrode		Single					
Method of back gouging		N.A.					
Oscillation		N.A.					
Multiple / single pass (per side)		Multiple					
MFS		TPI		Client			
WELDING PROCEDURE SPECIFICATIONS (WPS) (Section IX. ASME Boiler and Pressure Vessel Code)							

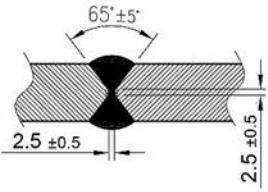
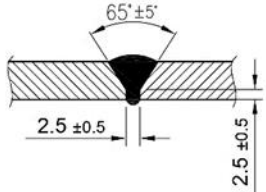
 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)								
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 15 از 19	
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال		نسخه
	BK	GCS	MF	120	QC	PR	0007	V00	

Organization Name		Masnouat Felezi Sangin (MFS) Co.					
WPS No.		W10		Sup. PQR No.		P0X	
Welding process: GTAW				Type:		Manual	
JOINT DESIGN (QW-402)							
STRENGTH WELD ARGON ARC WELDING 							
Groove		Single bevel					
Backing		N.A.		Backing material		Base Metal	
BASE METAL (QW-403)							
Material:		SA-266 Gr. 2 N		To		SA-179 N	
P-No.		1		G-No.		2	
T qualified (mm):		1.5-10		Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)							
SFA No.		GTAW					
AWS No.		5.18					
F-No.		ER70S-6					
A-No.		6					
Size (mm)		8					
Form		2.4					
Trade name		Bare solid rod					
Flux		AMA (30-13M)					
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions				Temp. rage (°C)			
Progression				Time range (min)			
1~3G				-			
Uphill				-			
PREHEAT (QW-406)				GAS (QW-408)			
(As per Sec. VIII)							
Temp. (°C) (min)		N.A.		Gas		Mixture	
Inter-pass temp. (°C) (max)		250		Ar.		99.997%	
				Shielding		Flow rate	
				Trailing		10-15 l/min	
				Backing		—	
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer		Process		Polarity		Amp.	
All		GTAW		DCEN		70 – 120	
TECHNIQUE (QW-410)							
Orifice or gas cap size (mm)		GTAW					
String / weave		4 – 10					
Initial and Inter-pass Cleaning		Both					
Single/multiple electrode		Brushing / grinding					
Method of back gouging		Single					
Oscillation		N.A.					
Multiple / single pass (per side)		N.A.					
		Multiple					
MFS		TPI		Client			

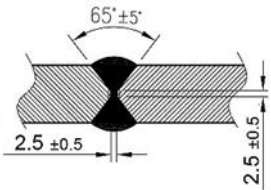
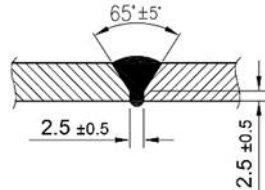
 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)							
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 16 از 19
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	MF	120	QC	PR	0007	V00

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]							
WPS No.	W11	Sup. PQR No.		PX			
Welding process: GTAW				Type:	Manual	Auto	
JOINT DESIGN (QW-402)							
							
Groove	Single bevel						
Backing	N. A			Backing material		N.A.	
BASE METAL (QW-403)							
Material:	SA106 – Gr. B /SA 234 WPB N			To	SA106 – Gr. B SA 182 F316 L/SA 234 WPB N		
P-No.	1	G-No.	1 / 2	to	P-No.	1	G-No. 2
T qualified (mm):	5 – 30			Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)							
SFA No.	GTAW						
AWS No.	5.18						
F-No.	ER70S-6						
A-No.	6						
Size (mm)	1						
Form	2.4						
Trade name	Solid rod						
AMA	Solid rod						
Max deposit (mm)	10						
Baking	N.A.						
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions	1~3G, 5G			Temp. rage (°C)		595 – 620	
Progression	All but downhill			Time range (min)		95	
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)	100			Shielding	Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)	250				N.A.	—	—
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input (J/mm)	
Root, Filling & cap	GTAW	DCEN	70 – 120	15 – 22	10 – 25	$\frac{V \times A \times 60}{Travel\ speed}$	
TECHNIQUE (QW-410)							
		Root		Filling & cap			
Orifice or gas cap size (mm)		10 – 16		N.A.			
String / weave		Both		Both			
Initial and Inter-pass Cleaning		Brushing / grinding		Brushing / grinding			
Method of back gouging		None		None			
Multiple / single pass (per side)		Multiple		Multiple			
MFS		TPI			Client		

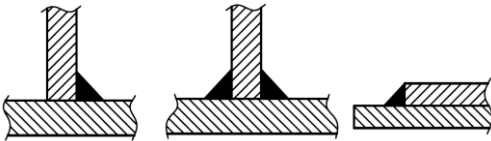
 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)							
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 17 از 19
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	MF	120	QC	PR	0007	V00

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]							
WPS No.	W12	Sup. PQR No.		PX			
Welding process: SMAW				Type:		Manual	
JOINT DESIGN (QW-402)							
							
Groove	Double V						
Backing	No			Backing material		N.A.	
BASE METAL (QW-403)							
Material:	SA516 – Gr.70N			To	SA516 – Gr.70N		
P-No.	1	G-No.	2	to	P-No.	1	G-No. 2
T qualified (mm):	5 – 50		Max. pass thick. (mm)		≤ 13		
FILLER METALS (QW-404)							
		Root, filling & cap					
SFA No.	5.1						
AWS No.	E7018-H4						
F-No.	4						
A-No.	1						
Size (mm)	2.5 – 4						
Form	Covered electrode						
Trade name	AMA						
Max deposit (mm)	200						
Flux	N.A.						
Baking	2 h @ 300 – 350 °C						
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions	1~3G & 5G			Temp. rage (°C)	595 – 620		
Progression	All but downhill			Time range (min)	95		
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)	100			Shielding	Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)	250				N.A.	—	—
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input	
Root, filling & cap	SMAW	DCEP	65-190	15 – 30	10 – 25	$\frac{V \times A \times 60}{Tr. speed}$	
TECHNIQUE (QW-410)							
		Root			Filling & cap		
String / weave		Both			Both		
Initial and Inter-pass Cleaning		Brushing / grinding			Brushing / grinding		
Method of back gouging		Arc-air gouging + grinding					
Multiple / single pass (per side)		Multiple			Multiple		
MFS		TPI			Client		

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)							
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 18 از 19
	پروژه	بسته کاری	صادر کننده	تسهیلات	رشته	نوع مدرک	سریال	
	BK	GCS	MF	120	QC	PR	0007	V00

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX] [2019]							
WPS No.	W13	Sup. PQR No.		PX			
Welding process: SMAW + SAW				Type:	Manual	Auto	
JOINT DESIGN (QW-402)							
							
Groove	Double V						
Backing	Yes (for SAW)			Backing material		Weld metal	
BASE METAL (QW-403)							
Material:	SA516 – Gr.70N			To	SA516 – Gr.70N		
P-No.	1	G-No.	2	to	P-No.	1	G-No. 2
T qualified (mm):	5 – 50			Max. pass thick. (mm)		≤ 13	
FILLER METALS (QW-404)							
	<u>Root</u>			<u>Filling & cap</u>			
SFA No.	5.1			5.17			
AWS No.	E7018-H4			EM12K			
F-No.	4			6			
A-No.	1			1			
Size (mm)	2.5 – 4			4			
Form	Covered electrode			Bare electrode			
Trade name	AMA			AMA			
Max deposit (mm)	8			192			
Flux	N.A.			AMA (OP139TT)			
Baking	2 h @ 300 – 350 °C			2 h @ 300 – 350 °C			
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions	1G			Temp. rage (°C)		595 – 620	
Progression	All but downhill			Time range (min)		95	
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)	100			Shielding	Gas	Mixture	Flow rate
Inter-pass temp. (°C) (max)	250				N.A.	—	—
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed (cm/min)	Heat input (J/mm)	
Root	SMAW	DCEP	65 – 190	15 – 30	10 – 25	(V×A×60)/(Tr.speed)	
Filling &Cap	SAW	DCEP	500-600	25 – 35	50 – 80		
TECHNIQUE (QW-410)							
	<u>Root</u>			<u>Filling & cap</u>			
Contact tube to work distance	N.A.			25 – 38 mm			
String / weave	Both			Both			
Initial and Inter-pass Cleaning	Brushing / grinding			Brushing / grinding			
Method of back gouging	None			None			
Multiple / single pass (per side)	Multiple			Multiple			
MFS	TPI					Client	

 NISOC	نگهداشت و افزایش تولید میدان نفتی بینک سطح الارض و ابنیه تحت الارض خرید بسته نم زدای گاز ایستگاه تقویت فشار گاز بینک (قرارداد BK-HD-GCS-CO-0010_08)							
شماره پیمان: 053 – 073 – 9184	WPS & PQR (TOWER, COLUMNS, REBOILER, DRUMS, FILTERS & EXCHANGERS)							شماره صفحه : 19 از 19
	پروژه	بسته کاری	صادر کننده	تمهيلات	رشته	نوع مدرک	سريال	
	BK	GCS	MF	120	QC	PR	0007	V00

WELDING PROCEDURE SPECIFICATIONS (WPS) [ASME BPVC – SEC IX]							
WPS No.	W14	Sup. PQR No.	PX				
Welding process: SMAW			Type:	Manual			
JOINT DESIGN (QW-402) 							
Groove	FILLET						
Backing	No	Backing material		-			
BASE METAL (QW-403)							
Material:	SA-240 -304	To	SA312 TP 316L				
P-No.	8	G-No.	1	to	P-No.	1	G-No. 2
T qualified (mm):	All	Max. pass thick. (mm)		≤ 13			
FILLER METALS (QW-404)							
		Root, filling & cap					
SFA No.	5.4						
AWS No.	E308L-16						
F-No.	5						
A-No.	8						
Size (mm)	2.5~4						
Form	Covered electrode						
Trade name	AMA (1460JA)						
Max deposit (mm)	N.A.						
Baking	2 h @ 350 – 400 °C						
POSITIONS (QW-405)				POSTWELD HEAT TREATMENT (QW-407)			
Positions	1 ~3G & 5G			Temp. rage (°C)	N.A.		
Progression	All but downhill			Time range (min)	—		
PREHEAT (QW-406)				GAS (QW-408)			
Temp. (°C) (min)	10			Gas	Mixture	Flow rate	
Inter-pass temp. (°C) (max)	250			Shielding	N.A.	—	
				Trailing	—	—	
ELECTRICAL CHARACTERISTICS (QW-409)							
Layer	Process	Polarity	Amp.	Voltage	Travel speed	Heat input	
Root, filling & cap	SMAW	DCEP	65-160	15-45	6-12 (cm/min)	$\frac{V \times A \times 60}{Tr. speed}$	
TECHNIQUE (QW-410)							
		SMAW					
String / weave	Both						
Initial and Inter-pass Cleaning	Brushing / grinding						
Method of back gouging	N.A.						
Oscillation	N.A.						
Multiple / single Electrode	Single						
Multiple / single pass (per side)	Single						
MFS	TPI			Client			