



Toase-eh Park Sanati Gohar Ofogh Petrochemical Co.

**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**

Document Title: WELDING & NDT MAP

Document No. : E1027-FPA-VD-QC-NDT-003



Farnikan
Engineered Solutions

Rev.: R1



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STYRENE PARK OFFSITE

Document Title:

WELDING & NDT MAP

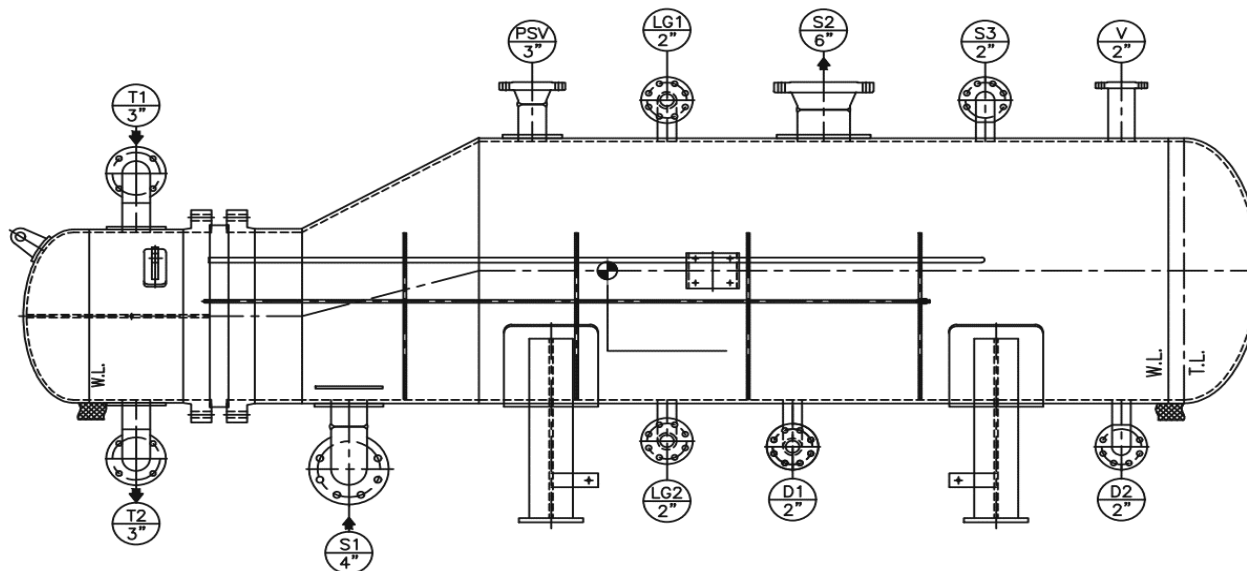
01	16-Sep-2024	IFA	F.Baviye	N.Abnavi	N.Abnavi
00	29-Aug-2024	IFA	F.Baviye	N.Abnavi	N.Abnavi
Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED

	Toase-che Park Sanati Gohar Ofogh Petrochemical Co.			
	CONCEPTUAL, BASIC and DETAIL DESIGN ENGINEERING OF STYRENE PARK OFFSITE			
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Page	Revisions							Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6		R0	R1	R2	R3	R4	R5	R6
1	X	X						41							
2	X	X						42							
3	X	X						43							
4	X	X						44							
5	X	X						45							
6	X	X						46							
7	X	X						47							
8	X	X						48							
9	X	X						49							
10		X						50							
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40								80							

WELDING BOOK

DOC. NO.	E1027-FPA-VD-QC-NDT-003			REV.	1
SHEET	3	Of		10	
PROJECT NO.		HX-127			
ITEM		CHILLER			



GENERAL INFORMATION			DESCRIPTION MATERIALS		
TYPE OF SERVICE		CHILLER (EVAPORATOR)	SHELL SIDE	BARREL	SA 516 Gr.70 <u>N</u>
CONSTRUCTION CODE		ASME VIII div.1 Ed.2021 & TEMA R /10th Ed. 2019		NOZZLES (FROM PIPE/PLATE/FLANGE)	SA 333-6/ SA 516 Gr.70 N/SA 350-LF2 <u>CL1</u>
M.D.M.T		-45 °C for Shell side & -29°C for Tube side		FLANGES	SA 350-LF2 CL1
DESCRIPTION MATERIALS			SADDLE	COUPLING / PLUG	-
TUBE BUNDLE	TUBES	WPS-HX127-003		WEAR PLATE	SA 516 Gr.70 N
	TUBESHEET	SA 350-LF2 CL1		WEB PLATE	<u>SA 283 Gr.C</u>
	BAFFLES	SA 516 Gr.70		RIB	<u>SA 283 Gr.C</u>
	TIE RODS / SPACERS	SA 36/SA 179		EARTHING LUG	S.S. 304
CHANNEL SIDE	BARREL	SA 516 Gr.70	APPLICABLE DOCUMENTS		
	NOZZLES (FROM PIPE/PLATE/FLANGE)	SA 106-B/SA 516-70N/SA 105N	GENERAL DRAWINGS		E1027-HSE-VD-ME-DWG-008
	HEAD	SA 516 Gr.70	PWHT PROCEDURE		NO
	FLANGE	<u>SA 266 2N</u>			
	PIPE	SA 106-B			
	ELBOW	SA 234-WPB			

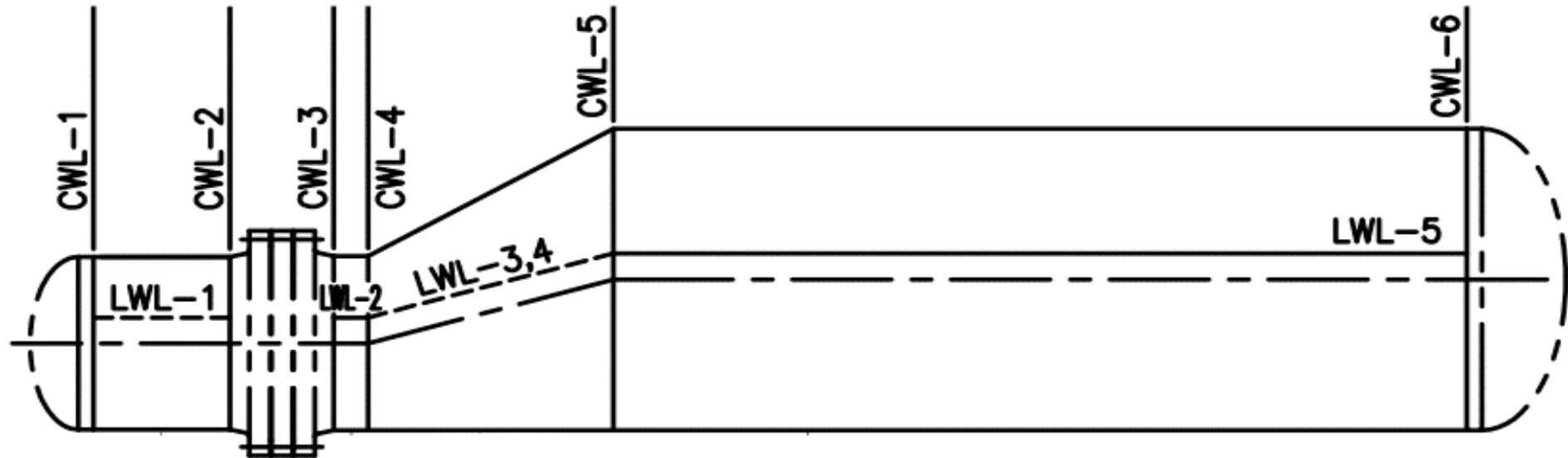


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WELDING & NDT MAP

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ITEM	CHILLER			

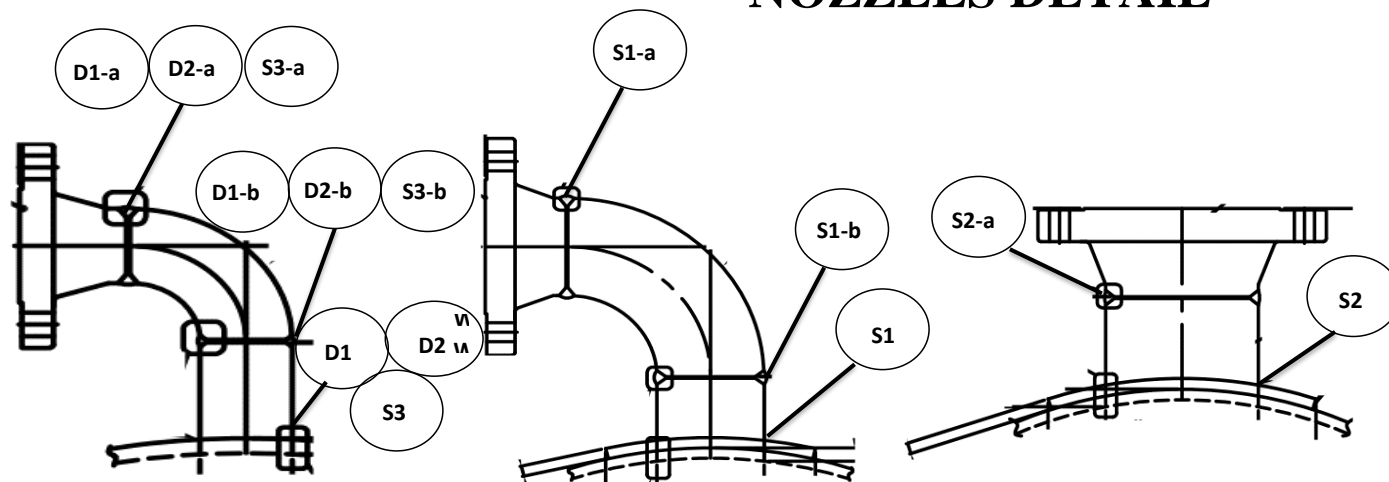
SHELL DETAIL



WELDING & NDT MAP

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NOZZLES DETAIL



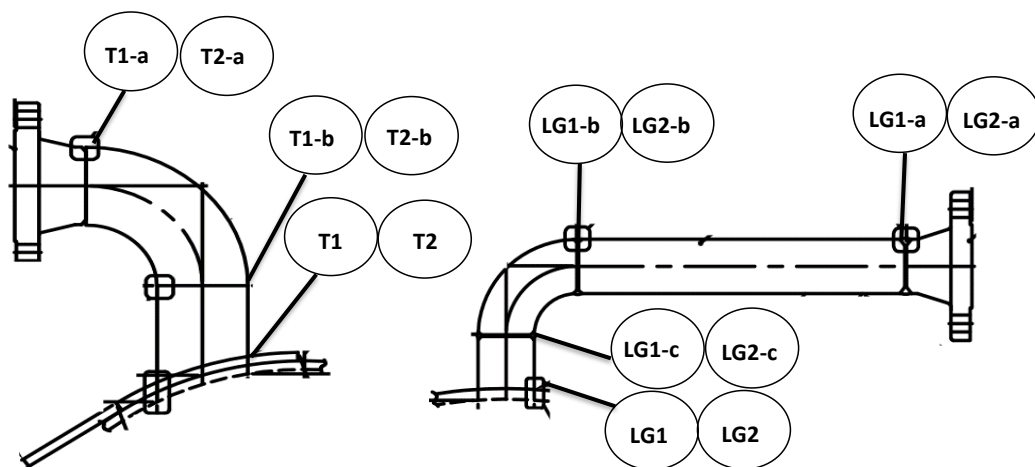
Detail for D1, D2, S3

Detail for S1

Detail for S2

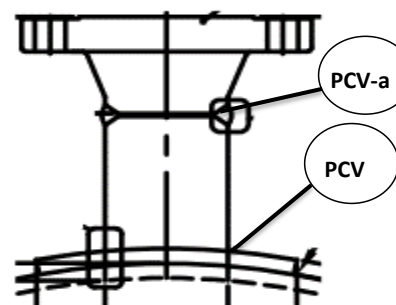
NOZZLE LIST

NOZZLE MARK	Q'TY /1 SET	SIZE (INCH)	FLANGE	
			RATING	SCH.
S1	1	4"	ASME B16.5 300# WN.RF	120
S2	1	6"	ASME B16.5 300# WN.RF	80
T1	1	3"	ASME B16.5 150# WN.RF	80
T2	1	3"	ASME B16.5 150# WN.RF	80
D1	1	2"	ASME B16.5 300# LWN.RF	160
D2	1	2"	ASME B16.5 300# LWN.RF	160
LG1	1	2"	ASME B16.5 300# WN.RF	160
LG2	1	2"	ASME B16.5 300# WN.RF	160
PSV	1	3"	ASME B16.5 300# WN.RF	160
V	1	2"	ASME B16.5 300# LWN.RF	t16.6
S3	1	2"	ASME B16.5 300# WN.RF	160

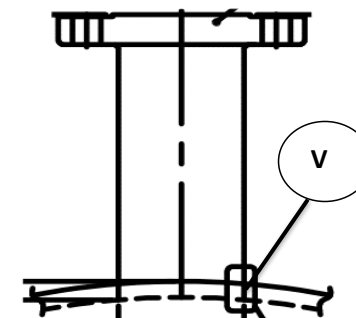


Detail for T1, T2

Detail for LG1, LG2



Detail for PSV

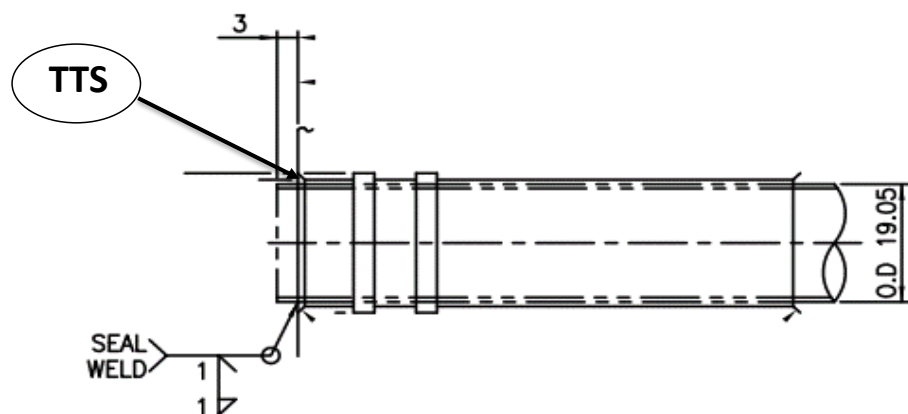


Detail for V

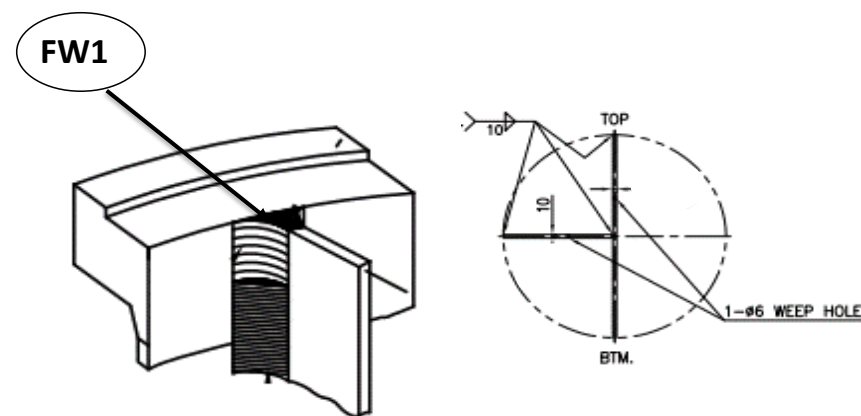
WELDING & NDT MAP

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ITEM	CHILLER			

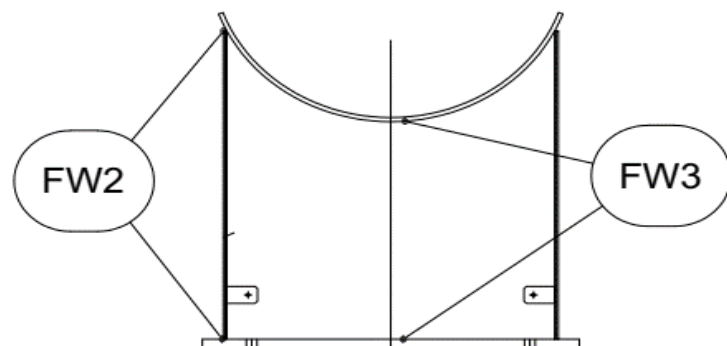
DETAIL



TUBE TO TUBESHEET JOINT



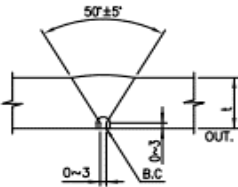
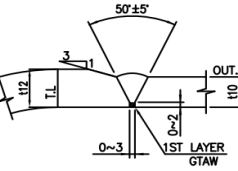
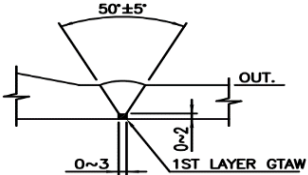
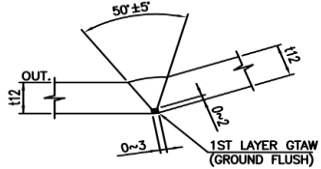
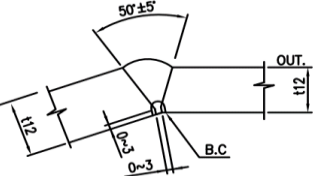
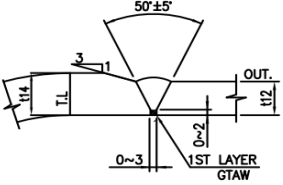
PARTITION PLATE DETAIL



SADDLE DETAIL

WELDING & NDT MAP

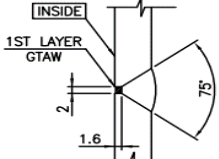
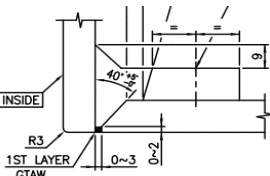
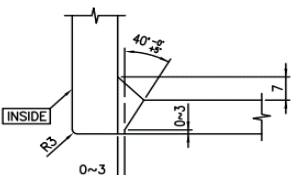
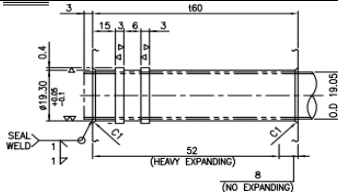
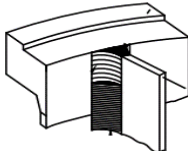
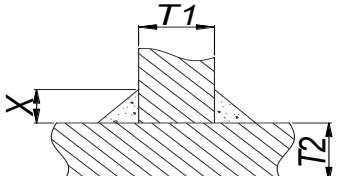
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ITEM	CHILLER			

Joint Type	Schematic	Joint
A		LWL-1~LWL-5
B		CWL-1
C		CWL-2,3
D		CWL-4
E		CWL-5
F		CWL-6

WELDING & NDT MAP

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PROJECT NO.		HX-127		
ITEM	CHILLER			

continue

Joint Type	Schematic	Joint
G		T1-a,T1-b,T2-a,T2-b,S1-a,S1-b,S2-a,PSV-a,LG1-a,LG2-a,S3-a,LG1-b,LG1-c,LG2-b,LG2-c,T1-a,T1-b,T2-a,T2-b
H		T1,T2,S1,S2,PSV
I		LG1,LG2,D1,D2 ,S3,V
<u>J</u>		TTS
<u>K</u>		FW1
L		FW2,FW3



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ITEM		CHILLER		

WELDS LIST

WELD IDENTIFICATION	WELDING PROCESS	BASE MATERIAL		W.P.S.		P.Q.R.		Joint Type	IMPACT TEST	PWHT	NDT
		TYPE AND GRADE	THK. (mm)	NUMBER	REV.	NUMBER	QUALIFIED RANGE(mm)				
LWL-1	GTAW+SMAW	SA-516 Gr.70N	10	WPS-HX127-001	1	FPA-PQR-029	5:50	A	N.A.	N.A.	100% RT
		SA-516 Gr.70N									
LWL-2~LWL-4	GTAW+SMAW/SMAW	SA-516 Gr.70N	12	WPS-HX127-003	1	FPA-PQR-029	5:50	A	N.A.	N.A.	100% RT
		SA-516 Gr.70N									
LWL-5	GTAW+SMAW/SMAW+SAW	SA-516 Gr.70N	12	WPS-HX127-004 WPS-HX127-005	1	FPA-PQR-029	5:50	A	N.A.	N.A.	100% RT
		SA-516 Gr.70N									
CWL-1	GTAW+SMAW/GTAW+SMAW+SAW	SA-516 Gr.70N	10	WPS-HX127-004 WPS-HX127-005	1	FPA-PQR-029	5:50	B	N.A.	N.A.	100% RT
		SA-516 Gr.70N									
CWL-2	GTAW+SMAW/GTAW+SMAW+SAW	SA-516 Gr.70N	10	WPS-HX127-002	1	FPA-PQR-029	5:50	C	N.A.	N.A.	100% RT
		SA-266-2N									
CWL-3	GTAW+SMAW/SMAW+SAW	SA-516 Gr.70N	12	WPS-HX127-002	1	FPA-PQR-029	5:50	C	N.A.	N.A.	100% RT
		SA-266-2N									
CWL-4	GTAW+SMAW/SMAW+SAW	SA-516 Gr.70N	12	WPS-HX127-002	1	FPA-PQR-029	5:50	D	N.A.	N.A.	100% RT
		SA-516 Gr.70N									
CWL-5,CWL-6	GTAW+SMAW/SMAW+SAW	SA-516 Gr.70N	12	WPS-HX127-002	1	FPA-PQR-029	5:50	E	N.A.	N.A.	100% RT
		SA-516 Gr.70N									
T1,T2	GTAW+SMAW	SA-106 Gr.B	10	WPS-HX127-001	1	FPA-PQR-029	5:50	H	N.A.	N.A.	100% UT+ 100% PT
		SA-516 Gr.70N									
S1,S2,PSV	GTAW+SMAW	SA-333 Gr.6	12	WPS-HX127-001	1	FPA-PQR-029	5:50	H	N.A.	N.A.	100% UT+ 100% PT
		SA-516 Gr.70N									
LG1, LG2,D1,D2,S3	GTAW+SMAW	SA-333 Gr.6	12	WPS-HX127-001	1	FPA-PQR-029	5:50	I	N.A.	N.A.	100% UT+ 100% PT
		SA-516 Gr.70N									
V	GTAW+SMAW	SA-350 LF2	12	WPS-HX127-001	1	FPA-PQR-029	5:50	I	N.A.	N.A.	100% UT+ 100% PT
		SA-516 Gr.70N									
T1-a,T1-b,T2-a,T2-b	GTAW+SMAW/GTAW	SA-106 Gr.B	7.62	WPS-HX127-001	1	FPA-PQR-029	5:50	G	N.A.	N.A.	100% RT
		SA 234 WPB6									
		SA-105N									
S1-a,S1-b, S2-a,PSV-a,LG1-a, LG2-a,S3-a	GTAW+SMAW	SA-333 Gr.6	8.74, 11.13, 10.97	WPS-HX127-001	1	FPA-PQR-029	5:50	G	N.A.	N.A.	100% RT
		SA-420 WPL6									
		SA-350 LF2									



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WELDING AND NDT MAP

DOC. NO.	E1027-FPA-VD-QC-NDT-003		REV.	1
SHEET	10	Of	10	
PROJECT NO.		HX-127		
ITEM		CHILLER		

WELDS LIST

WELD IDENTIFICATION	WELDING PROCESS	BASE MATERIAL		W.P.S.		P.Q.R.		Joint Type	IMPACT TEST	PWHT	NDT
		TYPE AND GRADE	THK. (mm)	NUMBER	REV.	NUMBER	QUALIFIED RANGE(mm)				
LG1-b, LG1-c LG2-b, LG2-c	GTAW+SMAW	SA-420-WPL6	8.74	WPS-HX127-001	1	FPA-PQR-029	5:50	G	N.A.	N.A.	<u>100% RT</u>
		SA-333 Gr.6									
TTS	GTAW (ORBITAL)	SA-334-6	-	WPS-HX127-003	1	FPA-PQR-104	1.05:4.22	J	N.A.	N.A.	100% PT
		SA-350-LF2									
FW1	SMAW/GMAW	SA-516 Gr.70	-	WPS-HX127-004 WPS-HX127-005	1	FPA-PQR-029 FPA-PQR-027	5~50 for Groove, ALL for fillet	K	N.A.	N.A.	100% PT
		SA-516 Gr.70									
FW2,FW3	SMAW/GMAW	SA-516 Gr.70 SA 283 Gr.c	-	WPS-HX127-004 WPS-HX127-005	1	FPA-PQR-029 FPA-PQR-028	5~50 for Groove, ALL for fillet	L	N.A.	N.A.	100% PT
		SA-516 Gr.70 SA 283 Gr.c									

Note:

- 100% PT shall be done for root pass.
- 100% VT shall be done for all weld lines.
- 100% PT shall be done for final pass and back gouged welds and after edge preparation.