				PRC	DJECT: PP-PE PI	LOT PL	ANT			ك	
			тіт	LE: Pres	sure Safety / Re	lief Valv	ve Dat	a Sheet		شرکت ملی صنایع پتروشیمی	
			Contractor	Job No:		Doc. No:	900-DA	S-A4-IN-00	007	شرکت پژوهش و فناوری پتروشیمی	
			Owner Job	No:		Sheet No:	: 3	of 30			
		1	Tag No.				-	PSV 1	201		
		2		ssel				P 12	21		
0.		3		Piping Size	Class Line No	012		1/2"	1F\$	FS4	
Ge	eneral Data	4			State	TEA+HEXANE		ХL	X Liq. o Aer. o Flash		
	Data	5			Piping material		#600			S.S	
		6			Amb.Rel.Humidity Max	(-20)°C /	50°C	0.82	Bara	86%	
		7			Area		zone 1			100	
		8			VISC. AT RELIEV. T.						
		9			SPEC. HEAT RATIO	0 86 0.2896					
			INLET COM						bara		
					MIN - MAX	40 0.5			barg		
		1			P. MIN - MAX AT DISCHARGE	0.5			barg		
OPI	ERATING	-	4 SET Press.	BUILT-UP	AT DISCHARGE	65			barg		
COI	NDITION	2	5 OVERPRES			10			barg %		
			6 OPERATING		E TEMP	30			°C		
			7 TEMPERAT			-45 +10	0		°C		
			B FLOW RATI			4.55	<u> </u>		kg/h		
							IRE		<u> </u>	Q. EX.	
		1	9 CALCULATI	ON HYPOTH	ESIS	X OPER.	MISTAK	E			
	:	2	AREA: CAL	CULATED-SE	LECTED	0,002			cm	2	
			ORIFICE			"B"					
	SIZING	2				INLET			1⁄2" #60	0	
		2	CONNECTION & NOMIN. PRESSURE			OUTLET 3⁄4" #150				60	
			4 BODY	BODY			o C.S. o 304 S.S. X 316 S.S.				
			5 BONNET			o C.S.					
Ν	/laterials		6 SPRING			o C.S.	X 316 S	S.S. o Tl	JNGST.	ST.	
	latorialo		7 STEM & GU			STD SS					
			B NOZZLE OF	R SEAT		Metal-to-Me	tal - STD	S.S.			
		_	PLUG			STD SS					
					ENS OPENED	CLOSED				A 18 1	
	CESS.&		1 LIFTING LE 2 BALANC. BI			o WITH PAC o YES	KING		o Pl	AIN	
	TIONALS		BALANC. BI BALANC. PI			o YES					
OF	HONAL	-			ZZLE - INJECT.	NO					
Notes	5:	3	5 HEATING C	ONNECTION	<u>S</u>	ΝΟ					
\downarrow											
	0	12/	26/2021	IF	A	K.A		M.N		AA.SH	
11										AA.an	

				PRO	JECT: PP-PE P	ILOT PL	ANT			4
			TITL	E: Pres	sure Safety / Ro	elief Valv	e Dat	a Sheet		مرکت ملی صنایع پتروشیمی
			Contractor Jo	ob No:		Doc. No: 9	900-DA	S-A4-IN-0	007 ၂	شرکت پژوهش و فناوری پتروشیمی
			Owner Job N	lo:		Sheet No:	4	of 30		
		1	Tag No.					PSV ²	1301	
			Piping or Vess	el				V 1	31	
Conorol		3	P&ID No. P	iping Size	Class Line No	013 3/4"				
General Data	[Fluid		State	HEX	ANE+DO	NOR	o Lio	q. o Aer. X Flash
Data		_	Pressure rating	g	Piping material		#150			S.S
			Amb.Temp		Amb.Rel.Humidity Max	(-20)°C /	50°C	0.82	Bara	86%
			Area Classifica	ation	Area		zone 1			100
		_	SP. WEIGHT	0.UT	VISC. AT RELIEV. T	1		kg/m3	0.83	mPas
			MOLEC. WEI		SPEC. HEAT RATIO	0 86 0.8708				
			INLET COMPR		MIN - MAX	0.3 barg				
		11 12		SUPERIMF		0.3			barg	
		13	BACK- PRESS		AT DISCHARGE	0.1			barg	
OPERATIN	-		SET Press.	DOILT OF		3.5			barg	
CONDITIO	NS		OVERPRESS	URE		10			%	
			OPERATING/I		E TEMP.	30 / 125,	7		°C	
	İ	_	TEMPERATU			-45 +150)		°C	
		18	FLOW RATE	TO BE DISC	HARGED	238.9			kg/h	
		19	CALCULATIO	Ν ΗΥΡΟΤΗΙ	ESIS	X F o OPER.	IRE MISTAK	E	o LIC	Q. EX.
		20	0 AREA: CALCULATED-SELECTED			0.5			cm2	2
SIZING		21	ORIFICE			"D"				
01211VO		23	CONNECTION & NOMIN. PRESSURE			INLET ¾" #150 OUTLET 1" #150				
			BODY			o C.S.	o 304 S	S.S. X 3	16 S.S.	
			BONNET			o C.S.				
Materials			SPRING			o C.S.	X 316 S	6.S. o Tl	JNGST. S	Т.
material	Í I		STEM & GUID			STD SS				
			NOZZLE OR S	SEAT		Metal-to-Met	al - STD	S.S.		
			PLUG			STD SS				
		_			ENS OPENED	CLOSED			- DL	
ACCESS.	<u>e</u>		LIFTING LEVE BALANC. BEL			o WITH PAC	INING		o PL/	AUN
OPTIONAL			BALANC. BEL			o YES				
					ZLE - INJECT.	NO				
		_								
Notes:		_	HEATING: JA(NO				
1 0	1		6/2021		A	K.A		M.N		AA.SH
No. Rev		D	ate	Sta	tus	Prepared		Checked		Approved

o No: i i ing Size ing Size Amb Press ion HT ESSIBILIT RESS. GUPERIMF	Class Line No State Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	Doc. No: 9 Sheet No: 013 Hez (-20)°C / 662 86 0.2896	200-DA 5 xane+Dor #600	S-A4-IN-00 of 30 PSV 1 P 13 1/2" nor 0.82	302 31 1FS4 X Liq	. o Aer. o Flash S.S	
I bing Size Amb Press ion HT ESSIBILIT RESS. 6UPERIMF	State Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	Sheet No: 013 He: (-20)°C / 662 86 0.2896	5 xane+Dor #600 50°C	of 30 PSV 1 P 13 1/2" 1/2" 0.82	302 31 1FS4 X Liq	شرکت پژوهش و فناوری پتروشیم . o Aer. o Flash S.S	
I oing Size Amb Press ion HT ESSIBILIT RESS. 6UPERIMF	State Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	013 Hex (-20)°C / 662 86 0.2896	xane+Dor #600 50°C	PSV 1 P 13 1/2" nor 0.82	302 31 1FS4 X Liq	o Aer. o Flash S.S	
Amb Press ion HT ESSIBILIT RESS. SUPERIMF	State Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	013 Hex (-20)°C / 662 86 0.2896	xane+Dor #600 50°C	P 13 1/2" hor 0.82	31 1FS4 X Liq	. o Aer. o Flash S.S	
Amb Press ion HT ESSIBILIT RESS. SUPERIMF	State Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	Hex (-20)°C / 662 86 0.2896	#600 50°C	1/2" nor 0.82	1FS4 X Liq	. o Aer. o Flash S.S	
Amb Press ion HT ESSIBILIT RESS. SUPERIMF	State Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	Hex (-20)°C / 662 86 0.2896	#600 50°C	nor 0.82	X Liq	. o Aer. o Flash S.S	
Amb Press ion HT ESSIBILIT RESS. SUPERIMF	Piping material Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	(-20)°C / 662 86 0.2896	#600 50°C	0.82		S.S	
Amb Press ion HT ESSIBILIT RESS. SUPERIMF	Amb.Rel.Humidity Max Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	662 86 0.2896	50°C		Bara		
ION HT ESSIBILIT RESS. GUPERIMF	Area VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	662 86 0.2896			Bara		
HT ESSIBILIT RESS. GUPERIMF	VISC. AT RELIEV. T. SPEC. HEAT RATIO Y FACTOR MIN - MAX	86 0.2896	zone 1	ka/m3		86%	
ESSIBILIT RESS. SUPERIMF	SPEC. HEAT RATIO Y FACTOR MIN - MAX	86 0.2896		ka/m3		100	
ESSIBILIT RESS. SUPERIMF	Y FACTOR MIN - MAX	0.2896					
RESS. SUPERIMF	MIN - MAX						
SUPERIMF		0.2896 40 barg					
	P. MIN - MAX	40 0.5			barg		
	AT DISCHARGE	0.3			barg		
		65			barg		
RE		10			%		
ISCHARGI	E TEMP.	30			°C		
E RANGE		-45 +100)		°C		
	HARGED	4.55			kg/h		
		o F	IRE		o LIQ	. EX.	
HYPOTH	2818	n OPER.	MISTAKE	1			
ATED-SE	LECTED	0,002			cm2		
ORIFICE							
3 CONNECTION & NOMIN. PRESSURE							
			OUTLET ¾" #150				
BODY BONNET			o C.S. o 304 S.S. X 316 S.S.				
					NIGOT OT		
			X 316 S	.S. 01	JNGST. SI		
				2.0			
-AI			al-SID:	5.5.			
	LING OF EINED		KING		ο PI Δ	IN	
	TERIAI				UTLA		
		NO					
		NO					
	D BE DISC HYPOTHI ATED-SE & NOMIN. & NOMIN. EAT EAT SED - EXT R OWS - MA OWS - MA OWS - MA CN - META KET - NOZ	D BE DISCHARGED HYPOTHESIS ATED-SELECTED & NOMIN. PRESSURE EAT SED - EXTENS OPENED	D BE DISCHARGED 4.55 HYPOTHESIS 0 F n OPER. ATED-SELECTED 0,002 "B" & NOMIN. PRESSURE INLET OUTLET 0 C.S. 0 C.S. 0 C.S. 0 C.S. 0 C.S. 5TD SS EAT Metal-to-Meta STD SS SED - EXTENS OPENED CLOSED R 0 WITH PAC OWS - MATERIAL 0 YES N - METAL 0 YES KET - NOZZLE - INJECT. NO	D BE DISCHARGED 4.55 HYPOTHESIS o FIRE ATED-SELECTED 0,002 "B" "B" & NOMIN. PRESSURE INLET 0 C.S. o 304 S. o C.S. o 304 S. o C.S. std st STD SS STD SS SED - EXTENS OPENED CLOSED R o YES OWS - MATERIAL o YES OWS - MATERIAL o YES KET - NOZZLE - INJECT. NO	D BE DISCHARGED 4.55 HYPOTHESIS o FIRE ATED-SELECTED 0,002 "B" "B" & NOMIN. PRESSURE INLET 0 C.S. 0 304 S.S. X 3* o C.S. 0 304 S.S. X 3* o C.S. x 316 S.S. o TL EAT Metal-to-Metal - STD S.S. STD SS SED - EXTENS OPENED CLOSED QWS - MATERIAL o YES OWS - MATERIAL o YES XET - NOZZLE - INJECT. NO	D BE DISCHARGED 4.55 kg/h O BE DISCHARGED 4.55 kg/h HYPOTHESIS o FIRE o LIQ n OPER. MISTAKE 0,002 cm2 "B" "B" "B" & NOMIN. PRESSURE INLET ½" #600 OUTLET 0 C.S. o 304 S.S. X 316 S.S. o C.S. o C.S. o TUNGST. ST STD SS STD SS STD SS SED - EXTENS OPENED CLOSED OWS - MATERIAL OWS - MATERIAL o YES OYES OWS - MATERIAL o YES OYES KET - NOZZLE - INJECT. NO	

				PRO	DJECT: PP-PE P	LOT PL	ANT			-
			TITL	E: Pres	sure Safety / Re	lief Valv	e Dat	a Sheet	4	شرکت ملی صنایع پتروشیمی
			Contractor J	ob No:		Doc. No: 9	900-DA	S-A4-IN-0	007	شرکت پژوهش و فناوری پتروشیم
			Owner Job N	lo:		Sheet No:	7	of 30		
		1	Tag No.					PSV ²	401	
			Piping or Vess	sel				V 1	41	
Can	aral	3	P&ID No. F	Piping Size	Class Line No	014		3/4"		
Gen ſ	Data	4	Fluid		State	HEX	ANE+AT	MER	o Liq	. o Aer. X Flash
	Julu		Pressure ratin	g	Piping material		#150			S.S
			Amb.Temp		Amb.Rel.Humidity Max	(-20)°C /	50°C	0.82	Bara	86%
		7	Area Classific	ation	Area		zone 1			100
			SP. WEIGHT	0.117	VISC. AT RELIEV. T.			kg/m3	0.83	mPas
			MOLEC. WEI		SPEC. HEAT RATIO	86				
		10	INLET COMP		MIN - MAX	0.8708 0.3 barg				
		12		SUPERIM		0.3			barg	
		13	BACK- PRESS		AT DISCHARGE	0.1			barg	
-	RATING	14	SET Press.	DOILT OF		3.5			barg	
CON	DITIONS	_	OVERPRESS	URE		10			%	
		-	OPERATING/		E TEMP.	30 / 125,	7		°C	
			TEMPERATU			-45 +150)		°C	
		18	FLOW RATE	TO BE DISC	HARGED	238.9			kg/h	
		19	CALCULATIO	N HYPOTH	ESIS	X F o OPER.	ÎRE MISTAKI	E	o LIC). EX.
		20	0 AREA: CALCULATED-SELECTED			0.5			cm2	
S	IZING	21	ORIFICE			"D"				
0		23	CONNECTION & NOMIN. PRESSURE			INLET ¾" #150 OUTLET 1" #150				
			BODY			o C.S.	o 304 S	.S. X 3	16 S.S.	
			BONNET			o C.S.				
Ма	aterials		SPRING			o C.S.	X 316 S	6.S. o Tl	JNGST. S	Т.
			STEM & GUID			STD SS				
			NOZZLE OR	SEAT		Metal-to-Met	al - STD	S.S.		
		_				STD SS CLOSED				
			LIFTING LEV		ENS OPENED	o WITH PAC	KING		o PLA	
ACC	CESS.&	_	BALANC. BEI			o YES	MING		UFLF	
	IONALS	_	BALANC. PIS			o YES				
-						NO				
		-	HEATING CO			NO				
Notes:		34	HEATING: JA	CKET - NOZ	ZZLE - INJECT.	NO				
		10/0	6/2024							
1 No.	0 Rev		6/2021 Date		A Itus	K.A Prepared		M.N Checked		AA.SH Approved
NU.	1/64		Jale	518	11113	Fiehalea		CHECKED		Approved

				PRO	JECT: PP-PE	PILOT PL	ANT			-	
			тіті	LE: Pres	sure Safety / F	elief Valv	/e Dat	a Sheet		شرکت ملی صنایع پتروشیمی	
		ľ	Contractor	Job No:		Doc. No:	900-DA	S-A4-IN-0	007	شرکت پژوهش و فناوری پتروشیمی	
		ľ	Owner Job	No:		Sheet No	: 8	of 30			
		1	Tag No.				RV 1402				
	ľ		Piping or Ves	sel				P 1	41		
General				Piping Size	Class Line N	014		1/2"	1F	S4	
Data			Fluid		State	HEΣ	KANE+AT	MER	XI	iq. o Aer. o Flash	
Data			Pressure rati		Piping material		#600			S.S	
	Ļ		Amb.Temp		Amb.Rel.Humidity Ma	(-20)°C /		0.82	Bara	86%	
			Area Classific			- 000	zone 1	1 - / - 0	0.07	100 mPas	
	-	_	SP. WEIGHT		VISC. AT RELIEV.						
	⊦		MOLEC. WE	PRESSIBILIT	SPEC. HEAT RATI	0.2896					
	⊦	_	OPERATING		MIN - MAX	40 barg					
	ŀ	12		SUPERIM		40 barg 0.5 barg					
	Ē	13	BACK- PRESS		AT DISCHARGE	0.8			barg		
OPERATIN	G		SET Press.			65			barg		
CONDITION	15 -	_	OVERPRES	SURE		10			%		
	Ī	16	OPERATING	/DISCHARG	e temp.	30			°C		
		17	TEMPERATU	JRE RANGE		-45 +10	0		°C		
		18	FLOW RATE	TO BE DISC	HARGED	4.55			kg/h		
		19	CALCULATIO	ON HYPOTH	ESIS		FIRE MISTAK	E	οL	IQ. EX.	
		_	AREA: CALCULATED-SELECTED			0,002			cn	n2	
SIZING		21	ORIFICE			"B"	-				
0.2		23	CONNECTION & NOMIN. PRESSURE			INLET OUTLET	OUTLET ¾" #150				
			BODY			o C.S.	o 304 S	S.S. X 3	16 S.S.		
			BONNET			o C.S.					
Materials			SPRING			o C.S.	X 316 S	S.S. o T	UNGST.	ST.	
			STEM & GUI			STD SS					
		-	NOZZLE OR	SEAT		Metal-to-Me	tal - STD	S.S.			
	_	_	PLUG			STD SS					
		-			ENS OPENED				~ D		
	- H	_				-	GRING		0 P		
	H	_									
	Ŀ										
	-	_									
ACCESS.8 OPTIONAL Notes:	S	31 32 33 34	LIFTING LEV BALANC. BE BALANC. PIS HEATING: JA	/ER ELLOWS - MA STON - META	AL ZZLE - INJECT.	CLOSED o WITH PAG o YES o YES NO NO	CKING		0 P	LAIN	
1 0	1:		6/2021		A	K.A		M.N		AA.SH	
No. Rev		D	ate	Sta	itus	Prepared		Checked	1	Approved	

			PROJECT: PP-	PE PI	LOT PLA	NT		<u>مه</u>	
		TITLE	Pressure Safet	y Rel	ief Valve I	Data Sh	neet	شرکت ملی صنایع پتروشیمی	
		Requisition No: Job No:			Sheet No:	of		نرکت پژوهش و فناوری پتروشیمی	
GENERAL	1 2		Equipment Number				PSV-2501 R-251		
DATA	4	P&ID No. Fluid	State			PYLENE	025	Gas	
		Amb.Temp An Operating Temper Operating Pressu		y Max	(-28)°C / 44	ĉ	0.82 Bara 20 30	86%	
	8	Design Temperati Relieving Temper	ıre (∘C)				-60 +180 82.4		
PROCESS CONDITION	11		g tempetature (Cp.)				105.4 0.0139		
	13	Molecular weight (Ratio of Specific I Compressibility Fa	Heats (Cp/Cv)		42.08 1.924 0.529				
	15	Valve type Rupture Disk			SPECIAL EXTENDED SEAT RELIFE VALVE No				
	18	Sizing standard Pressure vessel of	ode				API 520 ASME VIII API 526		
	20		(calculation hypothesis rking pressure (bar a))			Firecase 45.82		
	22 set pressure(bar a) 23 superimposed back pressure(bar a) 24 bulit up back pressure(bar)						38.82 1.22		
	25	Allowable overnre			0.6 bar 10% 2.16 cm ²				
	27	Orifice Designation					G		
ALVE SIZING & DATA	29	Body Materials Bonnet Materials Spring & Washer	Materials			:	316 S.S. 316 S.S. 316 S.S. & VT	Ā	
	31	Stem & Guide Ma Seat Type & Mate	terials				STD S.S. -to-Metal - ST		
	34	Seat Tightness St Nozzle or seat Ma Pluge Materials		F	API 527 ull Nozzle - S STD S.S.	S.			
	36	Bonnet type Lifting device			Opened Bonn VTA	et			
	39	Outlet connection	ze & pressure rate & ty size & pressure rate &		1½" #600 RF 2" #150 RF				
	41	Connection stand Outlet Piping isom Inlet Piping isome	etrics (mm)			A	SME ANSI B1 VTA VTA	6.5	
	43	Valve Height (mm Valve weight (Kg)					VTA VTA		
	46	Type of vessel vessel head desig	n				e construction e construction		
	48	vessel elevation vessel diameter vessel length					construction		
VESSEL DATA	50	liquid depth	alculated (increased 20	%)			 2.56 m ²	•	
	53	drainage presenc Type of insolation					NO 		
	55	Environment facto Min. required mas required mass flow	s flow (Kg/h)				12800 VTA		
	57 58	Heat of evaporation	on (Latent heat) (kJ/kg)				169.8 VTA		
PURCHASE	60	Model No. Vendor Calculatio Ordering code infe			VTA YES VTA				
Notes:	62	Certificates					YES		
2 1									
0 1 Rev		7/2021 Pate	IFA Status		K.A Prepared		M.N Checked	AA.SH Approved	

GENERAL DATA	2 3 4 5 6	Requisitio Job No: Tag No.		afety Rel	ief Valve Da	ta Sh	eet	2000				
	2 3 4 5 6	Job No: Tag No.	n No:	تيني TITLE: Pressure Safety Relief Valve Data Sheet								
	2 3 4 5 6				Sheet No:	of		ىركت پژوهش و فناورى پتروشيمى				
DATA	4 5 6	P&ID No.	ne, or Equipment Number				PSV-2601 R-261 026					
		Fluid Amb.Temp	State Amb Press Amb.Rel.Hu	midity Max	PROPY (-28)°C / 44°C	LENE	0.82 Bara	Gas 86%				
		Operating I	Temperature (°C) Pressure (bar a) mperature (°C)				20 30 -60 +180					
PROCESS CONDITION	9 10	Relieving T Density (Ko	emperature (∘C) g/m3)				82.4 105.4					
	12	Molecular v	t flowing tempetature (Cp.) weight (Kg/Kmol) pecific Heats (Cp/Cv))			0.0139 42.08 1.924					
	15	Compressi Valve type Rupture Dis	bility Factor (Z Factor)		0.529 SPECIAL EXTENDED SEAT RELIFE VALVE No							
	17 18	Sizing stan Pressure v	dard essel code			API 520 ASME VIII API 526						
	20 21	Max. allowa	low off (calculation hypoth able working pressure (bar				Firecase 45.82					
	23		re(bar a) sed back pressure(bar a) sk pressure(bar)			38.82 1.22 0.6 bar						
	25	Allowable o	verpressure Orifice area (Required act	10% 2.16 cm ²								
ALVE SIZING & DATA	28	Orifice Des Body Mater Bonnet Ma					G 316 S.S. 316 S.S.					
	30 31	Spring & W Stem & Gu	/asher Materials ide Materials				16 S.S. & VTA STD S.S.					
	33		& Materials ness Standard seat Materials				o-Metal - STD API 527 III Nozzle - S.S					
	36	Pluge Mate Bonnet type Lifting devis	e		0	STD S.S. pened Bonnet VTA						
	38 39	Inlet conne Outlet conn	ction size & pressure rate nection size & pressure rate		11/* #600 RF 2" #150 RF ASME ANSI B16.5							
	41 42	Inlet Piping	ng isometrics (mm) g isometrics (mm)			7.5	VTA VTA	5				
	44	Valve Heig Valve weigl Type of ves	ht (Kg)			See	VTA VTA construction m	ар				
	46 47	vessel hea vessel elev	d design ration				construction m construction m	-				
	49 50	vessel dian vessel leng liquid depth	th				construction m					
VESSEL DATA	52	Wetted sur drainage pr Type of ins		ed 20%)			8 m ² NO 					
	55		nt factor ed mass flow (Kg/h) ass flow (Kg/h)				1 12800 VTA					
	57 58	Heat of eva Manufactur	aporation (Latent heat) (kJ	J/kg)			169.8 VTA					
PURCHASE	60 61	Ordering co	lculations Required	VTA YES VTA								
Notes:	62	Certificates	3				YES					
2												
1 0 ^ Rev		7/2021 Date	IFA Status		K.A Prepared		M.N necked	AA.SH Approved				

		PROJECT:	PP-PE PI	LOT PL	ANT		-
		TITLE: Pressure Sa	fety / Re	lief Valv	/e Data Sh	eet	کت ملی صنایع پتروشیمی
		Contractor Job No:		Doc. No:	900-DAS-A4	-IN-0007	، پژوهش و فناوری پتروشیمی
		Owner Job No:		Sheet No	: 17 of	30	
	1	Tag No.		011001110		PSV 3201	
		Piping or Vessel				TK 321	
. .		P&ID No. Piping Size Class	Line No	032	1"		
General	-	Fluid State		P	ROPYLENE		o Liq. o Aer. X Flash
Data	5	Pressure rating Piping ma	terial		#300		S.S
	-	Amb.Temp Amb Press Amb.Rel.H		(-20)°C /	/ 50°C	0.82 Bara	86%
	7	Area Classification Area			zone 1		300
	8	SP. WEIGHT VISC. AT	RELIEV. T.	42	kg/m	3 C).1 mPa
	9	MOLEC. WEIGHT SPEC. H	EAT RATIO	42			
	10	INLET COMPRESSIBILITY FACTOR	l	0.718			
	11	OPERATING PRESS. MI	N - MAX	18		b	arg
	12	superimp. Mi	N - MAX	0.4		bi	arg
	13	SUPERIMP MI	ARGE	0.6		ba	arg
OPERATING	14	SETTING AL BANCO		24		bi	arg
CONDITIONS		OVERPRESSURE		10			%
	16	OPERATING/DISCHARGE TEMP.		47 / 59,	3	c	°C
-	-	TEMPERATURE RANGE		-45 +12	0	c	°C
	18	FLOW RATE TO BE DISCHARGED		2275 (1)	k	g/h
					, FIRE		o LIQ. EX.
	19	CALCULATION HYPOTHESIS	n OPER. N	/ISTAKE (2)			
	20	AREA: CALCULATED-SELECTED		1.1	0		cm2
		ORIFICE	"E"				
SIZING			INLET		1" #	#300	
	23	CONNECTION & NOMIN. PRESSU	OUTLET		2" #	#150	
	24	BODY		o C.S.	o 304 S.S.	X 316 S.S	
		BONNET		o C.S.			
		SPRING		o C.S.	X 316 S.S.	o TUNGS	ST. ST.
Materials		STEM & GUIDE		STD SS			
		NOZZLE OR SEAT			tal - STD S.S.		
		PLUG		STD SS	010 0.0.		
	-	BONNET: CLOSED - EXTENS OF		CLOSED			
	_	LIFTING LEVER		o WITH PAG	CKING	· · · · · · · · · · · · · · · · · · ·	PLAIN
ACCESS.&	_	BALANC. BELLOWS - MATERIAL		o YES		(2 1 L/ WIX
OPTIONALS		BALANC. PISTON - METAL		o YES			
		HEATING: JACKET - NOZZLE - INJI	-CT	NO			
		HEATING CONNECTIONS	_01.	NO			
2) Alterna	e is i ative	ncreased by 20% to consider piping and ir condition: TK 321 outlet closed, LV 3201 f	ully open				
(estimate	dC∖	=1,85 - upstream pres.=25barg) calcolate	d flowrate = 1	200Kg/h liqu	id propylene		

K.A

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M.N

Checked

AA.SH

Approved

12/26/2021

Date

IFA

Status

1 No. 0

Rev

		PR	ОЈЕСТ: РР-РЕ Р	ILOT PL	LANT			4
		TITLE: Pres	ssure Safety / R	elief Valv	ve Dat	a Sheet		شرکت ملی صنایع پتروشیمی
		Contractor Job No:		Doc. No:	900-DA	S-A4-IN-0	007	مرکت پژوهش و فناوری پتروشیمی
		Owner Job No:		Sheet No); 18	of 30		-
	1	Tag No.				PSV	3202	
		Piping or Vessel				PIPI	NG	
Comoral	3		Class Line No	032		1 1/2"	1F\$	64
General Data	4	Fluid	State	P	ROPYLE	NE	n L	iq. o Aer. o Flash
Dala	5	Pressure rating	Piping material		#600			S.S
	6	Amb.Temp Amb Pres	s Amb.Rel.Humidity Max	(-20)°C	/ 50°C	0.82	Bara	86%
		Area Classification	Area		zone 1			300
	-	SP. WEIGHT	VISC. AT RELIEV. T	. 500		kg/m3	0.57	mPas
		MOLEC. WEIGHT	SPEC. HEAT RATIO					
		INLET COMPRESSIBILI		0.18				
	_	OPERATING PRESS.	MIN - MAX	55			barg	
	12	SUPERIN		18			barg	
OPERATING	13		P AT DISCHARGE	0.6			barg	
CONDITIONS	-	SET Press.		80			barg	
	-	OVERPRESSURE		10			%	
	-	OPERATING/DISCHAR		40 / 60			°C	
	-	TEMPERATURE RANGE		-45 +12	20		°C	
	18	FLOW RATE TO BE DIS	CHARGED	(1)			kg/h	
	19	CALCULATION HYPOTH		FIRE		X LI	Q. EX.	
					. MISTAKI			
		AREA: CALCULATED-S	ELECTED	(1)		0	cm	2
SIZING	21	ORIFICE	"B" 1/" #600					
	23	CONNECTION & NOMIN	INLET ½" #600					
				OUTLET			³⁄4" #30	0
		BODY		o C.S.	o 304 S	.S. X3	16 S.S.	
		BONNET		o C.S.			NIGOT	~
Materials		SPRING		o C.S.	X 316 S	5.S. 01	UNGST.	S1.
		STEM & GUIDE		STD SS				
		NOZZLE OR SEAT		STD SS				
	-			STD SS				
		BONNET: CLOSED - EX	TENS OPENED	CLOSED			- DI	AINI
		LIFTING LEVER		o WITH PA	CKING		o PL	AIN
ACCESS.&	-	BALANC. BELLOWS - N		o YES				
OPTIONALS		BALANC. PISTON - MET HEATING: JACKET - NO		o YES NO				
		HEATING CONNECTION		NO				
Notes: 1) Liquid		ansion is not calculated		<u></u>				

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12/26/2021

Date

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Rev

1 No.

			PROJECT: PP-	PE PI	LOT PLAN	T		<u>مه</u>		
		TITLE	: Pressure Safe	ty Rel	ief Valve D	ata Sl	neet	مرکت ملی صابع پتروشیمی		
		Requisition No: Job No:			Sheet No:	of		ىركت پژوهش و فناورى پتروشيمى		
	1	Tag No.			Sheet No.	01	PSV-3401			
GENERAL	2		Equipment Number				V-341 034			
DATA		P&ID No. Fluid	State		1-H	exene	034	Gas		
	5	Amb.Temp Ar	nb Press Amb.Rel.Humidit	y Max	(-28)°C / 44°	С	0.82 Bara	86%		
		Operating Tempe Operating Pressu					AMB 1.32			
		Design Temperat					-45 +230			
PROCESS		Relieving Temper	ature (∘C)				116 12.53			
CONDITION		Density (Kg/m3) Viscosity at flowin	g tempetature (Cp.)				0.0084			
	12	Molecular weight	(Kg/Kmol)				84.16			
	_	Ratio of Specific Compressibility F			1.074 0.8966					
	-	Valve type			0.8966 Conventional Spring Loaded Pressure Relief Valve					
	_	Rupture Disk					No API 520			
		Sizing standard Pressure vessel	code				API 520 ASME VIII			
	19 Comply standard						API 526			
	20 Case for blow off (calculation hypothesis) 21 Max. allowable working pressure (bar a) 22 set pressure(bar a) 23 superimposed back pressure(bar a) 24 built up back pressure(bar) 25 Allowable overpressure						Firecase 26.82			
							4.32			
							1.22			
					0.6 bar 10%					
	26	calculated Orifice	area (Required actual		4.0 cm ²					
	27	discharge area) Orifice Designation	on (Letter)				н			
ALVE SIZING & DATA	28	Body Materials					316 S.S.			
		Bonnet Materials Spring & Washer	Matoriala				316 S.S. 316 S.S. & VT/	4		
		Stem & Guide Ma					STD S.S.	•		
		Seat Type & Mate				Meta	-to-Metal - STI	D S.S.		
		Seat Tightness Si Nozzle or seat Ma			1	API 527 Full Nozzle - S.S	3.			
	35	Pluge Materials			STD S.S.					
		Bonnet type Lifting device					Closed Bonnet VTA			
			ize & pressure rate & ty	/pe	1½"#150 RF					
	39	Outlet connection	size & pressure rate &				3" #150 RF			
		Connection stand Outlet Piping ison				A	SME ANSI B16 VTA	.5		
		Inlet Piping isome					VTA			
		Valve Height (mm)				VTA VTA			
		Valve weight (Kg) Type of vessel					vertical			
	46	vessel head desig	jn				ellipsoidal head	1		
		vessel elevation vessel diameter					700mm 1000mm			
		vessel length					2200mm			
		liquid depth					1700mm			
VESSEL DATA	-	Wetted surface c drainage presenc					7.35 m ² NO			
	53	Type of insolation					Hot - 40mm			
		Environment facto Min. required mas					0.5 2269 (Note1)			
		required mass flo					VTA			
			on (Latent heat) (kJ/kg)				288.9			
		Manufacturer Model No.					VTA VTA			
PURCHASE	_	Vendor Calculatio	ns Required				YES			
		Ordering code inf Certificates	ormation				VTA YES			
Notes1: Surface			o consider piping .				123			
2										
1						1		1		
0	12/2	7/2021	IFA		K.A		M.N	AA.SH		
Rev	[ate	Status		Prepared		Checked	Approved		

		PROJE	CT: PP-PE	PILOT PLA	NT	4					
		TITLE: Pressu	re Safety	Relief Valve	Data Sheet	شرکت ملی صنایع پتروشیمی					
		Requisition No: Job No:		Sheet No:	of	رکت پژوهش و فناوری پتروشیمی					
		Tag No. Service, Line, or Equipment Nu	mbor		PSV-34 P-341						
GENERAL DATA	3	P&ID No.	INDEL		034						
		Fluid Stat			Hexene 4°C 0.82 Ba	LIQ. ara 86%					
	_	Amb.Temp Amb Press Amb Operating Temperature (°C)	.Rel.Humidity Ma	ax (-28) C / 4	4 C 0.82 Ba 40	ara 80%					
	7	Operating Pressure (bar a)			55						
		Design Temperature (°C) Relieving Temperature (°C)			-45 +12 40	20					
PROCESS CONDITION		Density (Kg/m3)			661.1						
CONDITION		Viscosity at flowing tempetature	e (Cp.)		0.214						
		Molecular weight (Kg/Kmol) Ratio of Specific Heats (Cp/Cv	()		84.16						
		Compressibility Factor (Z Factor			0.3218						
		Valve type		Conv	Conventional Spring Loaded Pressure Relief Valve						
		Rupture Disk Sizing standard			No API 52	20					
		Pressure vessel code			ASME \						
	19 Comply standard				API 52	26					
		Case for blow off (calculation			Oper. Mis 100.82						
		Max. allowable working pressure set pressure(bar a)	re (bar a)		65.82						
		superimposed back pressure(b	oar a)		5.82						
						r					
	25	Allowable overpressure calculated Orifice area (Requir	ed actual		10%						
		discharge area)	ed dotadi		0.017 c	m²					
		Orifice Designation (Letter)			D 316 S.5	°					
ALVE SIZING & DATA		Body Materials Bonnet Materials			316 S.: 316 S.:						
	_	Spring & Washer Materials			316 S.S. 8	k VTA					
	_	Stem & Guide Materials			STD S.						
		Seat Type & Materials Seat Tightness Standard			Metal-to-Metal - API 52						
		Nozzle or seat Materials			Full Nozzle						
	35	Pluge Materials			STD S.						
		Bonnet type			Closed Bo VTA						
		Lifting device Inlet connection size & pressur	e rate & type		¹ / ₂ " #600						
		Outlet connection size & press		e	³/ ₄ " #300	RF					
		Connection standard			ASME ANSI						
		Outlet Piping isometrics (mm) Inlet Piping isometrics (mm)			VTA VTA						
		Valve Height (mm)			VTA						
		Valve weight (Kg)			VTA						
		Type of vessel vessel head design			vertica ellipsoidal						
		vessel elevation			700mr						
		vessel diameter			1000m						
		vessel length			2200m 1700m						
VESSEL DATA		liquid depth Wetted surface calculated			7.35 m						
		drainage presence			NO						
		Type of insolation			Hot - 40	mm					
	_	Environment factor Min. required mass flow (Kg/h)			285						
		required mass flow (Kg/h)			VTA						
	57	Heat of evaporation (Latent he	at) (kJ/kg)								
	_	Manufacturer Model No.			VTA VTA						
PURCHASE		Model No. Vendor Calculations Required			YES						
	61	Ordering code information			VTA						
Notes1:	62	Certificates			YES						
2											
1	12/2	7/2021 IEA									
v		ate Status		K.A	M.N	AA.SH					

			PROJECT: PI	P-PE PI	LOT PLA	NT		4		
		тіт	LE: Pressure Saf	ety Rel	ief Valve I	Data SI	neet	شرکت ملی صنایع پتروشیمی		
		Requisition Job No:	No:		Sheet No:	of		کت پژوهش و فناوری پتروشیمی		
	1	Tag No.			Sheet NO.	of	PSV-3403			
GENERAL	2		, or Equipment Number				P-341			
DATA		P&ID No.					034			
		Fluid Amb.Temp	State Amb Press Amb.Rel.Humi		1-H (-28)°C / 44	lexene	0.82 Bara	LIQ. 86%		
	-		mperature (°C)	ulty wax	(-20) 07 44	0	40	00%		
			essure (bar a)				55			
		Design Temp					-45 +120			
PROCESS			nperature (°C)				40 661.1			
CONDITION		Density (Kg/n Viscosity at fl	owing tempetature (Cp.)				0.2147			
		Molecular we			84.16					
			cific Heats (Cp/Cv)		1.283					
			ity Factor (Z Factor)		Convo	ational Car	0.3218	acture Delief Value		
		Valve type Rupture Disk			Conventional Spring Loaded Pressure Relief Valve No					
		Sizing standa			API 520					
		Pressure ves					ASME VIII			
		Comply stand		• •			API 526 Oper. Mistak			
			v off (calculation hypothes				100.82	e		
	21 Max. allowable working pressure (bar a) 22 set pressure(bar a) 23 superimposed back pressure(bar a) 24 built up back pressure(bar) 25 c			/			80			
							5.82			
					0.6 bar					
	25	Allowable over	rpressure ifice area (Required actua	al	10%					
		discharge are	ea)				0.017 cm ²			
			nation (Letter)				D			
ALVE SIZING & DATA		Body Materia Bonnet Mater					316 S.S. 316 S.S.			
		Spring & Was					316 S.S. & VT	A		
		Stem & Guide					STD S.S.			
		Seat Type &				Meta	I-to-Metal - ST	D S.S.		
		Seat Tightnes Nozzle or sea				F	API 527 Full Nozzle - S.	S.		
		Pluge Materia				STD S.S.				
		Bonnet type				Closed Bonne	et			
		Lifting device				VTA				
			on size & pressure rate & ction size & pressure rate		1" #600 RF 1" #300 RF					
		Connection s		a type		A	SME ANSI B1	6.5		
			isometrics (mm)				VTA			
			ometrics (mm)				VTA			
		Valve Height Valve weight					VTA VTA			
		Type of vess					vertical			
		vessel head of					ellipsoidal hea	ıd		
	47	vessel elevat	ion				700mm			
		vessel diame	ter				1000mm 2200mm			
		vessel length liquid depth					1700mm			
VESSEL DATA		Wetted surfa	ce calculated				7.35 m ²			
	52	drainage pres	sence				NO			
		Type of insola					Hot - 40mm			
		Environment	factor mass flow (Kg/h)				285			
		required mas					VTA			
			oration (Latent heat) (kJ/k	g)						
		Manufacturer					VTA			
PURCHASE		Model No.	lations Required				VTA YES			
2. (O. # (OL		Ordering cod			VES VTA					
Notes1:		Certificates					YES			
		I								
2										
1										
0		7/2021	IFA	_	K.A	-	M.N	AA.SH		
Rev	1	Date	Status		Prepared		Checked	Approved		

			DJECT: PP-PE P			a Shee	t	یت وشیمی بت وشیمی	می منابع بر شرکت ملی صنایع ب
		Contractor Job No:		Doc. No:	900-DA	S-A4-IN-	0007		کر دی ملی منابع ; کت پژوهش و فناور;
		Owner Job No:		Sheet No:	: 23	of 30			
	1	Tag No.				PS	V 3501		
	2	Piping or Vessel				F	Г 351		
a .	3	P&ID No. Piping Size	Class Line No	035					
General	4	Fluid	State	F	PROPAN	IE	ol	_iq. XAe	r. o Flash
Data	5	Pressure rating	Piping material						
			Amb.Rel.Humidity Max	(-20)°C /	′ 50°C	8.0	32 Bara		86%
	7	Area Classification	Area		zone 1			300	0
	8	SP. WEIGHT	VISC. AT RELIEV. T	44		kg/m3	0.119	9	mPas
	9	MOLEC. WEIGHT	SPEC. HEAT RATIC			-			
	10	INLET COMPRESSIBILIT	Y FACTOR	0.6269					
		OPERATING PRESS.	MIN - MAX	18			barg	1	
	12			0.4			barg	1	
	13		AT DISCHARGE	0.6			barg	1	
CONDITIONS	_	SET Press.		28			barg	1	
	_	OVERPRESSURE	10			%	,		
		OPERATING/DISCHARG	80			°C			
		EMPERATURE RANGE		-60 +18	0		°C		
	-	FLOW RATE TO BE DISC	CHARGED	22000 (1	1)		kg/h	1	
				o F	IRE		o L	IQ. EX.	
	19	CALCULATION HYPOTH	ESIS	X OPER.	MISTAK	Œ			
	20	AREA: CALCULATED-SE	LECTED	6.5		0	cn	n2	
0171010		ORIFICE		"J"					
SIZING	~~			INLET			2" #30	00	
	23	CONNECTION & NOMIN.	PRESSURE	OUTLET			3" #15	50	
	24	BODY		o C.S.	o 304 S	6.S. X	316 S.S.		
		BONNET		o C.S.					
		SPRING		o C.S.	X 316 S	S.S. 0	TUNGST.	ST.	
Materials		STEM & GUIDE		STD SS					
	28	NOZZLE OR SEAT		STD SS					
		PLUG		STD SS					
		BONNET: CLOSED - EXT	ENS OPENED	CLOSED					
	-	LIFTING LEVER		o WITH PAC	CKING		оP	LAIN	
ACCESS.&		BALANC. BELLOWS - MA	ATERIAL	o YES					
OPTIONALS		BALANC. PISTON - MET		o YES					
		HEATING: JACKET - NO		NO					
	-	HEATING CONNECTION		NO					

1) Valve failure: PV 2803 or 2903 fully open (Ø=24mm, Cv= 83,4, loop pres. =55barg) SV discharge only gas fase recived

1	0	12/26/2021	IFA	K.A	M.N	AA.SH
No.	Rev	Date	Status	Prepared	Checked	Approved

		TITLE: Pres	sure Safety / F	Relief Valv	ve Data	a Sheet		شرکت ملی صنایع پتروشیمی
		Contractor Job No:		Doc. No:	900-DA	S-A4-IN-00	007	کت پژوهش و فناوری پتروشیمی
		Owner Job No:		Sheet No:	: 24	of 30		
	1	Tag No.				PSV 3	3502	
	2	Piping or Vessel				V 3	51	
General	3	P&ID No. Piping Size	Class Line N	035				
Data	4	Fluid	State	PI	ROPYLEN	NE	o Li	iq. o Aer. X Flash
Dala	5	Pressure rating	Piping material					
	6	Amb.Temp Amb Press	Amb.Rel.Humidity Max	(-20)°C /	50°C	0.82	Bara	86%
	7	Area Classification	Area		zone 1			300
	8	SP. WEIGHT	VISC. AT RELIEV.	T. 70		kg/m3	0.123	mPas
	9	MOLEC. WEIGHT	SPEC. HEAT RATI	0 42				
	10	INLET COMPRESSIBILIT	TY FACTOR	0.6444				
	11	OPERATING PRESS.	MIN - MAX	18			barg	
	12	SUPERIM	IP. MIN - MAX	0.4			barg	
CONDITIONS 1	13	BUILT-UP	AT DISCHARGE	0.6			barg	
	14	SETTING AL BANCO		30			barg	
	15	OVERPRESSURE		10			%	
	16	OPERATING/DISCHARG	80			°C		
		TEMPERATURE RANGE		-60 +18	0		°C	
	18	FLOW RATE TO BE DIS	CHARGED	1064			kg/h	
	19	CALCULATION HYPOTH	IESIS	X F o OPER. M	FIRE MISTAKE	(1)	o Ll	Q. EX.
	20	AREA: CALCULATED-SE	ELECTED	0.4		0	cm	2
	21	ORIFICE		"D"				
SIZING	~~			INLET			1" #300	0
	23	CONNECTION & NOMIN	I. PRESSURE	OUTLET			2" #150	0
	24	BODY		o C.S.	o 304 S	.S. X 3	16 S.S.	
	25	BONNET		o C.S.				
Matariala	26	SPRING		o C.S.	X 316 S	.S. o Tl	JNGST. S	ST.
Materials	27	STEM & GUIDE		STD SS				
	28	NOZZLE OR SEAT		STD SS				
	29	PLUG		STD SS				
	30	BONNET: CLOSED - EX	TENS OPENED	CLOSED				
	31	LIFTING LEVER		o WITH PAC	CKING		o PL	AIN
ACCESS.&	32	BALANC. BELLOWS - M	ATERIAL	o YES				
OPTIONALS	33	BALANC. PISTON - MET	AL	o YES				
	34	HEATING: JACKET - NO	ZZLE - INJECT.	NO				
	35	HEATING CONNECTION	IS	NO				

1) Alternative condition: V 351 outlet closed; PV 3505 fully open (esitated CV=0,289 - upstream pres.=65barg)

calcolated flowrate = 1100Kg/h liquid propylene

			• • • • •			
1	0	12/26/2021	IFA	K.A	M.N	AA.SH
No.	Rev	Date	Status	Prepared	Checked	Approved

ntractor Job No: /ner Job No: / No. /ng or Vessel /ID No. Piping Size d ssure rating	sure Safety / Re	Doc. No: 9 Sheet No:	00-DAS-	A4-IN-00	بمی 007	شرکت ملی صنایع بتروشیمی شرکت پژوهش و فناوری پتروش
rner Job No: y No. ing or Vessel ID No. Piping Size d ssure rating		Sheet No:		f 30 PSV 3	بمی 007	
I No. ing or Vessel ID No. Piping Size d ssure rating			25 oʻ	PSV 3	601	
ing or Vessel ID No. Piping Size d ssure rating		036				
ing or Vessel ID No. Piping Size d ssure rating		036		PIPI	10	
d ssure rating		036		1 11 11	NG	
ssure rating	State			2"	1DS4	
		P	ROPANE		o Liq.	o Aer. X Flash
	Piping material	(00)00 (/	#300		_	000/
	Amb.Rel.Humidity Max	(-20)°C / 5		0.82	Bara	86%
a Classification	Area VISC. AT RELIEV. T.		zone 1	a/m3	0.119	300 mPas
LEC. WEIGHT	SPEC. HEAT RATIO	44	ĸ	g/m3	0.119	IIIFdS
	MIN - MAX				barg	
		0.4			•	
BUILT-UP		0.6			barg	
		28			barg	
ERPRESSURE		10			%	
	e temp.	53 / 70			°C	
		-60 +180				
OW RATE TO BE DISC	HARGED					
		X CW FA			o LIQ.	EX.
	LECTED			0	cm2	
IFICE					01 //000	
	PRESSURE	OUTLET			3" #150	
			o 304 S.S.	X 3 1	l6 S.S.	
			X 316 S.S	. o TL	JNGST. ST.	
	LINC. OI LINLD		KING		o PLAI	N
	ATERIAL	o YES			01 27 11	-
		o YES				
		NO				
ATING CONNECTION	S	NO				
	ET COMPRESSIBILIT ERATING PRESS. SUPERIMF BUILT-UP T Press. ERPRESSURE ERATING/DISCHARGE OW RATE TO BE DISC LCULATION HYPOTH EA: CALCULATED-SE CONNECTION & NOMIN. DY NNET RING EM & GUIDE VZZLE OR SEAT UG NNET: CLOSED - EXT TING LEVER LANC. PISTON - META ATING: JACKET - NOZ	ET COMPRESSIBILITY FACTOR ERATING PRESS. MIN - MAX SUPERIMP. MIN - MAX BUILT-UP AT DISCHARGE T Press. ERPRESSURE ERATING/DISCHARGE TEMP. MPERATURE RANGE DW RATE TO BE DISCHARGED LCULATION HYPOTHESIS EA: CALCULATED-SELECTED IFFICE MNECTION & NOMIN. PRESSURE DY NNET RING EM & GUIDE ZZLE OR SEAT UG NNET: CLOSED - EXTENS OPENED	ET COMPRESSIBILITY FACTOR0.6269ERATING PRESS.MIN - MAX18YSUPERIMP.MIN - MAX0.4BUILT-UP AT DISCHARGE0.6T Press.28ZERPRESSURE10ERATING/DISCHARGE TEMP.53 / 70MPERATURE RANGE-60 + 180DW RATE TO BE DISCHARGED8500LCULATION HYPOTHESIS0 FIX CW FA3.7EA: CALCULATED-SELECTED3.7CIFICE"H"DY0 C.S.NNECTION & NOMIN. PRESSUREINLETDY0 C.S.NNET0 C.S.EM & GUIDESTD SSVZZLE OR SEATSTD SSUGSTD SSNNET: CLOSED - EXTENS OPENEDCLOSEDTING LEVER0 WITH PACILANC. BELLOWS - MATERIAL0 YESATING: JACKET - NOZZLE - INJECT.NO	ET COMPRESSIBILITY FACTOR0.6269ERATING PRESS.MIN - MAX18SUPERIMP.MIN - MAX0.4BUILT-UP AT DISCHARGE0.6T Press.28ERPRESSURE10ERATING/DISCHARGE TEMP.53 / 70MPERATURE RANGE-60 + 180DW RATE TO BE DISCHARGED8500LCULATION HYPOTHESIS0 FIRE X CW FAILUREEA: CALCULATED-SELECTED3.7EIFICE"H"DY0 C.S.OY0 C.S.NNECTION & NOMIN. PRESSURE0 C.S.ING0 C.S.ZZLE OR SEATSTD SSZZLE OR SEATSTD SSUGSTD SSINRET: CLOSED - EXTENS OPENEDCLOSEDTING LEVER0 YESLANC. BELLOWS - MATERIAL0 YESLANC. PISTON - METAL0 YESATING: JACKET - NOZZLE - INJECT.NO	ET COMPRESSIBILITY FACTOR0.6269ERATING PRESS.MIN - MAX18SUPERIMP.MIN - MAX0.4BUILT-UP AT DISCHARGE0.6T Press.28ERPRESSURE10ERATING/DISCHARGE TEMP.53 / 70MPERATURE RANGE-60 +180OW RATE TO BE DISCHARGED8500LCULATION HYPOTHESIS0 FIRE X CW FAILUREEA: CALCULATED-SELECTED3.7ONNECTION & NOMIN. PRESSUREINLET OUTLETDY0 C.S.0 304 S.S.NNET0 C.S.RING0 C.S.XZLE OR SEATSTD SSUGSTD SSINLET: CLOSED - EXTENS OPENEDCLOSEDTING LEVER0 YESLANC. BELLOWS - MATERIAL0 YESLANC. PISTON - METAL0 YESATING: JACKET - NOZZLE - INJECT.NO	ET COMPRESSIBILITY FACTOR 0.6269 ERATING PRESS. MIN - MAX 18 barg ERATING PRESS. MIN - MAX 0.4 barg BUILT-UP AT DISCHARGE 0.6 barg T Press. 28 barg ERPRESSURE 10 % ERATING/DISCHARGE TEMP. 53 / 70 °C MPERATURE RANGE -60 +180 °C OW RATE TO BE DISCHARGED 8500 kg/h LCULATION HYPOTHESIS 0 FIRE o LIQ. X CW FAILURE 3.7 0 cm2 INFICE "H" 0 C.S. 0 304 S.S. X 316 S.S. NNET 0 C.S. 0 304 S.S. x 316 S.S. 0 TUNGST. ST. EM & GUIDE STD SS STD SS STD SS STD SS ING 0 C.S. X 316 S.S. 0 PLAIL LANC. BELLOWS - MATERIAL 0 YES 0 PLAIL 0 PLAIL LANC. PISTON - METAL 0 YES 0 YES 0 PLAIL

Contractor Job No: Owner Job No: Tag No. Piping or Vessel	sure Safety / Re		000-DAS-A4-IN		شرکت ملی صنایع پتروشیمی شرکت پژوهش و فناوری پتروشیمی
Owner Job No: Tag No. Piping or Vessel				I-0007	
Tag No. Piping or Vessel		Sheet No:	26 of 30		سرعت پروسس و صوری پیروسید
Piping or Vessel			20 01 0	D	
Piping or Vessel				SV 3602	
			F	PIPING	
P&ID No. Piping Size	Class Line No	036	3"	2DC4	4
Fluid	State		WATER	o Liq	. o Aer. X Flash
	Piping material		#300		C.S
	Amb.Rel.Humidity Max	(-20)°C /	50°C 0.	.82 Bara	86%
	Area		zone 1		300
			kg/m3	0.168	mPas
		-			
				borg	
				•	
		-			
				-	
			,		
I LOW RATE TO BE DISC	MARGED		IRE	0) FX
				0 Elg	
	LECTED	0.1		cm2	
ORIFICE					
CONNECTION & NOMIN.	PRESSURE	OUTLET			
BODY		o C.S.	o 304 S.S.	X 316 S.S.	
BONNET		o C.S.			
SPRING		o C.S.	X 316 S.S.	o TUNGST. S	T.
STEM & GUIDE		STD SS			
NOZZLE OR SEAT		STD SS			
PLUG		STD SS			
BONNET: CLOSED - EXT	ENS OPENED	CLOSED			
LIFTING LEVER		o WITH PAC	KING	o PLA	AIN
		o YES			
		o YES			
		NO			
HEATING CONNECTION	S	NO			
	Amb.Temp Amb Press Area Classification SP. WEIGHT MOLEC. WEIGHT MOLEC. WEIGHT INLET COMPRESSIBILIT OPERATING PRESS. SET Press. SUPERIMI OVERPRESSURE OPERATING/DISCHARG TEMPERATURE RANGE FLOW RATE TO BE DISC CALCULATION HYPOTH AREA: CALCULATED-SE ORIFICE CONNECTION & NOMIN. BODY BONNET SPRING STEM & GUIDE NOZZLE OR SEAT PLUG BONNET: CLOSED - EXT LIFTING LEVER BALANC. BELLOWS - M/ BALANC. PISTON - MET/	Amb.Temp Amb Press Amb.Rel.Humidity Max Area Classification Area SP. WEIGHT VISC. AT RELIEV. T. MOLEC. WEIGHT SPEC. HEAT RATIO INLET COMPRESSIBILITY FACTOR OPERATING PRESS. OPERATING PRESS. MIN - MAX	Amb.TempAmb PressAmb.Rel.Humidity Max(-20)°C /AreaSP. WEIGHTAreaImage: Constraint of the system	Amb.Temp Amb Press Amb.Rel.Humidity Max (-20)°C / 50°C 0 Area Classification Area zone 1 SP. WEIGHT VISC. AT RELIEV. T. 14.5 kg/m3 MOLEC. WEIGHT SPEC. HEAT RATIO 18 18 INLET COMPRESSIBILITY FACTOR 0.8804 0 0 OPERATING PRESS. MIN - MAX 4 4 SUPERIMP. MIN - MAX ATM 6 BUILT-UP AT DISCHARGE 0.6 0.6 0 SET Press. 29 0 0 0 OVERPRESSURE 10 0 0 0 OPERATING/DISCHARGE TEMP. 35 / 234 119.5 119.5 FLOW RATE TO BE DISCHARGED 119.5 X FIRE 0 OPER. MISTAKE CALCULATION HYPOTHESIS X FIRE 0 OPER. MISTAKE 0 OPER. MISTAKE AREA: CALCULATED-SELECTED 0.1 0.1 0ULET 0ULET BODY 0 C.S. 0 304 S.S. 0 C.S. 0304 S.S. BONNET 0 C.S. 0 304 S.S. 0ULET 0ULET BODY 0 C.S.	Amb.Temp Amb.Rel.Humidity Max (-20)°C / 50°C 0.82 Bara Area Classification Area zone 1 SP. WEIGHT VISC. AT RELIEV. T. 14.5 kg/m3 0.168 MOLEC. WEIGHT SPEC. HEAT RATIO 18 INLET COMPRESSIBILITY FACTOR 0.8804 OPERATING PRESS MIN - MAX 4 barg SE SUPERIMP. MIN - MAX 4 barg SE BUIL T-UP AT DISCHARGE 0.6 barg OVERPRESSURE 10 % OVERPRESSURE 10 % OVERPRESSURE 10 % CALCULATION DISCHARGE TEMP. 35 / 234 °C TEMPERATURE RANGE -10 + 250 °C FLOW RATE TO BE DISCHARGED 119.5 kg/n CALCULATION HYPOTHESIS X FIRE 0 LIC OUTLET "D" CONNECTION & NOMIN. PRESSURE "D" BODY <td< td=""></td<>

TITLE: Press Contractor Job No: Owner Job No: Tag No. Piping or Vessel P&ID No. Piping Size	sure Safety / Re	Doc. No: 9	900-DA	S-A4-IN-00	ی ی 007	شرکت ملی صنایع پتروشیمی شرکت ملی صنایع پتروشیمی		
Owner Job No: Tag No. Piping or Vessel					ى 07			
Tag No. Piping or Vessel		Sheet No:	27	Sheet No: 27 of 30				
Piping or Vessel		PSV 3603						
Piping or Vessel				PSV 3	603			
P&ID No. Pining Size				PIPI	NG			
	Class Line No	036		1 1/2"	2DC4			
Fluid	State		LPS		o Liq	. o Aer. X Flash		
Pressure rating	Piping material	(00)00 (#300	0.00		C.S		
		(-20)°C /		0.82	Bara	86%		
		14.5	zone 1	ka/m3	0 168	300 mPas		
				кулпэ	0.100	IIIF d5		
		_						
	MIN - MAX	6			barg			
		ATM						
BUILT-UP		0.6			barg			
SETTING AL BANCO		29			barg			
OVERPRESSURE		10			%			
	e temp.	165 / 234	ļ.		°C			
FLOW RATE TO BE DISC	CHARGED				0			
					o LIQ	. EX.		
	LECTED	0.1		0	cm2			
ORIFICE		_	1					
CONNECTION & NOMIN.	PRESSURE	INLET OUTLET			1" #300 2" #150			
BODY		o C.S.	o 304 S	.S. X 3′	16 S.S.			
		o C.S.						
			X 316 S	.S. o Tl	JNGST. ST	Г.		
	LING OF LINED		KING		n PI A	IN		
	ATERIAL	o YES			5. 67			
		o YES						
		NO						
HEATING CONNECTION	S	NO				-		
	Amb.Temp Amb Press Area Classification SP. WEIGHT MOLEC. WEIGHT MOLEC. WEIGHT INLET COMPRESSIBILIT OPERATING PRESS.	Amb.Temp Amb Press Amb.Rel.Humidity Max Area Classification Area SP. WEIGHT VISC. AT RELIEV. T. MOLEC. WEIGHT SPEC. HEAT RATIO INLET COMPRESSIBILITY FACTOR OPERATING PRESS. OPERATING PRESS. MIN - MAX Y X X X	Amb.Temp Amb Press Amb.Rel.Humidity Max (-20)°C / Area Classification Area	Amb.TempAmb PressAmb.Rel.Humidity Max(-20)°C / 50°CArea ClassificationAreazone 1SP. WEIGHTVISC. AT RELIEV. T.14.5MOLEC. WEIGHTSPEC. HEAT RATIO18INLET COMPRESSIBILITY FACTOR0.8804OPERATING PRESS.MIN - MAXG & BUPERIMP.MIN - MAXG & BUILT-UP AT DISCHARGE0.6SETTING AL BANCO29OVERPRESSURE10OPERATING/DISCHARGE TEMP.165 / 234TEMPERATURE RANGE-60 +250FLOW RATE TO BE DISCHARGED74.4CALCULATION HYPOTHESISX FIRE o OPER. MISTAKIAREA: CALCULATED-SELECTED0.1ORIFICE"D"BODYo C.S.BONNETo C.S.STEM & GUIDESTD SSNOZZLE OR SEATSTD SSPLUGSTD SSBONNET: CLOSED - EXTENS OPENEDCLOSEDLIFTING LEVERo YESBALANC. PISTON - METALo YESBALANC. PISTON - METALo YESHEATING: JACKET - NOZZLE - INJECT.NO	Amb. Temp Amb. Press Amb. Rel. Humidity Max (-20)°C / 50°C 0.82 Area Classification Area zone 1 2000 1 SP. WEIGHT VISC. AT RELIEV. T. 14.5 kg/m3 MOLEC. WEIGHT SPEC. HEAT RATIO 18 INLET COMPRESSIBILITY FACTOR 0.8804 OPERATING PRESS MIN - MAX 6 SUPERIMP. MIN - MAX ATM BUILT-UP AT DISCHARGE 0.6 3 SETTING AL BANCO 29 0 OVERPRESSURE 10 0 OPERATING/DISCHARGE TEMP. 165/234 TEMPERATURE RANGE -60 + 250 FLOW RATE TO BE DISCHARGED 74.4 CALCULATION HYPOTHESIS X FIRE ORIFICE "D" CONNECTION & NOMIN. PRESSURE "DUTLET" BODY o C.S. o 304 S.S. STEM & GUIDE STD SS NOZZLE OR SEAT STD SS PLUG STD SS BONNET: CLOSED - EXTENS OPENED CLOSED LIFTING LEVER WITH PACKING BALANC. BELLOWS - MATERIAL o YES BALANC. PISTON - METAL o YES BALANC. PISTON - METAL o YES	Amb.Temp Amb Press Amb.Rel.Humidity Max (-20)°C / 50°C 0.82 Bara Area Classification Area zone 1 SP. WEIGHT VISC. AT RELIEV. T. 14.5 kg/m3 0.168 MOLEC. WEIGHT SPEC. HEAT RATIO 18 INLET COMPRESSIBILITY FACTOR 0.8804 OPERATING PRESS MIN - MAX 6 barg SS SUPERIMP. MIN - MAX 6 barg SS BUILT-UP AT DISCHARGE 0.6 barg OVERPRESSURE 10 % OPERATING/DISCHARGE TEMP. 165 / 234 °C TEMPERATURE RANGE -60 + 250 °C FLOW RATE TO BE DISCHARGED 74.4 kg/h CALCULATION HYPOTHESIS 0 OPER.MISTAKE 0 LIQ 0 OPER.MISTAKE AREA: CALCULATED-SELECTED 0.1 0 cm2 0 UTLET 2" #150 BODY 0 C.S. 0 304 S.S. X 316 S.S. 0 TUNGST.S' STID SS STD SS STD SS STD SS STD SS PLUG STD SS OVITH PACKING 0 PLA		

		PROJECT: PP-PE PILOT PLANT TITLE: Pressure Safety / Relief Valve Data Sheet								_
		TITLE: Pres	ssure Safety	/ Relie	ef Valvo	e Data	Sheet		میں تروشیمی	میں شرکت ملی صنایع پ
		Contractor Job No:								کت پژوهش و فناور;
		Owner Job No:								
	1	Tag No.					SV 4	001		
		Piping or Vessel					V-4	01		
		P&ID No. Piping Size	Class Line	e No						
General Data	4	Fluid	State		PROPA	NE & ETH	YLENE	Gas	s	
Dala	5	Pressure rating	Piping material							
	6	Amb.Temp Amb Press	Amb.Rel.Humidity	Max	(-20)°C /	50°C	0.82	Bara		86%
	7	Area Classification	Area			zone 1			40	0
	8	SP. WEIGHT	VISC. AT RELIE	V. T.	1.7		kg/m3	8.67e	-3	CP
	9	MOLEC. WEIGHT	SPEC. HEAT RA	ATIO	40.7					
	10	INLET COMPRESSIBILI	TY FACTOR		0.986					
	11	OPERATING PRESS.	MIN - MA	۸X	1.5			barg		
	12	SUPERIM	1P. MIN - MA	٨X	0.4			barg		
OPERATING	13	BUILT-UF	P AT DISCHARGE		0.6			barg		
CONDITIONS	14	SETTING AL BANCO			30			barg		
CONDITIONO		OVERPRESSURE			10			%		
		OPERATING/DISCHARC			25			°C		
	17	TEMPERATURE RANGE			-60 +180)		°C		
F	18	FLOW RATE TO BE DIS	CHARGED		800			kg/h		
	19	CALCULATION HYPOTH	HESIS	×		IRE IISTAKE (2	2)	o Ll	Q. EX.	
	20	AREA: CALCULATED-SI	ELECTED		0.4		0	cm	2	
SIZING	21	ORIFICE			"D"	-				
UIZING	23	CONNECTION & NOMIN	I. PRESSURE	(INLET OUTLET			1" #300 1/2" #1		
	24	BODY		o (C.S.	o 304 S.S	. X 3	16 S.S.		
	25	BONNET		o (C.S.					
Matariala	26	SPRING		o (C.S.	X 316 S.S	6. o T	JNGST.	ST.	
Materials	27	STEM & GUIDE		ST	TD SS					
	28	NOZZLE OR SEAT		ST	TD SS					
	29	PLUG		ST	TD SS					
	30	BONNET: CLOSED - EX	TENS OPENED	CL	OSED					
	31	LIFTING LEVER		٥ /	WITH PAC	KING		o PL	AIN	
ACCESS.&		BALANC. BELLOWS - M		0	YES					
OPTIONALS	33	BALANC. PISTON - MET	ΓAL	٥ ٢	YES					
	34	HEATING: JACKET - NC	ZZLE - INJECT.	NC	C					
	35	HEATING CONNECTION	NS	NC	C					

			OJECT: PP-PE PI	LOT PLA	ANT				<u>ک</u>
		TITLE: Pre	ssure Safety / Re	lief Valve	e Data S	heet		میں تروشیمی	مرکت ملی صنایع پ
		Contractor Job No:						ى پتروشيمى	کت پژوهش و فناور:
		Owner Job No:							
	1	Tag No.				SV 4	002		
		Piping or Vessel				V-4	02		
0	3	P&ID No. Piping Size	Class Line No						
General Data	4	Fluid	State	PROPA	NE & ETHYL	ENE	Ga	s	
Data	5	Pressure rating	Piping material						
	6	Amb.Temp Amb Pres	s Amb.Rel.Humidity Max	(-20)°C /	50°C	0.82	Bara		86%
	-	Area Classification	Area		zone 1			40	-
		SP. WEIGHT	VISC. AT RELIEV. T.	30.5	kg/	m3	1.456	e-2	CP
		MOLEC. WEIGHT	SPEC. HEAT RATIO	40.7					
	-	INLET COMPRESSIBIL		0.9					
		OPERATING PRESS.	MIN - MAX	27			barg		
	12	SUPERI BUILT-U		0.4			barg		
OPERATING	13		P AT DISCHARGE	0.6			barg		
CONDITIONS		SETTING AL BANCO		30			barg		
		OVERPRESSURE		10			%		
		OPERATING/DISCHAR		80 -60 +180			0° 0°		
		TEMPERATURE RANG		-60 + 180			-		
	18	FLOW RATE TO BE DIS	SCHARGED	800 X F	IDE		kg/h	IQ. EX.	
	19	CALCULATION HYPOT	XOPER. M			ΟL	IQ. EA.		
	20	AREA: CALCULATED-S		0.4)	cm	12	
		ORIFICE		"D"		<i>.</i>	011		
SIZING				INLET			1" #30	0	
	23	CONNECTION & NOMI	N. PRESSURE	OUTLET			1/2" #	150	
	24	BODY		o C.S.	o 304 S.S.	X 3	16 S.S.		
	25	BONNET		o C.S.					
Materials	26	SPRING		o C.S.	X 316 S.S.	o T	JNGST.	ST.	
Materials	27	STEM & GUIDE		STD SS					
	28	NOZZLE OR SEAT		STD SS					
	29	PLUG		STD SS					
	30	BONNET: CLOSED - EX	KTENS OPENED	CLOSED					
		LIFTING LEVER		o WITH PAC	KING		o Pl	_AIN	
ACCESS.&		BALANC. BELLOWS - N		o YES					
OPTIONALS		BALANC. PISTON - ME		o YES					
		HEATING: JACKET - NO		NO					
	35	HEATING CONNECTIO	NS	NO					

TITLE: Pressure Safety Relief Valve Data Sheet Regulation No: Image: Safety Relief Valve Data Sheet 1 12 Bp No. PSV-4101 Sevido. Line, or Equipment Number PA1 PSV-4101 1 2 Boxido. Line, or Equipment Number PA1 1 2 None Number Note Number PA1 <			PROJECT: PP-P	PE PII	LOT PLANT		<u>مه</u>		
Job No: Sheet No: of CENERAL 1 Bay No. PSV-4101 2 Sersion, Line, of Egupment Number R-411 Control CANTA 4 PBD No. 041 Control 2 State Monorem 041 Control Contro Contro Control			TITLE: Pressure Safety	/ Relie	ef Valve Data	a Sheet	A B		
1 1g 30. PP-4401 CBENERAL 3 Quentity, or Eggement Number PA11 2 State Not. Of 1 5 Fadd State Mocromer 0 6 Anto Teng, Lano neg, Juno feet fundity Max (280/C / 44/C 0) 0.8 feat 06/5 FROCESS 10 Peeting Tensure (-C) -0 -0 -100 -0 10 Design Tengerature (-C) -0 -0 -100 -0 -0 11 Denity (Kg/mg) 42.84 -0 0.0116 -0 -0 12 Viscosity Tengerature (C) -0 0.0116 -0 -0 -0 12 Viscosity at flowing tempetature (C) -0 0.0116 -0 -0 -0 13 Batio of Specific Inteatic (CP/Co) -0 -0 -0 -0 -0 14 Batio of Specific Inteatic (CP/Co) -0 -0 -0 -0 -0 20 consty standard API 520 -0 -0 -0 -0 21 bati uptack ressure(bar a)					Sheet No:	of	ىرىت شى كىنى پەروسىمى ركت پژوهش و فناورى پتروشيمى		
CENTRAL 3 Justify of Capital Control 2 Flad State Monomers 0H Flad State Monomers 0B PROCESS 10 pertaing Temperature (-C) -0 10 11 Density (Kgm) 42.34 -0 0 12 Density Temperature (-C) -0 -0 -0 13 Density (Kgm) 42.34 -0 0 14 Density (Kgm) 42.34 -0 0 15 Operating Temperature (-C) -0 0.0116 -0 14 Density (Kgm) 42.34 -0 0 15 Operating Temperature (-C) -0.0116 -0 0 14 Density (Kgm) -0.0116 -0 0 0 15 Valve type Conventional Dong Leaded Pressure Relet Valve 10 -0 0 14 Density (Kgm) -0.0116 -0 0 0 0 16 Dressure Donk -0 -0 0 0 0 0 0 0 0 0 0		1		Ì					
DATA 4 State 041 6 Anb Teng Anb Press Jone ReitHundty Max (28)°C / 4*C 0.82 Bana 88% 7 Operating Freesprature (-C) 70 70 70 70 8 Design Temperature (-C) -40 + 140 70 70 70 11 Bensity (Kg/m3) -3.82 -40 + 140 70 70 12 Bensity (Kg/m3) -42.4 -12 + 140 70 -13 13 Molecular weight (Kg/m3) -3.85 -14 -14 -14 14 Batio of Specific Heads (Cp/C) -138 -14 -14 -14 14 Batio of Specific Heads (Cp/C) -138 -16 -16 -16 17 Ruptor Dak		_							
6 Arrb Trag Ann Press Desc Restandy Max (20)*Cl 4/C 0.28 Barn 08% 8 Operating Pressure (bar a) 3.442 3.442 3.442 3.442 9 Design Temperature (C) -00 160 -00 160 -00 160 -00 160 11 Density (Kg/MG) -0.33.5 -0.0116 -0.0116 -0.0116 13 Melocutar weight (Kg/MG) -0.33.5 -0.0116 -0.0116 -0.0116 14 Ratio of Specific Heads (Cp/C) 0.718 -0.0116 -0.0116 -0.0116 15 Compressibility Factor (2 Factor) 0.0116 -0.0116 -0.0116 -0.0116 16 Station Specific Heads (Cp/C) 0.38 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116 -0.0116		_							
Image: style style Process Design Temperature (-C) Pro- 24.82 ID besign (Temperature (-C) 70 ID besign (Temperature (-C) 0.0116 ID besign (Temperature (-C) 0.0216 ID comperature (-C) 0.0216 ID besign (Temperature (-C) 0.0216									
B Operating Pressure (par.a) 24.82 CONDITION 10 Relevant (pc) 70 11 Density (fights) 42.34 12 12 Molecular weight (fightson) 48.65 42.34 13 Molecular weight (fightson) 38.65 43.34 14 Ratio of Specific Heats (CpC) 1.36 0.719 15 Compossibility Factor (2 Factor) 0.719 0.719 16 Sizing standard API 500 43.84 17 Rutrue Disk No No 21 Gase for Boro off (calculation hypothesis) Oper-Matake 22 22 Max allowable working pressure (bar a) 3.82 3.82 23 sate pressure(bar a) 0.82 3.82 24 sate pressure(bar a) 0.9 cm² 3.82 25 Abuseble overpressure 10% 3.82 24 sate pressure(bar a) 0.9 cm² 3.62 25 Abuseble Ontherais 3.19 ES 3.62 24 Sate pressu		_		Max	(-28)°C / 44°C		86%		
PROCESS 10 Relieving Temperature (-C) 70 11 Density (Kg/m3) 44.24 12 Velocity at Idwing tempetature (-C) 0.0116 13 Molecular weight (Kg/m3) 38.55 13 Molecular weight (Kg/m3) 38.55 14 Atalo of Specific Heals (Cp/Cv) 1.38 15 Compressibility Factor (2 Factor) 0.7919 16 Pressure vise at code ASME VIII 17 Pupture Disk No 18 Storing standard API 520 19 Pressure vise at code ASME VIII 20 Comply standard API 520 21 Case for toword (cabulation hypothesis) Oper: Mettake 22 Mat is abweable working pressure (bar a) 0.62 24 superimposed back pressure(bar a) 0.82 25 Dati it pack pressure(bar a) 0.80 26 Dati it pack pressure(bar a) 0.81 28 Dati it pack pressure(bar a) 0.81 26 Datone thaterials 316 8.5.		8	Operating Pressure (bar a)						
PROCESS 12 test (kgm3) 42.3 12 Vexosity at flowing termplature (Cp.) 0.0116 13 Molecular weigh (kg/km4) 38.55 14 Ratio of Specific Heats (Cp/Cv) 1.36 15 Ocompressibility Factor (Z Factor) Conventional Spring Loaded Pressure Relet Value 14 Ratio of Specific Heats (Cp/Cv) 1.38 15 Value type Conventional Spring Loaded Pressure Relet Value 14 Ratio of Specific Heats (Cp/Cv) 0.38.22 20 Dompt Standard AP1 500 21 Case for bow off (calculation hypothesis) Oper-Matake 22 Max: allowable workpring pressure (for a) 3.2.62 23 set pressure(bar) 0.6 bar 24 bayenimoged back pressure(bar) 0.6 bar 25 Datity back pressure(bar) 0.6 bar 26 Ontice Designation (Letter) E 25 Datity back pressure(bar) 0.6 bar 30 Bornet Materials 316 5.5 31 Spring & Washer Materials 316 5.8 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>									
13 Molecular velgin(Kg/Kno) 38:55 14 Falio of Specific Heals (CpC) 1.36 15 Compressibility Factor (Z Factor) 0.7919 18 Vale type Convertional Spring Loaded Pressure Relet Valee 18 Sizing standard API 520 19 Pressure vessel code ANNE VIII 20 Comply standard API 526 21 Case for baov off (calculation hypothesis) Oper. Mistake 24 Max. allowable working pressure (bar a) 38:22 23 set pressure(bar a) 38:22 24 superimyobe took pressure(bar a) 0.8 bar 25 balk up back pressure(bar a) 0.8 bar 26 balk back pressure(bar) 0.8 bar 27 abore the pressure (bar a) 0.9 cm² 28 bore took off (calculation actual 0.9 cm² 29 balk Metrials 316:8.5. 30 String & Washer Materials 316:8.5. 31 String & Washer Materials 316:8.5. 33 String thewasite S		11	Density (Kg/m3)						
14 Ratio of Specific Heats (Cp/Cv) 1.38 15 Compressibility Factor (Z Factor) 0.7919 16 Valve type Conventional Spring Laaded Pressure Relief Valve 17 Rupture Disk No 18 Sizing standard API 520 19 Pressure vessel code ASME VIII 20 Case for blow off (calculation hypothesis) Oper. Matake 21 Case for blow off (calculation hypothesis) Oper. Matake 22 Max. allowable working pressure (bar a) 3.0.82 24 superimposed back pressure(bar a) 1.22 25 built up back pressure(bar) 0.6 bar 26 Body Materials 316.5.5. 28 Doffice area (Required actual 0.9 cm ² 28 Doffice Designation (Letter) E 28 Doffice Designation (Letter) E 29 Doffice Designation (Letter) E 21 Disto metals Materials 316.5.5. 31 Board Materials Materials 316.5.5. 32									
Ife Value type Convertional Spring Lacado Pressure Relief Value 17 Rupture Disk No 18 Sizing standard API 520 19 Pressure vessel code ASME VIII 20 Comyst standard API 525 21 Case for blow off (calculation typothesis) Oper. Mistake 22 Max. allowable working pressure (bar a) 30.82 24 superimposed back pressure(bar a) 0.6 bar 25 built ty back pressure(bar a) 0.9 cm² 26 Jondamb overpressure 10%. 26 Calculated Orifice area (Regured actual) 0.9 cm² 26 Jondamb overpressure 10%. 27 discharge area) 316.8.5. 28 Dody Materials 316.8.5. 30 Bornet Materials 316.8.5. 31 Steat Type & Materials 316.8.5. 32 Steat Type & Materials STD S.5. 33 Steat Type & Materials STD S.5. 36 Pulge Materials STD S.5. <td< td=""><td></td><td></td><td></td><td></td><td></td><td>1.36</td><td></td></td<>						1.36			
17 Rupture Disk No 18 Sizing standard API 520 19 Pressure vessel code ASME VIII 20 Compy standard API 526 21 Case for Blow off (acluidito hypothesis) Oper. Mistale 22 Max. allowable working pressure (bar a) 32.82 23 set pressure(bar a) 1.22 24 superingoed back pressure(bar a) 1.22 25 built up back pressure(bar a) 0.6 bar 26 Abovebic overpressure 10%. 26 cacluidated Orifice area (Required actual 0.9 on ² 26 Diffice Designation (Letter) E 27 Glob Chice area (Required actual 316.5.5. 30 Boart Materials 316.5.5. 31 Spring & Washer Materials 316.5.5. 32 Seat Type & Materials State S.5. 33 Seat Type & Materials State S.5. 34 Seat Type & Materials State S.5. 35 Boart Type Materials State S.5. <		-			Convention		ssure Relief Valve		
19 Pressure vessel code ASME VIII 20 Comply standard AP1 528 21 Case for Now off (calculation hypothesis) Oper. Mistake 22 Max. allowable working pressure(bar a) 32.82 23 set pressure(bar a) 30.82 24 superimposed back pressure(bar a) 0.6 bar 25 balt up back pressure(bar) 0.6 bar 24 superimposed back pressure(bar a) 0.9 cm² 25 balt up back pressure(bar) E 26 balt up back pressure(bar) E 26 balt up back pressure(bar) E 27 calculated Onfice area (Required actual discharge area) 0.9 cm² 28 bady Materials 316 8.5. 31 Spring & Washer Materials 316 8.5. 33 Seat Tightness Standard AP1 627 34 Seat Tightness Standard AP1 627 35 Brune type Closed Bornet 36 Divet on standard ASME ANSI B16.5 37 Bornet type Closed Bornet <td></td> <td></td> <td></td> <td></td> <td>Contonuon</td> <td></td> <td></td>					Contonuon				
20 Comply standard API 528 21 Case for blow off (calculation hypothesis) Oper. Mistake 22 Max. allowable working pressure (bar a) 30.82 23 set pressure(bar a) 122 25 built up back pressure(bar a) 0.6 bar 26 built up back pressure(bar) 0.6 bar 26 calculated Orifice area (Required actual discharge area) 0.9 cm² 28 Dorifice Designation (Letter) E 29 Ed ovinterialis 316 8.5. 30 Bornet Materialis 316 8.5. 31 Spring & Washer Materialis 316 8.5. 32 Steat Type & Materialis TD 5.5. 33 Seat Type & Materialis Full Nozie - S.5. 34 Seat Type & Materialis Full Nozie - S.5. 35 Bornet fype Closed Bornet 38 Lifting device VTA 39 Intel connection size & pressure rate & type 1" #150 RF 40 Outlet connection size & pressure rate & type 2" #150 RF 41 Connect			-						
22 Max. allowable working pressure (bar a) 32.82 23 set pressure(bar a) 30.82 24 superimposed back pressure(bar a) 1.22 25 ball up back pressure(bar a) 0.6 bar 26 ball up back pressure(bar) 0.6 bar 27 calculated Orifice area (Required actual 0.9 cm ²) 0.9 cm ² 20 Orifice Designation (Letter) E E 28 Bornet Materials 316 S.S. 316 S.S. 31 Spring & Washer Materials 316 S.S. 316 S.S. 32 Stent Type & Materials Metal-Metal- STD S.S. 315 S.S. 33 Spring & Washer Materials STD S.S. 315 S.S. 34 Seat Tightness Standard API S27 33 35 Nozzle or seat Materials STD S.S. 37 36 Puge Materials STD S.S. 37 37 Bornet type Closed bornet 36 34 Seat Tightness Standard AMI ACCE - S.S. 36 35 Bornet type Trace of t									
VALVE SIZING 30.82 23 Superimposed back pressure(bar a) 1.22 24 Superimposed back pressure(bar a) 0.6 bar 25 ballt up back pressure(bar a) 0.6 bar 26 Allowable overpressure 10% 27 cakuled Onfice area (Required actual discharge area) 0.9 om ² 28 Drifice Designation (Letter) E 28 Body Materials 316 S.S. 30 Bornet Materials 316 S.S. 31 Spring & Washer Materials 316 S.S. 32 Stent & Sciude Materials Strop S.S. 33 Spring & Washer Materials Strop S.S. 34 Seat Type & Materials Strop S.S. 35 Bornet type Closed Bornet 36 Nozzle or seat Materials Strop S.S. 37 Bornet type Closed Bornet 38 Inter connection size & pressure rate & type 2*#300 RF 40 Outlet connection size & pressure rate & type 2*#300 RF 41 Connection size & pressure rate & type 2*#3						<u> </u>			
24 superimposed back pressure(bar a) 1.22 25 bulk up back pressure(bar) 0.6 bar 26 Aldovable overpressure 10% 28 Aldovable overpressure 10% 28 Onlice Designation (Letter) E 28 Onlice Designation (Letter) E 29 Oddy Materials 316 5.8. 30 Bonet Muterials 316 5.8. 31 Spring & Washer Materials STD 5.8. 32 Stem & Cuide Materials STD 5.8. 33 Seat Type & Materials Materials 34 Seat Type & Materials StD 5.8. 33 Bornet type Closed Bornet 34 Seat Tightings Standard ASH 5.7. 35 Bornet type Closed Bornet 36 Pulge Materials STD 5.8. 37 Bornet type Closed Bornet 38 Iring device VTA 39 Iriet connection size & pressure rate & type 2 #150 BF 41 Connection standard ASHE									
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VALVE SIZING 2 calculated Orifice area (Required actual department of the second of t									
VALVE SIZING E 29 Ortico Designation (Letter) E 29 Body Materials 316 S.S. 30 Bornet Materials 316 S.S. 31 Spring & Washer Materials 316 S.S. 32 Stem & Guide Materials 316 S.S. 33 Seat Type & Materials MetaHo-Metal - STD S. 34 Seat Tiphtenss Standard API S27 35 Nozzle or seat Materials STD S.S. 36 Plage Materials STD S.S. 37 Bornet type Closed Bornet 38 Lifting device VTA 39 Initet connection size & pressure rate & type 1*#300 RF 40 Outlet connection size & pressure rate & type 1*#100 RF 41 Connection standard ASME ANSI B18.5 42 Outlet Pliping isometrics (mm) VTA 43 Jintet Piping isometrics (mm) VTA 44 Valve Height (mm) VTA 45 Valve weight (Kg) VTA 46 Type of vessel werical 47 vessel lead design ellipsoidal head 48 vessel ellevation 49 vessel length Sozionm 51 liguid depth <t< td=""><td></td><td colspan="4">27 calculated Orifice area (Required actual</td><td></td><td></td></t<>		27 calculated Orifice area (Required actual							
VALVE SIZING & DATA 30 Bornet Materials 316 S.S. 31 Spring & Washer Materials 315 S.S. 4.7A 32 Stem & Guide Materials 315 S.S. 4.7A 33 Seat Type & Materials Metal-to-Matel - STO S.S. 34 Seat Tightness Standard API 527 35 Nozzie or seat Materials Full Nozzie - S.S. 36 Puge Materials STD S.S. 37 Bornet type Closed Bornet 38 Lifting device VTA 39 Inter connection size & pressure rate & type 2* #150 RF 40 Outlet connection size & pressure rate & type 2* #150 RF 41 Connection size & pressure rate & type 2* #150 RF 41 Connection size & pressure rate & type 2* #150 RF 42 Outlet Piping isometrics (mm) VTA 43 Intel Piping isometrics (mm) VTA 44 Stave Height (mm) VTA 45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel lead design eilipsoidal head 48 vessel eleaded 11.3 m ² 51 Siguid depth 52 Wetted surface calculated 11.3 m ²									
& DATA Of Bolmet Materials 30.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.			Body Materials						
32 Stem & Guide Materials STD S.S. 33 Seat Tightness Standard AP37 34 Seat Tightness Standard AP37 35 Nozzle or seat Materials Full Nozzle - S.S. 36 Pluge Materials STD S.S. 37 Bornet type Closed Bornet 38 Lifting device VTA 39 Infet connection size & pressure rate & type 1*#300 RF 40 Outlet connection size & pressure rate & type 2*#150 RF 41 Connection standard ASME ANS 1816.5 42 Outlet Piping isometrics (mm) VTA 43 Infet Piping isometrics (mm) VTA 44 Vake Height (mm) VTA 45 Vale Weight (Kg) VTA 46 Type of vessel vestel and 47 vessel levation m 48 vessel length 5020mm 50 vessel length 5020mm 51 iquid depth 52 Weted surface calculated 11.3	ALVE SIZING	30					<u></u>		
34 Seat Tightness Standard API 527 35 Nozzle or seat Materials Full Nozzle - S.S. 36 Pluge Materials STD S.S. 37 Bornet type Closed Bornet 38 Lifting device VTA 39 Inlet connection size & pressure rate & type 1" #300 RF 40 Outlet connection size & pressure rate & type 2" #150 RF 41 Connection standard ASME ANSI B16.5 42 Outlet Connection standard ASME ANSI B16.5 42 Outlet connection standard ASME ANSI B16.5 43 Inet Piping isometrics (mm) VTA 43 Inet Piping isometrics (mm) VTA 44 Valve Height (mm) VTA 44 44 Valve Height (mm) VTA 46 47 vessel elevation									
Image: Statistic Statistics Full Nozzle - S.S. 36 Pluge Materials STD S.S. 37 Bonnet type Closed Bonnet 38 Lifting device VTA 39 Inst connection size & pressure rate & type 1*#300 RF 40 Outlet connection size & pressure rate & type 2*#150 RF 41 Connection size & pressure rate & type 2*#150 RF 42 Outlet Piping isometrics (mm) VTA 43 Intel Piping isometrics (mm) VTA 43 Intel Piping isometrics (mm) VTA 44 Valve Height (Mg) VTA 45 Valve weight (Kg) VTA 46 Type of vessel wetrical 47 vessel head design ellipsoidal head 48 vessel idameter 1000mm>D>600mm 50 vessel idameter 1000mm>D>600mm 51 Riguid depth 52 Wetted surface calculated 11.3 m² 53 drainage presence NO 54 Type of insolation <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td colspan="3">D S.S.</td>							D S.S.		
37 Bornet type Closed Bornet 38 Lifting device VTA 39 Inlet connection size & pressure rate & type 1*#300 RF 40 Outlet connection size & pressure rate & type 2*#150 RF 41 Connection standard ASME ANSI B16.5 42 Outlet Piping isometrics (mm) VTA 43 Inlet. Piping isometrics (mm) VTA 44 Valve Height (mm) VTA 45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel head design ellipsoidal head 48 vessel devidton			-				i.		
38 Lifting device VTA 39 Inlet connection size & pressure rate & type 1"#300 RF 40 Outlet connection size & pressure rate & type 2"#150 RF 41 Connection standard ASME ANSI B16.5 42 Outlet Piping isometrics (mm) VTA 43 Intel Piping isometrics (mm) VTA 43 Intel Piping isometrics (mm) VTA 44 Valve Height (Mg) VTA 45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel head design ellipsidial head 48 vessel leagth 500mm 51 liquid depth 49 vessel length 5020mm 51 liquid depth 52 Weted surface calculated 11.3 m² 53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) VTA			-						
40 Outlet connection size & pressure rate & type 2*#150 RF 41 Connection standard ASME ANSI B16.5 42 Outlet Piping isometrics (mm) VTA 43 Inlet Piping isometrics (mm) VTA 44 Valve Height (mm) VTA 45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel head design eilipsoidal head 48 vessel diameter 1000mm>D-600mm 50 vessel length 5000mm 50 vessel length 5000mm 51 liquid depth 43 Type of insolation Hot -50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 50 Monufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES									
41 Connection standard ASME ANSI B16.5 42 Outlet Piping isometrics (mm) VTA 43 Inlet Piping isometrics (mm) VTA 44 Valve Height (mm) VTA 45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel head design ellipsoidal head 48 vessel elevation m 49 vessel lead design 1000mm>De600mm 50 vessel length 5020mm 51 lequid depth 52 Wetted surface calculated 11.3 m ² 53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 60 Model No. VTA 61 Ordering code information VTA 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO YES									
42 Outlet Piping isometrics (mm) VTA 43 Inlet Piping isometrics (mm) VTA 44 Valve Height (mm) VTA 44 Valve weight (Kg) VTA 45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel head design ellipsoidal head 48 vessel design ellipsoidal head 49 vessel design illipsoidal head 50 vessel leavation m 49 vessel leapth 5020mm 51 liquid depth 50 vessel length 5020mm 51 liquid depth 52 Wetted surface calculated 11.3 m ² 53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 59				ype			.5		
44 Value Height (mm) VTA 45 Value Height (mm) VTA 45 Value weight (Kg) VTA 46 Type of vessel vertical 47 vessel head design ellipsoidal head 48 vessel leavation m 49 vessel deviation m 50 vessel length 5020mm 51 liquid depth m 52 Wetted surface calculated 11.3 m ² 53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 50 Monufacturer VTA 61 Vendor Calculations Required YES Notes1: line 4105 HECO YES YES						VTA			
45 Valve weight (Kg) VTA 46 Type of vessel vertical 47 vessel design ellipsoidal head 48 vessel elevation m 49 vessel elevation m 49 vessel elevation m 49 vessel elevation m 50 vessel length 5020mm 51 liquid depth 52 Wetted surface calculated 11.3 m ² 53 drainage presence NO 54 Type of insolation Hot - Somm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 9 Manufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates									
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48 vessel elevation m 49 vessel lameter 1000mm>D>600mm 50 vessel length 5020mm 51 iquid depth 52 Wetted surface calculated 11.3 m² 53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 70 Model No. VTA 60 Model No. VTA 61 Vendor Calculations Required YES 70 Ged information VTA 63 Certificates YES 70 Settificates YES							1		
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51 iquid depth 52 Wetted surface calculated 11.3 m ² 53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO VES YES							nm		
53 drainage presence NO 54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 59 Manufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO									
54 Type of insolation Hot - 50mm 55 Environment factor 56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 59 Manufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO	VESSEL DATA	_							
56 Min. required mass flow (Kg/h) 2950 57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 59 Manufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO									
57 required mass flow (Kg/h) VTA 58 Heat of evaporation (Latent heat) (kJ/kg) 59 Manufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO									
58 Heat of evaporation (Latent heat) (kJ/kg) FURCHASE 59 Manufacturer VTA 60 Model No. VTA 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO									
Bit Model No. VTA PURCHASE 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO YES		58	Heat of evaporation (Latent heat) (kJ/kg)						
PURCHASE 61 Vendor Calculations Required YES 62 Ordering code information VTA 63 Certificates YES Notes1: line 4105 HECO YES YES									
63 Certificates YES Notes1: line 4105 HECO 2 1 1 2 1	PURCHASE					YES			
2 1 1 1									
	Notes1: line 410					120			
	2								
0 12/27/2021 IFA K.A M.N AA.SH	1								
Rev Date Status Prepared Checked Approved				~	1				

			PROJECT: PP-	PE PI	LOT PLAN	Т			4	
		т	ITLE: Pressure Safe	ty Rel	ief Valve D	ata Sł	neet	4	مرکت ملی صابع پتروشیمی	
		Requisitio	on No:		Shoot No:	of			کت پژوهش و فناوری پتروشیمی	
	1	Tag No.			Sheet No:	of	PSV-420)1		
GENERAL		Service, Li	ine, or Equipment Number				R-421			
DATA		P&ID No.					042			
		Fluid Amb.Temp	State Amb Press Amb.Rel.Humidi		(-28)°C / 44°C		0.82 Ba	ra	Gas 86%	
	-	· · · · · ·	Temperature (°C)	ly wax	(-20) 07 44 0	,	70	a	0070	
			Pressure (bar a)				28.82			
			mperature (∘C)				-60 +18	0		
PROCESS			Femperature (∘C)				70 31.32			
CONDITION		Density (K Viscosity a	g/m3) at flowing tempetature (Cp.)				0.0129			
			weight (Kg/Kmol)				28.09			
			pecific Heats (Cp/Cv)				1.146			
			ibility Factor (Z Factor)		Convert	ional Cari	0.9061		ra Daliaf Valva	
		Valve type Rupture Di			Conveni	опа эрп	No	FIESSU	re Relief Valve	
		Sizing star					API 520)		
	18	Pressure v	vessel code				ASME VI			
		Comply sta					API 526			
			Now off (calculation hypothesis	5)			Oper. Mist 32.82	ake		
		Max. allow set pressu	able working pressure (bar a) re(bar a)				32.82			
			sed back pressure(bar a)				1.22			
	24	built up bac	ck pressure(bar)				0.6 bar			
	25	Allowable of	overpressure				10%			
	26	discharge	Orifice area (Required actual area)				1.45 cm	2		
	27	Orifice De	signation (Letter)				F			
ALVE SIZING & DATA	<u> </u>	Body Mate					316 S.S			
	29	Bonnet Ma					316 S.S 316 S.S. &			
		Spring & Washer Materials Stem & Guide Materials					STD S.S. &			
			& Materials			Metal	-to-Metal -		.S.	
	33	Seat Tight	ness Standard				API 527	7		
			seat Materials			F	ull Nozzle -			
		Pluge Mate Bonnet typ					STD S.S Closed Bor			
		Lifting devi					VTA		-	
			ection size & pressure rate & ty	/pe			1 ¹ / ₂ " #300	RF		
			nection size & pressure rate &	type			2" #150 F			
		Connection				A	SME ANSI	B16.5		
			ng isometrics (mm) g isometrics (mm)				VTA			
		Valve Heig					VTA			
		Valve weig					VTA			
		Type of ve					vertical			
		vessel hea					ellipsoidal h	1690		
		vessel elev				15	00mm>D>9	900mm		
	49	vessel leng	gth				7000mn	n		
		liquid depth					?			
VESSEL DATA		Wetted sur drainage p	rface calculated				23 m ²			
		Type of ins					Hot - 60m	nn		
		Environme								
			ed mass flow (Kg/h)				4000			
			ass flow (Kg/h)				VTA			
		Heat of ev Manufactu	aporation (Latent heat) (kJ/kg))			VTA			
		Model No.					VTA			
PURCHASE			lculations Required				YES			
	61	Ordering c	ode information				VTA			
Notes1: LINE 4		Certificate HDPE	s				VTA			
2										
1										
0	12/2	7/2021	IFA		K.A		M.N		AA.SH	
Rev		Date	Status		Prepared	0	Checked		Approved	

			PI	ROJECT: PP	-PE PI	LOT PLAN	Г	<u>مه</u>		
		т	ITLE: Pi	essure Safe	ty/Rel	ief Valve Da	ta Sheet	شرکت ملی صنایع پتروشیمی		
		Requisition	on No:			0		ئت پژوهش و فناوری پتروشیمی		
	1	Job No: Tag No.				Sheet No: 1	of 1 PSV-4401			
			ne. or Equip	ment Number			T-351			
GENERAL		Quantity	no, or Equip				2			
DATA	4	P&ID No.					0044			
	5	Fluid		State		Propane &	Ethylene	Gas		
		Amb.Temp		ss Amb.Rel.Humid	ity Max	(-28)°C / 44°C	0.82 Bara	a 86%		
	_			emperature (∘C)			55 / 60			
			Pressure (b				-60 +230			
		-	mperature (« to be Discha				-60 +230			
PROCESS		Density (Kg		ilgeu (kg/ili)			42			
CONDITION			· /	petature (cP.)			0.01			
		-	weight (Kg/K				44.1 & 28.0	05		
			pecific Heats				1.4			
			ibility Factor				0.7673			
	16	Valve type				Conve	ntional Spring Loade	d Pressure Valve		
	17	Rupture Di	isk				No			
		Sizing stan					API 520			
			vessel code				ASME VII			
		Comply sta					API 526			
				ulation hypothesis	S)		Oper. Mista 29	ke		
				pressure (barg)			29			
		set pressu	sed back pro	esure/barg)			0.4			
			ck pressure				0.6			
			Allowable overpressure				10%			
		calculated Orifice area (Required actual				0.6 in ²				
	27	discharge								
			signation (Le	tter)			H			
VALVE SIZING		Body Mate					316 S.S. 316 S.S.			
& DATA	30	Bonnet Ma		riala			316 S.S. 316 S.S.			
			Vasher Mate				STD S.S.			
	_		& Materials	5			Metal-to-Metal - S	TD S.S.		
			ness Standa	rd			API 527			
	_	v	seat Material				Full Nozzle - 3	S.S.		
	36	Pluge Mate	erials				STD S.S.			
	37	Bonnet typ	e				Closed Bon	net		
	38	Lifting devi	ice				VTA			
	39	Inlet conne	ection size &	pressure rate & ty	/pe		2" #300 RI			
				& pressure rate &	type		3" #150 R			
		Connection					ASME ANSI B	16.5		
			ng isometric				VTA VTA			
			g isometrics	(mm)			VTA			
		Valve Heig Valve weig					VTA			
		Manufactu					VTA			
		Model No.					VTA			
PURCHASE		Certificates	s				VTA			
	49	Ordering c	ode informa	ion			VTA			
	50									
lotes1: VTA =	Vend	or To Advis	se							
2										
1					1					
0	8/1	/2021	1	IFA	M.AGH	IAMOHAMMADI	A.A.SHOKRI	N.NOUHJAH		
			1		1					

			P	ROJECT: PP	P-PE P	LOT PLAN	ſ		<u>ه</u>		
		т	ITLE: P	ressure Safe	ety/Re	lief Valve Da	ta Shee	ət	مرکت ملی صنایع پتروشیمی		
		Requisitio	on No:						کت پژوهش و فناوری پتروشیمی		
	4	Job No:				Sheet No:	of	SV-4402			
		Tag No. Service Li	ne or Equir	ment Number			F	D-351			
GENERAL		Quantity	ne, or Equip					1			
DATA	4	P&ID No.						0044			
	5	Fluid		State		1-Bute	ene		Gas		
	6	Amb.Temp	Amb Pr	ess Amb.Rel.Humid	dity Max	(-28)°C / 44°C		0.82 Bara	86%		
	-		· · · ·	emperature (∘C)				110 / 110			
			Pressure (I					20			
		-	mperature (-60 +230 50			
PROCESS		Density (Kg		arged (kg/hr)				462			
CONDITION			· /	npetature (cP.)				0.0737			
		-	weight (Kg/I					56.1			
			pecific Heats					1.4			
			ibility Factor					0.7673			
		Valve type				Conve	ntional Spri	-	ressure Valve		
	_	Rupture Di						No			
		Sizing stan						API 520			
			vessel code					API 526			
		Comply sta		culation hypothes	ic)			er. Mistake			
			,	g pressure (barg)	,		0	29			
		set pressu		g pressure (barg)				29			
				essure(barg)				0.4			
	25	built up ba	ck pressure	(barg)				0.6			
	26	Allowable overpressure calculated Orifice area (Required actual						10%			
	27			(Required actual	I			0.04 in ²			
	28	discharge	signation (Le	atter)				D			
		Body Mate						316 S.S.			
VALVE SIZING		Bonnet Ma						316 S.S.			
& DATA	31	Spring & W	Vasher Mate	erials		316 S.S.					
	32	Stem & Gu	uide Materia	s		STD S.S.					
	33	Seat Type	& Materials					Metal - STD	S.S.		
			ness Standa					API 527			
			seat Materia	ls				Nozzle - S.S.			
		Pluge Mate						STD S.S. sed Bonnet			
		Bonnet typ Lifting devi					Cit	VTA			
				pressure rate & t	vne		1/3	#300 RF			
	-			& pressure rate &				'#150 RF			
	-	Connectior		•	,,		ASM	E ANSI B16.	5		
	42	Outlet Pipi	ng isometrio	cs(mm)				VTA			
	43	Inlet Piping	g isometrics	s (mm)				VTA			
		Valve Heig						VTA			
		Valve weig						VTA			
		Manufactur	rer					VTA VTA			
PURCHASE		Model No. Certificates	\$					VTA			
. UNUTROL	-		s ode informa	ition				VTA			
	50	S. a ching o									
lotes1: VTA =	venc	or to advise	9								
2											
1			1								
0	8/1	/2021		IFA	M.AGI	HAMOHAMMADI	A.A.S	HOKRI	N.NOUHJAH		
1			1								

			PI	ROJECT: PP	-PE PI	LOT PLAN	Г		<u>مه</u>		
		Т	ITLE: PI	ressure Safe	ety/Re	lief Valve Da	ta Shee	ət	مرکت ملی صنایع پتروشیمی		
		Requisitio	on No:						ت پژوهش و فناوری پتروشیمی		
	1.	Job No:				Sheet No:	of	01/ / / 00			
		Tag No.						SV-4403 Line to E-35	0		
	2		ne, or Equip	ment Number			LF3	2	2		
GENERAL DATA	4	Quantity P&ID No.						0044			
	_	Fluid		State		stea	m		vapor		
	6	Amb.Temp	Amb Pre	ess Amb.Rel.Humid	lity Max	(-28)°C / 44°C		0.82 Bara	. 86%		
	7			emperature (°C)				120 / 120			
	8	Operating	Pressure (b	arg)				2			
	9	Design Tei	mperature («	C)				-60 +230			
PROCESS	10	Flow Rate	to be Discha	arged (kg/hr)				50			
CONDITION	11	Density (Ke	g/m3)					1.7			
			-	npetature (cP.)				0.01			
			weight (Kg/k					18			
			becific Heats			1.283					
	_		ibility Factor	(∠ Factor)		Conve	ntional Spri		ressure Valve		
		Valve type Rupture Di				COINE	она орп	No	Coodic Valve		
		Sizing stan						API 520			
		Pressure v						ASME VIII			
		Comply sta						API 526			
				ulation hypothesi	s)		Op	er. Mistake			
				pressure (barg)				29			
	23	set pressu	re(barg)					29			
	24	superimpo	sed back pr	essure(barg)				ATM			
2	25	built up ba	ck pressure	barg)				0.6			
	26	Allowable overpressure calculated Orifice area (Required actual						10%			
	27	discharge		(Required actual				0.06 in ²			
	28	-	signation (Le	tter)				D			
		Body Mate						316 S.S.			
VALVE SIZING		Bonnet Ma						316 S.S.			
& DATA	31	Spring & W	Vasher Mate	rials		316 S.S.					
	32	Stem & Gu	ide Material	S		STD S.S.					
	33	Seat Type	& Materials					Metal - STD	S.S.		
			ness Standa					API 527			
			seat Materia	S				Nozzle - S.S			
		Pluge Mate						STD S.S. osed Bonnet			
		Bonnet typ Lifting devi					CIC	VTA			
				pressure rate & tv	Vne		1	#300 RF			
	_			& pressure rate &				#150 RF			
	_	Connection						E ANSI B16.	5		
			ng isometric	s(mm)				VTA			
	43	Inlet Piping	g isometrics	(mm)				VTA			
		Valve Heig	-					VTA			
	45	Valve weig	ht (Kg)					VTA			
	46	Manufactu	rer					VTA			
DUD 0 · · · · ·		Model No.						VTA			
PURCHASE	_	Certificates		•				VTA			
	49 50	Ordering c	ode informa	tion				VTA			
otes1: VTA =		lor to advise	e								
2											
1											
0	8/1	/2021		IFA	M.AGI	HAMOHAMMADI	A.A.S	HOKRI	N.NOUHJAH		
		Date		Status	1	Prepared	01	cked	Approved		

			P	ROJECT: PP	-PE PI	LOT PLAN	ſ		<u>ه</u>		
		т	TTLE: P	ressure Safe	ety/Rel	ief Valve Da	ita She	et	شرکت ملی صنایع پتروشیمی		
		Requisitio	on No:						کت پژوهش و فناوری پتروشیمی		
	4	Job No:				Sheet No:	of	PSV-4404			
		Tag No. Service Liv	ine or Equir	ment Number				Line of E-35	1		
GENERAL		Quantity	ine, or Equip				0111	1			
DATA	4	P&ID No.						0044			
	5	Fluid		State		wate	er		LIQ.		
	6	Amb.Temp	D Amb Pre	ess Amb.Rel.Humid	lity Max	(-28)°C / 44°C		0.82 Bara	86%		
	_			emperature (∘C)				35 / 55			
			Pressure (b					4			
	9	-	mperature (-60 +230 120			
PROCESS		Density (Kg		arged (kg/hr)				996			
CONDITION			• /	npetature (cP.)				1			
		-	weight (Kg/ł					18			
			pecific Heats					1.283			
			ibility Factor					0.8804			
		Valve type				Conve	ntional Spr	-	ressure Valve		
	_	Rupture Di						No			
		Sizing stan						API 520			
			essel code					ASME VIII API 526			
		Comply sta		culation hypothesis	c)		0	per. Mistake			
			,	g pressure (barg)	,		0	29			
		set pressu		g pressure (barg)				29			
				essure(barg)				ATM			
	25	built up ba	ick pressure	(barg)				0.6			
	26	Allowable overpressure						10%			
	27	calculated Orifice area (Required actual discharge area)						0.06 in ²			
	28	-	signation (Le	atter)				D			
		Body Mate						316 S.S.			
VALVE SIZING		Bonnet Ma						316 S.S.			
& DATA	31	Spring & W	Vasher Mate	erials		316 S.S.					
	32	Stem & Gu	uide Materia	s				STD S.S.			
	33	Seat Type	& Materials				Metal-to	-Metal - STD	S.S.		
			ness Standa					API 527			
	_		seat Materia	ls		Full Nozzle - S.S.					
		Pluge Mate						STD S.S. osed Bonnet			
		Bonnet typ Lifting devi					Ci	VTA			
				pressure rate & tv	vne		1	" #300 RF			
	_			& pressure rate &	,			" #150 RF			
		Connection		•	,		ASM	E ANSI B16.	5		
	42	Outlet Pipir	ng isometric	:s (mm)				VTA			
	43	Inlet Piping	g isometrics	(mm)				VTA			
		Valve Heig						VTA			
		Valve weig						VTA			
		Manufactu						VTA VTA			
PURCHASE		Model No. Certificates						VTA			
. UNONAUL	_		s code informa	tion				VTA			
	50	S. a ching o									
lotes1: VTA =	venc	lor to advise	e								
2											
1			1								
0	8/1	/2021	1	IFA	M.AG	IAMOHAMMADI	A.A.S	HOKRI	N.NOUHJAH		
		Date	1	Status	1	Prepared		cked			

منابع پتروشيمی شرکت ملی منابع پتروشيمی رکت پژوهش و فناوری پتروشيمی 3301 NG 1CS2 0 Liq. X Aer. o Flash S.S Bara 86% 600 0.02 mPas barg barg barg barg barg barg barg barg				
ison ison in CS2 o Liq. X Aer. o Flash S.S Bara 86% 600 0.02 mPas barg barg barg barg barg barg c °C °C kg/h				
NG 1CS2 o Liq. X Aer. o Flash S.S Bara 86% 600 0.02 mPas barg barg barg barg barg barg c c c kg/h				
NG 1CS2 o Liq. X Aer. o Flash S.S Bara 86% 600 0.02 mPas barg barg barg barg barg barg c c c kg/h				
1CS2 o Liq. X Aer. o Flash S.S Bara 86% 600 0.02 mPas barg barg barg barg barg c °C °C °C kg/h				
o Liq. X Aer. o Flash S.S Bara 86% 600 0.02 mPas barg barg barg barg barg barg barg c c °C kg/h				
S.S Bara 86% 600 0.02 mPas barg barg barg barg barg c c °C ¢C kg/h				
Bara 86% 600 0.02 mPas barg barg barg barg bar °C °C ¢C kg/h				
600 0.02 mPas barg barg barg barg barg bar °C °C kg/h				
0.02 mPas barg barg barg barg bar °C °C ¢C kg/h				
barg barg barg bar °C °C kg/h				
barg barg bar °C °C kg/h				
barg bar °C °C kg/h				
bar °C °C kg/h				
°C kg/h				
kg/h				
-				
X OPER. MISTAKE				
cm2				
1" #150				
2" #150				
16 S.S.				
JNGST. ST.				
o PLAIN				
UT LANK				

					PRO	JECT: PP-PE P	ILOT PL	ANT			4
			ТІТ	ΓLE:	Pres	sure Safety / Re	elief Valv	ve Dat	a Sheet		شرکت ملی صنایع پتروشیمی
			Contracto	r Job	No:		Doc. No:				شرکت پژوهش و فناوری پتروشیمی
			Owner Jo	b No:	1		Sheet No:		of		
		1	Tag No.						PSV 5	5302	
		2		essel					PIPI	NG	
Ga	neral	3	P&ID No.	Pipi	ing Size	Class Line No	062		3"	1C	S2
Ge	Data	4				State	N	IITROGE	N	٥L	iq. X Aer. o Flash
	Data		Pressure ra			Piping material		#150			S.S
		-	Amb.Temp			Amb.Rel.Humidity Max	(-20)°C /	50°C	0.82	Bara	86%
		7			on	Area		zone 1			600
			SP. WEIGH			VISC. AT RELIEV. T.			kg/m3	0.02	mPas
		9				SPEC. HEAT RATIO	28				
			INLET COM				1				
						MIN - MAX	0			barg	
		12					0			barg	
OPE	ERATING	; 1;			UIL I-UP	AT DISCHARGE	0.2			barg	
CON	NDITION		SET Press		<u></u>		0.5			barg	
		_					0.1 70 / 95			bar °C	
	16 OPERATING/DISCHARGE TEMP. 17 TEMPERATURE RANGE				E TEMP.	180			0°		
			FLOW RAT				50			kg/h	
			D FLOW RA		DE DISC	JHARGED		IRE		-	IQ. EX.
			CALCULA				X OPER.				
			AREA: CAL	ATED-SE	LECTED	4.5		0	cm	12	
S	SIZING	2	1 ORIFICE				"G"	1			0
		23	3 CONNECT	ION 8	& NOMIN.	PRESSURE	INLET OUTLET			1" #15 2" #15	
			4 BODY				o C.S.	o 304 S	S.S. X 3	16 S.S.	
			5 BONNET				o C.S.				
M	laterials		3 SPRING				o C.S.	X 316 S	S.S. o Tl	JNGST.	ST.
IV	atenais		7 STEM & G				STD SS				
			B NOZZLE C	R SE	AT		STD SS				
			9 PLUG				STD SS				
		_				ENS OPENED	CLOSED				
			1 LIFTING LE				o WITH PAC	KING		o Pl	_AIN
	CESS.&		2 BALANC. E				o YES				
OP	TIONALS	_	BALANC. F				o YES				
		_	5 HEATING:			ZLE - INJECT.	NO NO				
Notes	:					5					
-											
+											
1	0	12/	26/2021		IF	A	K.A		M.N		AA.SH
No.	Rev		Date		Sta	itus	Prepared		Checked		Approved

			PRO	DJECT: PP-PE PI	LOT PL	ANT				<u>لمه</u>
		ТІТ	LE: Pres	sure Safety / Re	lief Valv	e Dat	a Sheet		ر تروشیمی	شرکت ملی صنایع پ
		Contractor	Job No:		Doc. No:					شرکت پژوهش و فناوری
		Owner Job	No:		Sheet No:		of			
	1	Tag No.					PSV \$	5303		
	2	Piping or Ve	essel				PIPI	NG		
General	3	P&ID No.	Piping Size	Class Line No	53		1 1/2"	-	C2	
Data	4			State		WATER		ol		er. X Flash
		Pressure ra		Piping material	(00)00 (#150	0.00		C.	
		Amb.Temp		Amb.Rel.Humidity Max	(-20)°C /		0.82	Bara		86%
	7	Area Classi SP. WEIGH		Area VISC. AT RELIEV. T.	14.5	zone 1	ka/m2	0.168	30	mPas
		MOLEC. W		SPEC. HEAT RATIO	14.5		kg/m3	0.100	0	111P'dS
			IPRESSIBILIT		0.8804					
		1 OPERATIN		MIN - MAX	4			barg		
	1		SUPERIM		ATM			barg	·	
	1			AT DISCHARGE	0.6			barg		
OPERATING CONDITIONS	11.	4 SET Press.			8			barg	1	
CONDITIONS	1	5 OVERPRES	SSURE		10			%		
	1	6 OPERATIN	G/DISCHARG	E TEMP.	35 / 234	ļ.		°C		
	1	7 TEMPERAT	URE RANGE		-10 +250)		°C		
	1	B FLOW RAT	E TO BE DISC	CHARGED	119.5			kg/h		
			ION HYPOTH		X F o OPER.	IRE MISTAKI	E	οL	IQ. EX.	
			CULATED-SE	LECTED	0.1			cn	n2	
SIZING	2	1 ORIFICE			"D"					
			ON & NOMIN	PRESSURE	INLET OUTLET			1" #15 2" #15		
		4 BODY			o C.S.	o 304 S	.S. X3	16 S.S.		
		5 BONNET			o C.S.					
Materials		SPRING			o C.S.	X 316 S	6.S. o T	UNGST.	ST.	
		7 STEM & GU			STD SS					
		B NOZZLE O	R SEAT		STD SS					
	_			ENS OPENED	STD SS CLOSED					
		1 LIFTING LE		LING UFEINED	o WITH PAC	KING		٥P	LAIN	
ACCESS.&			ELLOWS - M	ATERIAI	o YES			01-	LI MIN	
OPTIONALS					o YES					
					NO					
			ONNECTION		NO					
OPTIONALS	3	4 HEATING: 、		ZZLE - INJECT.	NO					
	-									
1 0	12/	26/2021		A	K.A		M.N			AA.SH
No. Rev		Date	Sta	atus	Prepared		Checked	I	A	pproved

	TITLE: Pre Contractor Job No: Owner Job No: 1 Tag No. 2 Piping or Vessel	ssure Safety / Re	Doc. No:	e Data	Sheet		مرکت ملی صنایع پتروشیمی
F	Owner Job No: 1 Tag No.		Doc. No:				سرنت ملى صنايع پىروسيمى
	1 Tag No.						مرکت پژوهش و فناوری پتروشیمے
			Sheet No:	0	f		
					PSV	5304	
General					PIPI	NG	
	3 P&ID No. Piping Size		53	1	1/2"	4CC	
Data	4 Fluid	State		WATER		o Lio	I. o Aer. X Flash
	5 Pressure rating	Piping material	(#150			C.S
		s Amb.Rel.Humidity Max	(-20)°C /		0.82	Bara	86%
	7 Area Classification 8 SP. WEIGHT	Area VISC. AT RELIEV. T.	14.5	zone 1	g/m3	0.168	300 mPas
	9 MOLEC. WEIGHT	SPEC. HEAT RATIO	14.5	K	grino	0.100	IIIF dS
	10 INLET COMPRESSIBILI		0.8804			1	
	11 OPERATING PRESS.	MIN - MAX	4			barg	
		MP. MIN - MAX	ATM			barg	
OPERATING	12SUPERI13MarketBUILT-U	P AT DISCHARGE	0.6			barg	
CONDITIONS	14 SET Press.		8			barg	
1	15 OVERPRESSURE		10			%	
	16 OPERATING/DISCHAR		35 / 234			°C	
	17 TEMPERATURE RANG		-10 +250)		°C	
1	18 FLOW RATE TO BE DIS	SCHARGED	119.5	IRE		kg/h	0. EX.
	19 CALCULATION HYPOT			MISTAKE		0 LIG	ι. Ελ.
	20 AREA: CALCULATED-S	ELECTED	0.1			cm2	
SIZING	21 ORIFICE		"D"			48.4450	
2	23 CONNECTION & NOMI	N. PRESSURE	INLET OUTLET			1" #150 2" #150	
	24 BODY		o C.S.	o 304 S.S.	X 3	16 S.S.	
	25 BONNET		o C.S.				
	26 SPRING		o C.S.	X 316 S.S	. o T	UNGST. S	Т.
	27 STEM & GUIDE		STD SS				
	28 NOZZLE OR SEAT 29 PLUG		STD SS				
	29 PLUG 30 BONNET: CLOSED - EX		STD SS CLOSED				
	31 LIFTING LEVER	VILING UFEINED	o WITH PAC	CKING		o PL/	AIN
	32 BALANC. BELLOWS - N	MATERIAL	o YES			01 L/	
	33 BALANC. PISTON - ME		o YES				
	34 HEATING: JACKET - NO		NO				
	35 HEATING CONNECTIO	NS	NO				

				PRC	JECT: PP-PE P	LOT PL	ANT			- 3	<u>لمه</u>
			TITL	E: Pres	sure Safety / Re	lief Valv	e Dat	a Sheet		میں تروشیمی	شرکت ملی صنایع پ
			Contractor J	ob No:		Doc. No:					شرکت پژوهش و فناور;
			Owner Job N	lo:		Sheet No:		of			
		1	Tag No.					PSV \$	5305		
			Piping or Vess					PIPI	NG		
Ge	eneral	3		Piping Size	Class Line No	53		1 1/2"	4C0	-	
00	Data	4	Fluid		State		WATER		٥L		r. X Flash
			Pressure ratin	<u> </u>	Piping material	(00)00 (#150	0.00		С.	
			Amb.Temp		Amb.Rel.Humidity Max	(-20)°C /		0.82	Bara		86%
			Area Classific SP. WEIGHT	ation	Area VISC. AT RELIEV. T.	14.5	zone 1	ka/m2	0.168	30	u mPas
		_	MOLEC. WEI	СНТ	SPEC. HEAT RATIO	14.5		kg/m3	0.108	,	mras
		_	INLET COMP			0.8804					
		_	OPERATING		MIN - MAX	4			barg		
		12		SUPERIMI		ATM			barg		
		13	BACK- PRESS		AT DISCHARGE	0.6			barg		
	ERATING NDITIONS	14	SET Press.			8			barg		
CO	NDITIONS	15	OVERPRESS	SURE		10			%		
		16	OPERATING/	DISCHARG	E TEMP.	35 / 234	ļ.		°C		
			TEMPERATU	RE RANGE		-10 +250)		°C		
		18	FLOW RATE	TO BE DISC	CHARGED	119.5			kg/h		
				CULATION HYPOTHESIS			IRE MISTAKI	Ξ	o Ll	Q. EX.	
			AREA: CALCU	JLATED-SE	LECTED	0.1			cm	12	
:	SIZING	21	ORIFICE			"D"	T			_	
			CONNECTIO	N & NOMIN.	PRESSURE	INLET OUTLET			1" #15 2" #15		
			BODY			o C.S.	o 304 S	.S. X3	16 S.S.		
			BONNET			o C.S.					
Ν	Materials		SPRING			o C.S.	X 316 S	.S. oT	JNGST.	ST.	
			STEM & GUID			STD SS					
			NOZZLE OR	SEAT		STD SS					
		-			ENS OPENED	STD SS CLOSED					
			LIFTING LEV		LNO UFENED	o WITH PAC	KING		∩ Pl	AIN	
AC	CESS.&		BALANC. BEI			o YES			011	_/ XI N	
	TIONALS		BALANC. PIS			o YES					
-	-					NO					
			HEATING CO			NO					
Notes		34	HEATING: JA	CKET - NOZ	ZZLE - INJECT.	NO					
\neg											
1	0	12/2	6/2021	15	A	K.A		M.N			AA.SH

			P	ROJEC	CT: I	PP-PE PI	LOT PLA	ANT			4
		-	TITLE: Pr	essure	Sat	fety / Re	lief Valvo	e Dat	a Sheet		شرکت ملی صنایع پتروشیمی
		-	Contractor Job No:				Doc. No:				شرکت پژوهش و فناوری پتروشیمی
			Owner Job No:				Sheet No:		of		
	•	1	Tag No.					PS	V 5401 (BRE	ATHER	VALVE)
			Piping or Vessel						SI-541 (N7) (6" #150	RF)
General			P&ID No. Piping Siz			Line No	0054				
Data		-	Fluid	State			N	ITROGE	EN	0	Liq. X Aer. o Flash
		_	Pressure rating	Piping			(00)00 (0.00	<u> </u>	S.S
		_			Rel.Hu	midity Max	(-20)°C /	50°C zone 1	0.82	Bara	<u>86%</u> 600
		_	Area Classification SP. WEIGHT	Area		RELIEV. T.	1.87	ZONE I	kg/m3	0.02	
		_	MOLEC. WEIGHT			EAT RATIO	28		kg/mo	0.02	111 43
		_	INLET COMPRESSIBI				1			1	
			OPERATING PRESS.			N - MAX	0.05			barg	3
		2		IMP.		N - MAX	ATM			barg	
	1	3	ОШ.	JP AT DIS			ATM			barg	
OPERATING	1	4	SET Press.				0.18			barg)
CONDITIONS	^{>} 1	5	OVERPRESSURE				10			%	
	1	6	OPERATING/DISCHA	RGE TEM	1P.		70 / 95			°C	
	1	7	TEMPERATURE RAN	ΞE			180			°C	
	1	8	FLOW RATE TO BE D	ISCHARC	GED		80			kg/h	
	1	9	CALCULATION HYPO	THESIS			o F X OPER.		Æ	οL	.IQ. EX.
	2	0	AREA: CALCULATED-	SELECTE	ED					cr	m2
SIZING	2	1	ORIFICE	DRIFICE							
	2	3	CONNECTION & NOM	IN. PRES	SSUR	RE	INLET OUTLET			6" #1	50
	2	4	BODY				o C.S.	o 304 S	S.S. X 3	16 S.S.	
	2	5	BONNET				o C.S.				
Materials			SPRING				o C.S.	X 316 S	S.S. o T	UNGST.	ST.
materiale		_	STEM & GUIDE				STD SS				
			NOZZLE OR SEAT				STD SS				
		_	PLUG	VTENO	~		STD SS				
		_	BONNET: CLOSED - E	XIENS.	- OPI	ENED	CLOSED				
		_	LIFTING LEVER		A 1		o WITH PAC o YES	KING		o P	PLAIN
ACCESS.&			BALANC. BELLOWS - BALANC. PISTON - M		AL.		o YES				
OPTIONALS		_	HEATING: JACKET - N			СТ	NO				
			HEATING CONNECTION		INUL		NO				
			PSV Type:				Breather Valv	ve			
			Model Suggested				BREETEC T		3R		
Notes:											
1 0	12	/2	6/2021	IFA			K.A		M.N		AA.SH
No. Rev		D	ate	Status			Prepared		Checked	1 E	Approved

				PRO	DJECT:	PP-PE PI	LOT PLA	ANT			4
			TI	TLE: Pres	sure Sa	fety / Re	lief Valvo	e Dat	a Sheet		شرکت ملی صنایع پتروشیمی
			Contracto	r Job No:			Doc. No:				نرکت پژوهش و فناوری پتروشیمی
			Owner Jol				Sheet No:		of		
		1	Tag No.						V 5402 (BRE	ATHER	VALVE)
			Piping or V	essel					SI-542 (N7) (6" #150	RF)
Gene	aral	3	P&ID No.	Piping Size	Class	Line No	0054				
)ata		Fluid		State		N	ITROGE	EN	ol	Liq. X Aer. o Flash
_	u lu		Pressure ra		Piping mat					L	S.S
			Amb.Temp		Amb.Rel.Hu	umidity Max	(-20)°C /		0.82	Bara	86%
			Area Classi SP. WEIGH		Area	RELIEV. T.	1.87	zone 1	kg/m3	0.02	600 2 mPas
			MOLEC. W			EAT RATIO	28		ky/m5	0.02	. IIIF d5
				MPRESSIBILIT			1				
				IG PRESS.		N - MAX	0.05			barg	1
		12		SUPERIM		N - MAX	ATM			barg	
		13	BACK- PRESS		AT DISCH		ATM			barg	
-	RATING		SET Press.			-	0.18			barg	
CONL	DITIONS		OVERPRE				10			%	
		16	OPERATIN	IG/DISCHARG	E TEMP.		70 / 95			°C	
		17	TEMPERA	TURE RANGE			180			°C	
		18	FLOW RAT	TE TO BE DIS	CHARGED		80			kg/h	1
		19	CALCULAT	TION HYPOTH	ESIS		o F X OPER.	IRE MISTAK	Έ	οL	.IQ. EX.
		20	AREA: CAL	CULATED-SE	LECTED					cr	m2
SIZ	ZING	21	ORIFICE					1			
0.2		23	CONNECT	ION & NOMIN	. PRESSUP	RE	INLET OUTLET			6" #1	50
		24	BODY				o C.S.	o 304 S	S.S. X 3	16 S.S.	
			BONNET				o C.S.				
Mat	terials		SPRING				o C.S.	X 316 S	S.S. o T	UNGST.	ST.
			STEM & G				STD SS				
			NOZZLE O	R SEAT			STD SS				
							STD SS				
				CLOSED - EX	IENS OP	ENED					
			LIFTING LE	<u>= VER</u> BELLOWS - M			o WITH PAC o YES	INING		0 P	LAIN
۵۲۵	ESS.&			PISTON - MET			o YES				
	ESS.∝ ONALS			JACKET - NO		-ст	NO				
5. 10	5/ .LO						NO				
			PSV Type:		-		Breather Valv	ve			
			Model Sug				BREETEC T		3R		
Notes:											
1	0 1	2/2	6/2021	I	FA		K.A		M.N		AA.SH
No. R	Rev	C	ate	Sta	atus		Prepared		Checked	1	Approved

				PRO)JECT:]	PP-PE PI	LOT PLA	ANT			4
			דוד	LE: Pres	sure Sa	fety / Re	lief Valvo	e Dat	a Sheet		شرکت ملی صنایع پتروشیمی
			Contractor	Job No:			Doc. No:				نرکت پژوهش و فناوری پتروشیمی
			Owner Job	No:			Sheet No:		of		
		1	Tag No.	-					V 5403 (BRE	ATHER	VALVE)
			Piping or Ve	ssel					SI-543 (N7) (
General		3		Piping Size	Class	Line No	0054				
Data		4	Fluid		State		N	ITROGE	EN	ol	Liq. X Aer. o Flash
Data			Pressure rat		Piping mat				1		S.S
			Amb.Temp			umidity Max	(-20)°C /		0.82	Bara	86%
			Area Classif		Area			zone 1			600
			SP. WEIGH			RELIEV. T.	1.87		kg/m3	0.02	2 mPas
			MOLEC. WE			EAT RATIO	28				
				PRESSIBILIT			1			h	•
			OPERATING	<u>3 PRESS.</u> SUPERIMI		N - MAX	0.05 ATM			barg	
		12 13	BACK- PRESS	BUILT-UP		N - MAX	ATM			barg	
OPERAT	ING		SET Press.	BUILT-UP		ARGE	0.18			barg barg	
CONDITI	ONS		OVERPRES	SURE			10			%	1
				G/DISCHARG	E TEMP		70 / 95			°C	
				URE RANGE			180			°C	
				E TO BE DISC	HARGED		80			kg/h	1
				ON HYPOTH			o F X OPER.		Æ	o L	.IQ. EX.
		20	AREA: CAL	CULATED-SE	LECTED					cr	m2
SIZIN	~	21	ORIFICE								
SIZIN	5	23	CONNECTI	ON & NOMIN.	PRESSUF	RE	INLET OUTLET			6" #1	50
		24	BODY				o C.S.	o 304 S	S.S. X 3	16 S.S.	
			BONNET				o C.S.				
Materia	als		SPRING				o C.S.	X 316 S	6.S. o T	UNGST.	ST.
			STEM & GU				STD SS				
			NOZZLE OF	R SEAT			STD SS				
							STD SS				
				LOSED - EXT	ENS OP	ENED	CLOSED			_	
			LIFTING LE				o WITH PAC	KING		o P	LAIN
ACCESS	2.8			ELLOWS - MA STON - META			o YES o YES				
OPTION				ACKET - NOZ		СТ	NO				
						_01.	NO				
			PSV Type:	ONNECTION	0		Breather Valv	Ve			
			Model Sugg	ested			BREETEC T		3R		
Notes:											
	<u> </u>	A ' -									
<u>1 0</u>	1		6/2021		A		K.A		M.N		AA.SH
No. Rev			ate	Sta	itus		Prepared		Checked	1	Approved

		PRC	DJECT: PP-PE P	ILOT PL	ANT		4
		TITLE: Pres	sure Safety / Ro	elief Valv	ve Data She	et	شرکت ملی صنایع پتروشیمی
		Contractor Job No:		Doc. No:	900-DAS-A4-I	N-0007	کت پژوهش و فناوری پتروشیمی
		Owner Job No:		Sheet No	: 28 of 3	30	
	1	Tag No.			-	PSV 6101	
		Piping or Vessel				PIPING	
Conoral	3		Class Line No	061	4"	1C	S1
General Data	4	Fluid	State		Monomers	٥L	iq. X Aer. o Flash
Dala	5	Pressure rating	Piping material		#150		S.S
	6	Amb.Temp Amb Press	Amb.Rel.Humidity Max	(-20)°C /	/ 50°C	0.82 Bara	86%
		Area Classification	Area		zone 1		600
		SP. WEIGHT	VISC. AT RELIEV. T	8.15	kg/m3	0.11	mPas
		MOLEC. WEIGHT	SPEC. HEAT RATIO				
		INLET COMPRESSIBILIT		0.9585	5		
	11	OPERATING PRESS.	MIN - MAX	2		barg	
	12	SUPERIMI BUILT-UP		0.4		barg	
OPERATING	13		AT DISCHARGE	0.6		barg	
CONDITIONS	_	SET Press.		6		barg	
		OVERPRESSURE		10		%	
		OPERATING/DISCHARG	E TEMP.	90		°C	
	_	TEMPERATURE RANGE		-45 +18		°C	
	18	FLOW RATE TO BE DISC	CHARGED	16500 (*	1	kg/h	
	19	CALCULATION HYPOTH	ESIS	_		0 L	IQ. EX.
	20	AREA: CALCULATED-SE		31.27	MISTAKE (1)	cn	n?
		ORIFICE	LEGTED	"P"	0	CI	
SIZING				INLET		4" #15	50
	23	CONNECTION & NOMIN.	PRESSURE	OUTLET		6" #15	
	24	BODY		o C.S.	o 304 S.S.	X 316 S.S.	-
		BONNET		o C.S.			
•• • • •		SPRING		o C.S.	X 316 S.S.	o TUNGST.	ST.
Materials		STEM & GUIDE		STD SS			
	28	NOZZLE OR SEAT		STD SS			
		PLUG		STD SS			
	30	BONNET: CLOSED - EXT	ENS OPENED	CLOSED			
	31	LIFTING LEVER		o WITH PAG	CKING	٥P	LAIN
ACCESS.&	32	BALANC. BELLOWS - MA	ATERIAL	o YES			
OPTIONALS	33	BALANC. PISTON - MET/	4L	o YES			
		HEATING: JACKET - NOZ		NO			
	35	HEATING CONNECTION	S	NO			
Notes: 1) Consid 51.9 Kg/r		orst case the discharge valve	(HV 4201 block open Ø=	25mm at 30B	Barg and		

K.A

Prepared

M.N

Checked

AA.SH

Approved

12/26/2021

Date

IFA

Status

1 No. 0

Rev

Contractor Job No: Dwner Job No: ag No. iping or Vessel P&ID No. Piping Size luid ressure rating	sure Safety / Re	Doc. No: 9 Sheet No: 062	00-DAS-	A4-IN-00	یمی 007 201	شرکت ملی صنایع پتروشیم شرکت پژوهش و فناوری پتروش	
Dwner Job No: ag No. iping or Vessel 2&ID No. Piping Size luid ressure rating	State	Sheet No: 062		F 30 PSV 6 PIPIN	201	شرکت پژوهش و فناوری پتروش	
ag No. iping or Vessel P&ID No. Piping Size luid ressure rating	State	062	29 o	PSV 6 PIPIN	201		
iping or Vessel 2&ID No. Piping Size luid ressure rating	State			PIPI			
iping or Vessel 2&ID No. Piping Size luid ressure rating	State				١G		
luid ressure rating	State						
ressure rating				1CS2			
		NITROGEN			o Liq.	o Liq. X Aer. o Flash	
mh Tomp Arek Deser	Piping material	#150			S.S		
	Amb.Rel.Humidity Max	(-20)°C / 5		0.82	Bara	86%	
	Area		zone 1		0.00	600	
P. WEIGHT	VISC. AT RELIEV. T.	1.87	kg/m3 0.02 mPas				
IOLEC. WEIGHT							
					baro		
BUILT-UP		0.2					
ET Press.	0.8						
VERPRESSURE	10	%					
PERATING/DISCHARGE	60 / 70	°C					
EMPERATURE RANGE	180	°C					
LOW RATE TO BE DISC	700						
	o FIRE o LIQ. EX. X OPER. MISTAKE						
	6.6 0 cm2						
RIFICE							
	OUTLET	LET 3" #150					
ODY	o C.S. o 304 S.S. X 316 S.S.						
	o C.S.						
	TERIAL	o YES					
	o YES						
	NO						
EATING CONNECTION	S	NO					
	LET COMPRESSIBILIT PERATING PRESS. SUPERIMI BUILT-UP ET Press. VERPRESSURE PERATING/DISCHARGE OW RATE TO BE DISC ALCULATION HYPOTHI REA: CALCULATED-SE RIFICE ONNECTION & NOMIN. ODY ONNET PRING TEM & GUIDE OZZLE OR SEAT LUG ONNET: CLOSED - EXT FTING LEVER ALANC. BELLOWS - MA ALANC. PISTON - META EATING: JACKET - NOZ	LET COMPRESSIBILITY FACTOR PERATING PRESS. MIN - MAX SUPERIMP. MIN - MAX BUILT-UP AT DISCHARGE ET Press. VERPRESSURE PERATING/DISCHARGE TEMP. EMPERATURE RANGE OW RATE TO BE DISCHARGED ALCULATION HYPOTHESIS REA: CALCULATED-SELECTED RIFICE ONNECTION & NOMIN. PRESSURE ODY ONNET PRING TEM & GUIDE OZZLE OR SEAT -UG ONNET: CLOSED - EXTENS OPENED	LET COMPRESSIBILITY FACTOR1PERATING PRESS.MIN - MAX1SUPERIMP.MIN - MAXATMBUILT-UP AT DISCHARGE0.2ET Press.0.8VERPRESSURE10PERATING/DISCHARGE TEMP.60 / 70EMPERATURE RANGE180.OW RATE TO BE DISCHARGED700ALCULATION HYPOTHESIS0 FIIX OPER.N0 FIIREA: CALCULATED-SELECTED6.6RIFICE"J"ONNECTION & NOMIN. PRESSUREINLETODY0 C.S.ONNET0 C.S.PRING0 C.S.ONNET0 C.S.DINGSTD SSOZZLE OR SEATSTD SSLUGSTD SSONNET: CLOSED - EXTENS OPENEDCLOSEDFTING LEVER0 WITH PACHALANC. BELLOWS - MATERIAL0 YESALANC. PISTON - METAL0 YESEATING: JACKET - NOZZLE - INJECT.NO	LET COMPRESSIBILITY FACTOR 1 PERATING PRESS. MIN - MAX 1 Image: SUPERIMP. MIN - MAX ATM BUILT-UP AT DISCHARGE 0.2 ET Press. 0.8 VERPRESSURE 10 PERATING/DISCHARGE TEMP. 60 / 70 EMPERATURE RANGE 180 LOW RATE TO BE DISCHARGED 700 ALCULATION HYPOTHESIS 0 FIRE X OPER. MISTAKE 0.66 RIFICE "J" ONNECTION & NOMIN. PRESSURE 0.2. ODY 0 C.S. 0 304 S.S. ONNET 0 C.S. 316 S.S. PRING 0 C.S. X 316 S.S. DIG STD SS 0 OZZLE OR SEAT STD SS 0 LUG STD SS 0 0 ONNET: CLOSED - EXTENS OPENED CLOSED FTING LEVER ALANC. PISTON - METAL 0 YES 0 ALANC. PISTON - METAL 0 YES 0 ALANC. PISTON - METAL 0 YES 0	LET COMPRESSIBILITY FACTOR 1 PERATING PRESS. MIN - MAX 1 Image: Superimp. MIN - MAX ATM Image: Built-UP AT DISCHARGE 0.2 ET Press. 0.8 VERPRESSURE 10 PERATING/DISCHARGE TEMP. 60 / 70 EMPERATURE RANGE 180 .OW RATE TO BE DISCHARGED 700 ALCULATION HYPOTHESIS 0 FIRE X OPER. MISTAKE 6.6 REA: CALCULATED-SELECTED 6.6 RIFICE "J" ONNECTION & NOMIN. PRESSURE INLET ODY 0 C.S. 0 304 S.S. X 31 ONNET 0 C.S. 316 S.S. 0 TL ODY 0 C.S. X 316 S.S. 0 TL ODY 0 C.S. X 316 S.S. 0 TL TEM & GUIDE STD SS 0ZZLE OR SEAT STD SS UG STD SS 0NNET: CLOSED - EXTENS OPENED CLOSED FTING LEVER 0 WITH PACKING 0 YES ALANC. PISTON - METAL 0 YES 0 YES ALANC. PISTON - METAL 0 YES <td>LET COMPRESSIBILITY FACTOR 1 PERATING PRESS. MIN - MAX 1 barg SUPERIMP. MIN - MAX ATM barg BUILT-UP AT DISCHARGE 0.2 barg ET Press. 0.8 barg VERPRESSURE 10 % PERATING/DISCHARGE TEMP. 60 / 70 °C EMPERATURE RANGE 180 °C OW RATE TO BE DISCHARGED 700 kg/h ALCULATION HYPOTHESIS 0 FIRE 0 LIQ. X OPER. MISTAKE 0 CM2 minotoxic RIFICE "J" 0 C.S. 0 CM2 ONNECTION & NOMIN. PRESSURE 0 C.S. 0 OUTLET 3" #150 ODY 0 C.S. 0 C.S. 0 304 S.S. X 316 S.S. ONNET 0 C.S. X 316 S.S. 0 TUNGST. ST. TEM & GUIDE STD SS SUPERSE 0 CLOSED ONNET: CLOSED - EXTENS OPENED CLOSED 0 PLAIT ALANC. BELLOWS - MATERIAL 0 YES 0 YES ALANC. PISTON - METAL 0 YES 0 YES</td>	LET COMPRESSIBILITY FACTOR 1 PERATING PRESS. MIN - MAX 1 barg SUPERIMP. MIN - MAX ATM barg BUILT-UP AT DISCHARGE 0.2 barg ET Press. 0.8 barg VERPRESSURE 10 % PERATING/DISCHARGE TEMP. 60 / 70 °C EMPERATURE RANGE 180 °C OW RATE TO BE DISCHARGED 700 kg/h ALCULATION HYPOTHESIS 0 FIRE 0 LIQ. X OPER. MISTAKE 0 CM2 minotoxic RIFICE "J" 0 C.S. 0 CM2 ONNECTION & NOMIN. PRESSURE 0 C.S. 0 OUTLET 3" #150 ODY 0 C.S. 0 C.S. 0 304 S.S. X 316 S.S. ONNET 0 C.S. X 316 S.S. 0 TUNGST. ST. TEM & GUIDE STD SS SUPERSE 0 CLOSED ONNET: CLOSED - EXTENS OPENED CLOSED 0 PLAIT ALANC. BELLOWS - MATERIAL 0 YES 0 YES ALANC. PISTON - METAL 0 YES 0 YES	

				PRO)JECT: PP-PE P	ILOT PL	ANT			ك		
			тг	TLE: Pres	sure Safety / R	elief Valv	e Data	a Sheet	4	شرکت ملی صنایع پتروشیمی		
			Contracto	Doc. No: 900-DAS-A4-IN-0007				شرکت پژوهش و فناوری پتروشیم				
			Owner Jo	Sheet No: 59 of 60								
			Tag No.					PSV 6202				
General Data	2		PIPING									
		P&ID No.	P&ID No. Piping Size Class Line No				3006	CC6				
	4			State	STEAM			o Liq	o Liq. X Aer. o Flash			
	ţ			Piping material	#150			C.S				
	(Amb.Rel.Humidity Max	(-20)°C /		0.82	Bara	86%			
					Area		zone 1		0.044	600		
		8			VISC. AT RELIEV. T			kg/m3	0.014	mPas		
		(MOLEC. WEIGHT SPEC. HEAT RATIO			,					
		1		MPRESSIBILIT	MIN - MAX	0.97			haro			
		1		SUPERIM		0,2 - 4 ATM	barg M barg					
		1	ош.		AT DISCHARGE	0.2	barg barg					
-	ERATING	; 1	4 SET Press			6			barg			
CON	NDITION	5 –		OVERPRESSURE			%					
		1	6 OPERATIN	OPERATING/DISCHARGE TEMP.			0 °C					
		1	7 TEMPERA	TEMPERATURE RANGE			°C					
		1	8 FLOW RA	FLOW RATE TO BE DISCHARGED			70 kg/h					
				CALCULATION HYPOTHESIS			X FIRE o LIQ. EX. o OPER. MISTAKE					
SIZING		AREA: CALCULATED-SELECTED			0.3 0 cm2							
	2	ORIFICE			"D"							
		CONNECTION & NOMIN. PRESSURE			INLET OUTLET o C.S.	34" #150 1" #150						
			4 BODY	BODY			o 304 S.	.S. X 3	16 S.S.			
			5 BONNET					o C.S.				
Μ	laterials			SPRING			o C.S. X 316 S.S. o TUNGST. ST.					
			7 STEM & G	STD SS								
			8 NOZZLE C	STD SS								
			9 PLUG	STD SS CLOSED								
				BONNET: CLOSED - EXTENS OPENED LIFTING LEVER			o WITH PACKING o PLAIN					
AC	CESS.&			BELLOWS - M	ATERIAL	o YES						
	TIONALS	_		PISTON - MET		o YES						
			4 HEATING:	NO								
			5 HEATING	NO								
Notes	:											
\square												
1	0	12	26/2021		A	K.A		M.N		AA.SH		
No.	Rev		Date	St	atus	Prepared		Checked		Approved		

				PRO	JECT: PP-PE P	ILOT PL	ANT			<u>لمه</u>
			TITL	E: Pres	sure Safety / Re					شرکت ملی صنایع پتروشیمی
			Contractor J	ob No:		Doc. No: 9	900-DAS	6-A4-IN-00	007	شرکت پژوهش و فناوری پتروشیمی
			Owner Job N	lo:		Sheet No:	30	of 30		
		1	Tag No.					PSV 7	101	
	ľ		Piping or Vess	sel				V 7	11	
General	Ī	3	P&ID No. F	Piping Size	Class Line No	071				
Data			Fluid		State	M	ONOMER	S	ol	_iq. X Aer. o Flash
Data		_	Pressure ratin	š	Piping material					-
			Amb.Temp		Amb.Rel.Humidity Max	(-20)°C /		0.82	Bara	86%
			Area Classific	ation	Area		zone 1			700
		_	SP. WEIGHT	0.17	VISC. AT RELIEV. T.			kg/m3		mPas
	ŀ		MOLEC. WEI		SPEC. HEAT RATIO	42 0				
	ŀ	_	INLET COMP		MIN - MAX	-			bara	,
	ŀ		OPERATING			0,1 - 15 0.4			barg	
		12 13	BACK- PRESS		AT DISCHARGE	0.4			barg	
OPERATIN	G		SET Press.	BUILT-UP	AT DISCHARGE	5			barg	
CONDITION			OVERPRESS			5 10			barg %	•
			OPERATING/			AMB			°C	
	ŀ	_	TEMPERATU			-45 +180	<u>ר</u>		°C	
	ŀ		FLOW RATE			7350	5		kg/h	1
	ŀ						IRE		Ŭ	IQ. EX.
		19	CALCULATIO	N HYPOTH	ESIS	-	MISTAKE			.i.g. E/.
		20	AREA: CALCI	JLATED-SE	LECTED	4.9		4.9	cr	n2
0.7.1.0		_	ORIFICE			"H"				
SIZING	F	~~			PPEOQUEE	INLET			2" #30	00
		23	CONNECTIO	N & NOMIN.	PRESSURE	OUTLET			3" #1	50
		24	BODY			o C.S.	o 304 S.S	S. X 3′	16 S.S.	
		25	BONNET			o C.S.				
Materials			SPRING			o C.S.	X 316 S.	S. o Tl	JNGST.	ST.
Materials) [27	STEM & GUIE	DE		STD SS				
			NOZZLE OR	SEAT		STD SS				
			PLUG			STD SS				
					ENS OPENED	CLOSED				
	- F	_	LIFTING LEVI			o WITH PAC	CKING		οP	LAIN
ACCESS.8	-	_	BALANC. BEL			n YES				
OPTIONAL			BALANC. PIS			o YES				
	- F	_			ZLE - INJECT.	NO				
		35	HEATING CO	INNECTION	5	NO				
Notes:										
		0/0	0/0004							
1 0	12		6/2021		A	K.A		M.N		AA.SH
No. Rev		ט	ate	Sta	tus	Prepared		Checked		Approved

			SAZ C	ATALYS	T PLANT	E	OCUMENT 1	NUMBER
		Petrochemical Company search & Technology Company	PROCE	SS DESIGN	PACKAGE	SHEP	ET 2 OF 14	ISSUE 0
				PRES	SURE SAFETY	VALV	Έ	
	1	Tag No.			PSV	-60108		
	2	Piping or Vessel			V-	6014		
	3	P&ID No. Class	ss Line No	600-DW	/G-PID-602	150	3"-WAG-60	1XXX-SS1
General Data	4	Fluid State		WAS	STE GAS		GAS	
		· · · · · · · · · · · · · · · ·	material		<i>‡</i> 150		S.S.	
	_		l.Humidity Max	(-20)°C / 5		Bar a		36%
		Area Classification Area			N.A.		N.A.	
		SP. WEIGHT			7.62		kg/m3	
			HEAT RATIO	8	6.17		N.A.	
		INLET COMPRESSIBILITY FACT	r).83	1	
		OPERATING PRESS.	MIN - MAX		0.4		barg	
	12 13	SUPERIMP. BUILT-UP AT DIS	MIN - MAX		0.4		barg	
OPERATING		SET PRESSURE	CHARGE		5		barg barg	
CONDITIONS		OVERPRESSURE				21%	Uarg	
		OPERATING TEMP.				0 °C		
		TEMPERATURE RANGE				3 - 80 °C		
		FLOW RATE TO BE DISCHARGE	ED	1	3648		kg/h	
				Х	FIRE		o LIQ. EX	
	19	CALCULATION HYPOTHESIS			o OPER.	MISTAR	KΕ	
	20	AREA: CALCULATED-SELECTE	D		2	26.3		
SIZING	21	ORIFICE			1	N.A.		
SIZING	23	CONNECTION & NOMIN. PRESS	IIRF	INLET		3" \$	S.S.	
				OUTLET		4" (C.S.	
		BODY		o SS	X 304 S.S. o 316	S.S.		
		BONNET		o S.S.			_	
Materials	-	SPRING		o S.S.	o 316 S.S. o TUI	NGST. ST	ľ.	
		STEM & GUIDE		STD SS				
		NOZZLE OR SEAT PLUG		STD SS STD SS				
	-		DENED	CLOSED				
		BONNET: CLOSED - EXTENS (LIFTING LEVER	JPENED	o WITH PACE	ING	o PLA	IN	
ACCESS.&		LIFTING LEVER BALANC. BELLOWS - MATERIA	T	n YES		UILA		
OPTIONALS		BALANC. BELLOWS - MATERIA BALANC. PISTON - METAL	L	o YES				
51 1101/1110		HEATING: JACKET - NOZZLE - I	NJECT.	NO				
				NO				
Notes:		HEATING CONNECTIONS	NJEC1.					

		<u>4</u>		SAZ (CATALYS	T PLAN	Т	E	OCUMENT N	NUMBER
		etrochemical Company search & Technology Company	_	PROCE	SS DESIGN	PACKAG	E	SHEP	ET 3 OF 14	ISSUE 0
			⊢		PRES	SURE SAI	FETY	VALV	/E	
	1	Tag No.			I KES	BORE DI II		60109	L	
F		Piping or Vessel				H	ALFCO	IL V-60	14	
			Class	Line No	600-DV	VG-PID-602		150	2"-JAW-601	044-CS1-H
General Data	_	Fluid State			MEG	+ WATER			LIQUID	
F	5	Pressure rating Pipin	ng ma	aterial		#150			C.S.	
	6			umidity Max	(-20)°C /	50°C	0.82 I	Bar a	8	36%
		Area Classification Area	ı			N.A.			N.A.	
		SP. WEIGHT				1080			kg/m3	
				EAT RATIO		53			N.A.	
	_	INLET COMPRESSIBILITY FAC					N	.A.		
		OPERATING PRESS.		IIN - MAX		1 - 5			barg	
	12	SUPERIMP.		IIN - MAX		0			barg	
OPERATING	13		DISCH	HARGE		0			barg	
CONDITIONS		SET PRESSURE				6.5			barg	
		OVERPRESSURE						5%		
	_	OPERATING TEMP.) °C		
	17TEMPERATURE RANGE18FLOW RATE TO BE DISCHAR					2000	AMB -	110 °C	1/1-	
-						3000 EIDE			kg/h	
	19	CALCULATION HYPOTHESIS			0	FIRE	ODED	MISTAK	X LIQ. EX	•
	20	AREA: CALCULATED-SELECT	FED			0		.A.	Υ. Έ	
E E E E E E E E E E E E E E E E E E E		ORIFICE						.A.		
SIZING					INLET		14	1" (2.8.	
	23	CONNECTION & NOMIN. PRES	ESSU	RE	OUTLET			2" (
	24	BODY			X C.S.	o 105 C.S.	A 105			
		BONNET			o C.S.	1				
		SPRING			o C.S.	A 105 C.S.	o TUN	GST. ST	Г.	
Materials	27	STEM & GUIDE			STD CS					
	28	NOZZLE OR SEAT			STD CS					
	29	PLUG			STD CS					
	30	BONNET: CLOSED - EXTENS.	- OP	ENED	CLOSED					
	31	LIFTING LEVER			o WITH PACI	KING		o PLA	AIN	
ACCESS.&	32	BALANC. BELLOWS - MATER	RIAL		n YES					
OPTIONALS	33	BALANC. PISTON - METAL			o YES					
	34	HEATING: JACKET - NOZZLE	- INJ	ECT.	NO					
	35	HEATING CONNECTIONS			NO					

I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I	etrochemical Company search & Technology Comp Tag No. Piping or Vessel P&ID No. Fluid Pressure rating Amb.Temp Amb Pre	Cla	PROCE		PACKAGE		ET 4 OF 14	ISSUE 0
2 1 3 1 3 1 4 1 5 1 6 1 7 1 8 2 9 1	Piping or Vessel P&ID No. Fluid Pressure rating	Cla		PRES	SURE SAFET	V V/AT 1		
2 1 3 1 3 1 4 1 5 1 6 1 7 1 8 2 9 1	Piping or Vessel P&ID No. Fluid Pressure rating	Cla		-		I VAL	√Е	
2 1 3 1 3 1 4 1 5 1 6 1 7 1 8 9	Piping or Vessel P&ID No. Fluid Pressure rating	Cla			PS	V-70101		
General Data 3 1 4 1 5 1 6 4 7 4 8 5 9 1	P&ID No. Fluid Pressure rating	Cla		1	V	-7011A		
5 1 6 2 7 2 8 5 9 1	Pressure rating		ss Line No	700-DW	/G-PID-701	150	2"-WAG-70	1039-CS1
6 / 7 / 8 / 9 /		State		WAS	STE GAS	B	GAS	
7 1 8 5 9 1	Amh Tamm A 1 D	Piping	material	#	<i>#</i> 150		C.S.	
8 S 9 I	Amb.Temp Amb Pre	ess Amb.Re	el.Humidity Max	(-20)°C / 5	50°C 0.8	2 Bar a	8	6%
9 1	Area Classification	Area	i	J	N.A.		N.A.	
	SP. WEIGHT	•		11	7.621		kg/m3	
10.1	MOLEC. WEIGHT	SPEC	. HEAT RATIO	8	6.177		N.A.	
101	INLET COMPRESSIBIL	JTY FACT	ſOR			N.A.		
11 (OPERATING PRESS.		MIN - MAX	0	.5 - 5		barg	
12	k g SUPERI	MP.	MIN - MAX		0.1		barg	
ODED 4 TD 10 13	SUPERI BUILT-U	UP AT DIS	CHARGE	J	N.A.		barg	
OPERATING 14	SET PRESSURE				6.5		barg	
CONDITIONS 15	OVERPRESSURE					21%		
16 (OPERATING TEMP.					70 °C		
17	TEMPERATURE RANC	ЪЕ			AM	IB - 80 °C		
18 1	FLOW RATE TO BE DI	SCHARGE	ED	8	8100		kg/h	
19	CALCULATION HYPO	THESIS		X	FIRE	R. MISTAI	o LIQ. EX.	
20	AREA: CALCULATED-	CELECTE	D	<u> </u>		13.93	NE	
	ORIFICE	SELECTE	D			N.A.		
SIZING 21 0	ORIFICE			INLET			C.S.	
23 (CONNECTION & NOM	IN. PRESS	SURE	OUTLET			C.S.	
24 1	BODY			o S.S.	X 105 C.S. A 10)5 C.S.	0.0.	
	BONNET			o S.S.	A 105 C.S. 11 10	55 C.5.		
	SPRING			o S.S.	A 105 C.S. o TU	JNGST. S	Т	
Materials	STEM & GUIDE			STD SS	11105 0.5. 0110			
	NOZZLE OR SEAT			STD SS				
	PLUG			STD SS				
	BONNET: CLOSED - E	XTENS (OPENED	CLOSED				
	LIFTING LEVER	ATENS	JI ENED	o WITH PACK	KING	o PL	AIN	
	BALANC. BELLOWS -	MATERIA	T	n YES		012		
	BALANC. PISTON - MI			o YES				
	HEATING: JACKET - N		NIFCT	NO				
	HEATING CONNECTION		10201.	NO				

		<u>**</u>	_	SAZ C	ATALYS	T PLANT	I	DOCUMENT N	IUMBER
		Petrochemical Company search & Technology Com	pany	PROCE	SS DESIGN	PACKAGE	SHE	ET 5 OF 14	ISSUE (
					PRES	SURE SAFET	Y VALV	/E	•
	1	Tag No.		1		PS	SV-70102		
		Piping or Vessel				V	7-7011B		
	3	P&ID No.	Cla	ss Line No	700-DW	/G-PID-701	150	2"-WAG-70	1040-CS1
General Data	4	Fluid	State		WAS	STE GAS		GAS	
	5	Pressure rating	Piping	material	7	¥150		C.S	
	6	Amb.Temp Amb P	ress Amb.Re	l.Humidity Max	(-20)°C / :	50°C 0.8	32 Bar a	8	6%
	7	Area Classification	Area			N.A.		N.A.	
	8	SP. WEIGHT			1	7.621		kg/m3	
	9	MOLEC. WEIGHT	SPEC	. HEAT RATIO	8	6.177		N.A.	
	10	INLET COMPRESSIBI	LITY FACT	OR			N.A.		
	11	OPERATING PRESS.		MIN - MAX	0	.5 - 5		barg	
	12	BUER BUILT	IMP.	MIN - MAX		0.1		barg	
	13	M BUILT	-UP AT DIS	CHARGE		N.A.		barg	
OPERATING CONDITIONS	14	SET PRESSURE				6.5		barg	
CONDITIONS	15	OVERPRESSURE					21%		
	16	OPERATING TEMP.					70 °C		
	17	TEMPERATURE RAN	GE			AN	1B - 80 °C		
	18	FLOW RATE TO BE D	ISCHARGE	ED	1	8100		kg/h	
	19	CALCULATION HYPO	OTHESIS		X	FIRE	R. MISTAI	o LIQ. EX.	
	20	AREA: CALCULATED	SELECTE	D		0 OI E	13.93	NL	
			-SELECTE	D			N.A.		
SIZING	21	OKINCE			INLET			C.S	
	23	CONNECTION & NON	AIN. PRESS	SURE	OUTLET			C.S.	
	24	BODY			o S.S.	X 105 C.S. A 1	05 C.S.	0.5.	
		BONNET			o S.S.	M 105 C.B. M 1	05 0.5.		
		SPRING			o S.S.	A 105 C.S. o T	UNGST. S	Т.	
Materials		STEM & GUIDE			STD SS				
	-	NOZZLE OR SEAT			STD SS				
		PLUG			STD SS				
	-	BONNET: CLOSED - I	EXTENS - (OPENED	CLOSED				
		LIFTING LEVER			o WITH PACI	KING	o PL	AIN	
ACCESS.&	-	BALANC. BELLOWS	- MATERIA	I.	n YES				
OPTIONALS		BALANC. PISTON - M			o YES				
		HEATING: JACKET - 1		NJECT.	NO				
		HEATING CONNECTI			NO				

re rating I Semp Amb Press A Classification A EIGHT COMPRESSIBILITY ATING PRESS. SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	Area SPEC. 1 FACTO	s Line No naterial Humidity Max HEAT RATIO DR MIN - MAX MIN - MAX	PRES	VG-PID-701 AOH #150 50°C 0. N.A. 40 1 - 5 0 0	~~~~~	GAS S.S.	ISSUE 0
or Vessel No. re rating re rating I amb Press I assification I COMPRESSIBILITY ATING PRESS I S S S S S S S S S S S S S S S S S	State Piping m Amb.Rel. Area SPEC. 1 FACTC	naterial Humidity Max HEAT RATIO OR MIN - MAX MIN - MAX	700-DW N (-20)°C / 2	Pr VG-PID-701 IAOH #150 50°C 0. N.A. 40 1 - 5 0 0	SV-70103 V-7013 150 82 Bar a	GAS S.S. N.A. kg/m3 N.A. barg	36%
or Vessel No. re rating re rating Amb Press Classification Classification COMPRESSIBILITY ATING PRESS COMPRESSIBILITY ATING PRESS COMPRESSURE PRESSURE PRESSURE ATING TEMP. ERATURE RANGE	State Piping m Amb.Rel. Area SPEC. 1 FACTC	naterial Humidity Max HEAT RATIO OR MIN - MAX MIN - MAX	N (-20)°C / :	VG-PID-701 AOH #150 50°C 0. N.A. 40 1 - 5 0 0	V-7013 150 82 Bar a	S.S. N.A. kg/m3 N.A. barg	36%
or Vessel No. re rating re rating Amb Press Classification Classification COMPRESSIBILITY ATING PRESS COMPRESSIBILITY ATING PRESS COMPRESSURE PRESSURE PRESSURE ATING TEMP. ERATURE RANGE	State Piping m Amb.Rel. Area SPEC. 1 FACTC	naterial Humidity Max HEAT RATIO OR MIN - MAX MIN - MAX	N (-20)°C / :	VG-PID-701 IAOH #150 50°C 0. N.A. 40 1 - 5 0 0	150 82 Bar a	S.S. N.A. kg/m3 N.A. barg	36%
re rating 1 iemp Amb Press 4 Classification 4 EIGHT CC. WEIGHT COMPRESSIBILITY ATING PRESS. SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	State Piping m Amb.Rel. Area SPEC. 1 FACTC	naterial Humidity Max HEAT RATIO OR MIN - MAX MIN - MAX	N (-20)°C / :	IAOH #150 50°C 0. N.A. 40 1 - 5 0 0	82 Bar a	S.S. N.A. kg/m3 N.A. barg	36%
re rating I Semp Amb Press A Classification A EIGHT COMPRESSIBILITY ATING PRESS. SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	Piping m Amb.Rel. Area SPEC.	Humidity Max HEAT RATIO DR MIN - MAX MIN - MAX	(-20)°C / 5	#150 50°C 0. N.A. 40 1 - 5 0 0		S.S. N.A. kg/m3 N.A. barg	36%
Amb Press Amb Press Classification Z EIGHT Z COMPRESSIBILITY ATING PRESS Z SUPERIMP. Z BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	Amb.Rel. Area SPEC. 1 FACTO	Humidity Max HEAT RATIO DR MIN - MAX MIN - MAX	(-20)°C / 5	50°C 0. N.A. 40 1 - 5 0 0 0		N.A. kg/m3 N.A. barg	36%
Classification 2 EIGHT 2 COMPRESSIBILITY 2 ATING PRESS 3 SE SUPERIMP. SE BUILT-UP A RESSURE PRESSURE ATING TEMP. EATING TEMP.	Area SPEC. 1 FACTO	HEAT RATIO DR MIN - MAX MIN - MAX		N.A. 40 1 - 5 0 0		N.A. kg/m3 N.A. barg	36%
EIGHT C. WEIGHT COMPRESSIBILITY ATING PRESS. SE SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	SPEC.	OR MIN - MAX MIN - MAX		40 1 - 5 0 0	N.A.	kg/m3 N.A. barg	
C. WEIGHT COMPRESSIBILITY ATING PRESS. SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	FACTO	OR MIN - MAX MIN - MAX		1 - 5 0 0	N.A.	N.A. barg	
COMPRESSIBILITY ATING PRESS. SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE	FACTO	OR MIN - MAX MIN - MAX		1 - 5 0 0	N.A.	barg	
ATING PRESS. SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE]	MIN - MAX MIN - MAX		0 0	N.A.	e	
SEE SUPERIMP. BUILT-UP A RESSURE PRESSURE ATING TEMP. ERATURE RANGE]	MIN - MAX		0 0		e	
RESSURE PRESSURE ATING TEMP. ERATURE RANGE				0		barg	
RESSURE PRESSURE ATING TEMP. ERATURE RANGE	AT DISC	CHARGE		-		_	
PRESSURE ATING TEMP. ERATURE RANGE						barg	
ATING TEMP. ERATURE RANGE				6.5		barg	
ERATURE RANGE					21%		
					50 °C		
FLOW RATE TO BE DISCHARGED					MB - 60 °C		
RATE TO BE DISCH	IARGEI	D		700		kg/h	
ULATION HYPOTHE	ESIS		X	FIRE 0 OPE	ER. MISTAF	o LIQ. EX KE	
: CALCULATED-SEL	ECTED)		1	179 mm2		
					N.A.		
ECTION & NOMIN. 1	PRESSU	JRE	INLET				
r				- 204 S S V 2		5.5.	
				0 304 S.S. A 2	510 5.5.		
				¥ 316 5 5 0 T	UNGST S	Т	
				X 510 5.5. 0 1	011031.5	1.	
	INS - O	PENED					
	A (D O.	TENED		KING	o PL/	AIN	
	TERIAI		n YES				
		_	o YES				
		UECT	NO				
		0201.	NO				
	: CALCULATED-SEL CE NECTION & NOMIN. NET NG & GUIDE LE OR SEAT NET: CLOSED - EXTEN NG LEVER NC. BELLOWS - MA NC. PISTON - META ING: JACKET - NOZZ	: CALCULATED-SELECTED CE IECTION & NOMIN. PRESSU / IET IG I & GUIDE ILE OR SEAT IET: CLOSED - EXTENS O NG LEVER NC. BELLOWS - MATERIAI NC. PISTON - METAL	:: CALCULATED-SELECTED CE NECTION & NOMIN. PRESSURE NET NG & GUIDE LE OR SEAT NET: CLOSED - EXTENS OPENED NG LEVER NC. BELLOWS - MATERIAL NC. PISTON - METAL ING: JACKET - NOZZLE - INJECT.	: CALCULATED-SELECTED CE NECTION & NOMIN. PRESSURE NECTION & NOMIN. PRESSURE NET OUTLET OSS. NG OSS. N	CE INLET OUTLET OUTLET OUTLET OUTLET OSS. O 304 S.S. X 316 S.S. O 304 S.S. O 300 S.S. O 304 S.S. O 304 S.S. O 304 S.S. O 304 S.S. O	CE IN A IN	i: CALCULATED-SELECTED 179 mm2 CE N.A. NECTION & NOMIN. PRESSURE INLET 1" S.S. OUTLET 2" S.S. V 0 S.S. 0 304 S.S. X 316 S.S. VET 0 S.S. 0 304 S.S. X 316 S.S. VG 0 S.S. X 316 S.S. 0 TUNGST. ST. VG 0 S.S. X 316 S.S. 0 TUNGST. ST. VG 0 S.S. X 316 S.S. 0 TUNGST. ST. VG 0 S.S. X 316 S.S. 0 TUNGST. ST. VG 0 S.S. X 316 S.S. 0 TUNGST. ST. VG STD SS STD SS STD SS VET: CLOSED - EXTENS OPENED CLOSED 0 PLAIN NG LEVER 0 WITH PACKING 0 PLAIN NC. BELLOWS - MATERIAL n YES 0 YES NC. PISTON - METAL 0 YES 0 YES TNG: JACKET - NOZZLE - INJECT. NO 100

I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I <thi< th=""> <thi< th=""> <thi< th=""> <thi< th=""></thi<></thi<></thi<></thi<>	Pressure rating Amb.Temp Amb Press Area Classification SP. WEIGHT	<u> </u>		PRES		Y VALV SV-70201	ET 7 OF 14 /E	ISSUE (
2 3 3 1 3 1 3 1 4 1 5 1 6 1 7 1 8 9 10 1 10 1	Piping or Vessel P&ID No. Fluid Pressure rating Amb.Temp Amb Press Area Classification SP. WEIGHT	State Piping 1	ss Line No		PS	SV-70201	Έ	
2 3 3 1 3 1 3 1 4 1 5 1 6 1 7 1 8 9 10 1 10 1	Piping or Vessel P&ID No. Fluid Pressure rating Amb.Temp Amb Press Area Classification SP. WEIGHT	State Piping 1	s Line No	700 DW				
General Data 3 1 4 1 5 1 6 7 7 7 7 7 7 7 7 7 1 1 1 1 1 1 1 1 1	P&ID No. Fluid Pressure rating Amb.Temp Amb Press Area Classification SP. WEIGHT	State Piping 1	ss Line No	700 DW	V	1 70 21 4		
General Data 4 1 5 1 6 2 7 2 8 5 9 1 10 1 11 0	Fluid Pressure rating Amb.Temp Amb Press Area Classification SP. WEIGHT	State Piping 1	ss Line No	700 DW		/-7021A		
5 1 6 2 7 2 8 3 9 1 10 1 11 0	Pressure rating Amb Press Amb.Temp Amb Press Area Classification SP. WEIGHT	Piping		/00-DW	/G-PID-702	150	2"-WAG-702	2002-SS1
6 / 7 / 8 9 10 / 11 0	Amb.Temp Amb Press Area Classification SP. WEIGHT	<u> </u>		WAS	TE GAS		GAS	
7 / 8 5 9 1 10 1 11 0	Area Classification SP. WEIGHT	Amph Dal	material	#	[‡] 150		S.S.	
8 9 9 1 10 11	SP. WEIGHT	AIIID.Kel	l.Humidity Max	(-20)°C / 5	50°C 0.3	32 Bar a		6%
9 1 10 1 11 0		Area]	N.A.		N.A.	
10 11	MOLEC WEIGHT			1	7.621		kg/m3	
11	MOLEC. WEIGHT	SPEC.	HEAT RATIO	8	5.177		N.A.	
	INLET COMPRESSIBILITY					N.A.		
	OPERATING PRESS.		MIN - MAX		1 - 5		barg	
12	BUPERIMP		MIN - MAX		0.1		barg	
OPERATING 13		AT DIS	CHARGE]	N.A.		barg	
CONDITIONS 14	SET PRESSURE				6.5		barg	
15	OVERPRESSURE					21%		
16	OPERATING TEMP.					100 °C		
17	TEMPERATURE RANGE					IB - 110 °C		
18 1	FLOW RATE TO BE DISCH	HARGE	ED	8	3100		kg/h	
19	CALCULATION HYPOTHE	ESIS		Х	FIRE		o LIQ. EX.	
20		FOTE			0 OPE	R. MISTAR	E	
	AREA: CALCULATED-SEI	LECTEI)			13.93		
SIZING 21	ORIFICE			INLET		N.A. 2" S	20	
23	CONNECTION & NOMIN.	PRESS	URE	OUTLET		3" (
24	BODY			X S.S.	o 105 C.S. A 1	05 C.S.	2.0.	
	BONNET			o S.S.	0 105 C.S. A I	05 C.S.		
	SPRING			X S.S.	A 105 C.S. o T	UNGST. S	Г	
Matariala	STEM & GUIDE			STD SS		511001.0		
	NOZZLE OR SEAT			STD SS				
	PLUG			STD SS				
	BONNET: CLOSED - EXTE	INS - C	PENED	CLOSED				
	LIFTING LEVER	51 10 C	JI ENED	o WITH PACK	KING	o PLA	AIN	
	BALANC. BELLOWS - MA	TERIA	L	n YES		• • • •		
	BALANC. PISTON - META			o YES				
	HEATING: JACKET - NOZ		NIECT	NO				
	HEATING CONNECTIONS			NO				

	<u>*</u>	_	SAZ C	ATALYS	T PLANT		DOCUMENT N	JUMBER
		any	PROCE	SS DESIGN	PACKAGE	SHE	ET 8 OF 14	ISSUE (
				PRES	SURE SAFET	Y VALV	/E	
1	Tag No.		1		PS	V-70202		
					V	-7021B		
		Cla	ss Line No	700-DV	/G-PID-702	150	2"-WAG-70	2046-SS1
4	Fluid	State	•	WAS	STE GAS		GAS	
5	Pressure rating	Piping	material	;	¥150		S.S.	
6	Amb.Temp Amb Pre	ss Amb.Re	l.Humidity Max	(-20)°C /	50°C 0.8	2 Bar a	8	6%
7	Area Classification	Area	·		N.A.		N.A.	
8	SP. WEIGHT	-		1	7.621		kg/m3	
9	MOLEC. WEIGHT	SPEC	. HEAT RATIO	8	6.177		N.A.	
10	INLET COMPRESSIBIL	ITY FACT	OR			N.A.		
11	OPERATING PRESS.		MIN - MAX		1 - 5		barg	
12	k g SUPERI	MP.	MIN - MAX		0.1		barg	
13	Ma BUILT-U	JP AT DIS	CHARGE		N.A.		barg	
14	SET PRESSURE				6.5		barg	
15	OVERPRESSURE					21%		
16	OPERATING TEMP.					100 °C		
17	TEMPERATURE RANC	Έ			AM	B - 110 °C		
18	FLOW RATE TO BE DI	SCHARGE	ED		3100		kg/h	
19	CALCULATION HYPO	THESIS		X		D MISTAL	-	
20	APEA CALCULATED	SELECTE	D				XL	
		SELECTE.	D					
21	OKIFICE			INLET			5.5	
23	CONNECTION & NOM	IN. PRESS	SURE					
24	BODY				0.105 C.S. A.10		0.0.	
					0 100 0.0. 11 10	00 0.5.		
_					A 105 C S o TI	INGST S	Г	
		TENS - (OPENED					
		(1LN) (OTLIVED		KING	o PL/	AIN	
		MATERIA	I.					
	BALANC. PISTON - ME			o YES				
55	HEATING: JACKET - N		NIECT	NO				
34		NS	IGLEI.	NO				
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 23 24 25 26 27 28 29 30 31	1Tag No.2Piping or Vessel3P&ID No.4Fluid5Pressure rating6Amb.TempAmb Pre7Area Classification8SP. WEIGHT9MOLEC. WEIGHT10INLET COMPRESSIBIL11OPERATING PRESS.12 $\stackrel{\vee}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ 13 $\stackrel{\vee}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ 14SET PRESSURE15OVERPRESSURE16OPERATING TEMP.17TEMPERATURE RANG18FLOW RATE TO BE DIS19CALCULATION HYPOT20AREA: CALCULATED HYPOT20AREA: CALCULATED SURE12ONIFICE23CONNECTION & NOME24BODY25BONNET26SPRING27STEM & GUIDE28NOZZLE OR SEAT29PLUG30BONNET: CLOSED - E231LIFTING LEVER	al Research & Technology Company1Tag No. \Box 2Piping or Vessel \Box 3P&ID No.Cla4FluidState5Pressure ratingPiping6Amb.TempAmb PressAmb.Re7Area ClassificationArea8SP. WEIGHTSPEC9MOLEC. WEIGHTSPEC10INLET COMPRESSIBILITY FACT11OPERATING PRESS.12 $\stackrel{\vee}{}$ $\stackrel{\otimes}{}$ $\stackrel{\vee}{}$ $\stackrel{\otimes}{}$ SUPERIMP.13 $\stackrel{\otimes}{}$ $\stackrel{\otimes}{}$ 14SET PRESSURE15OVERPRESSURE16OPERATING TEMP.17TEMPERATURE RANGE18FLOW RATE TO BE DISCHARGH19CALCULATION HYPOTHESIS20AREA: CALCULATED-SELECTE21ORIFICE23CONNECTION & NOMIN. PRESS24BODY25BONNET26SPRING27STEM & GUIDE28NOZZLE OR SEAT29PLUG30BONNET: CLOSED - EXTENS 031LIFTING LEVER	Perforchemical Company PROCE 1 Tag No. PROCE 2 Piping or Vessel Ine No 3 P&ID No. Class Line No 4 Fluid State State 5 Pressure rating Piping material Amb No. 6 Amb.Temp Amb Press Amb.Rel.Humidity Max 7 Area Classification Area Area 8 SP. WEIGHT SPEC. HEAT RATIO 10 INLET COMPRESSIBILITY FACTOR MIN - MAX 12 Size SUPERIMP. MIN - MAX 13 Size BUILT-UP AT DISCHARGE BUILT-UP AT DISCHARGE 14 SET PRESSURE SUPERIMP. MIN - MAX 13 Size SUPERIMP. MIN - MAX 14 SET PRESSURE SUPERIMP. MIN - MAX 15 OVERPRESSURE SUPERIMP. MIN - MAX 16 OPERATING TEMP. TEMPERATURE RANGE SUPERIMP. 17 TEMPERATURE RANGE SUPERIMP. SUPERIMP. 19 CALCULATION HYPOTHESIS SUPERIMP.	nal Petrochemical Company al Research & Technology Company PROCESS DESIGN PROCESS DESIGN \mathbb{PRESS} 1 Tag No. \mathbb{PRESS} 2 Piping or Vessel \mathbb{PRESS} 3 P&ID No. Class Line No 4 Fluid State WAS 5 Pressure rating Piping material \mathbb{PRESS} 6 Amb.Temp Amb Press Amb.Rel.Humidity Max (-20)°C / 3 7 Area Classification Area 11 9 MOLEC. WEIGHT SPEC. HEAT RATIO 8 10 INLET COMPRESSIBILITY FACTOR 11 9 MOLEC. WEIGHT SPEC. HEAT RATIO 8 10 INLET COMPRESSIBILITY FACTOR 11 9 MOLEC. WEIGHT SPEC. HEAT RATIO 8 10 INLET COMPRESSIBILITY FACTOR 11 14 11 OPERATING PRESS MIN - MAX 11 12 \mathbb{Y} SUPERIMP. MIN - MAX 11 14 SET PRESSURE 0 16 16 16 OPERATING TEMP.	al Research & Technology Company PROCESS DESIGN PACKAGE PRESSURE SAFET PRESSURE SAFET PRESSURE SAFET PRESSURE SAFET PRESSURE SAFET PRESSURE SAFET V 3 P&ID No. Class Line No 700-DWG-PID-702 4 Fluid State VASTE GAS Pressure rating Piping material #150 0 Amb Press Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0.8 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classification Amb Rel.Humidity Max (-20)°C / 50°C 0 7 Area Classificati	PROCESS DESIGN PACKAGE SHEI PROCESS DESIGN PACKAGE SHEI PRESSURE SAFETY VALX PRESSURE VO202 SPRESSURE Amb RelHumidity Max (20)°C / 50°C 0.82 Bar a Amb Press Amb RelHumidity Max (20)°C / 50°C 0.82 Bar a A rea Classification Area Classification MAL	Name defines a company of

Nation				SAZ C	ATALYS	T PLANT	-	DC	CUMENT	NUMBER
		etrochemical Company search & Technology Company		PROCE	SS DESIGN	PACKAGE	S	HEET	9 OF 14	ISSUE 0
					PRES	SURE SAFET	Y VA	LVE	,	
	1	Tag No.				PS	SV-7020	03		
		Piping or Vessel					V-7022			
	3	P&ID No. Cla	iss	Line No	700-DV	VG-PID-702	150		2"-WAG-70)2027-SS1
General Data	4	Fluid State			WAS	STE GAS			GAS	
	5	Pressure rating Piping	; ma	terial	7	#150			S.S.	
	6	Amb.Temp Amb Press Amb.Re	el.Hu	umidity Max	(-20)°C / :	50°C 0.8	82 Bar a	a		36%
		Area Classification Area				N.A.			N.A.	
	8	SP. WEIGHT			1	0.33			kg/m3	
				EAT RATIO		86			N.A.	
1	10	INLET COMPRESSIBILITY FACT					N.A.			
1	11	OPERATING PRESS.		IN - MAX		1 - 3			barg	
	12	SUPERIMP. BUILT-UP AT DIS	_	IN - MAX		0			barg	
OPERATING -	13		SCH	ARGE		0			barg	
CONDITIONS		SET PRESSURE				4			barg	
1	_	OVERPRESSURE					21%			
	_	OPERATING TEMP.					AMB			
							ИВ - 60	°C		
1	17 TEMPERATURE RANGE 18 FLOW RATE TO BE DISCHAR					8086			kg/h	
1	19	CALCULATION HYPOTHESIS			X	FIRE		TAIZT	o LIQ. EX	•
	20	AREA: CALCULATED-SELECTE	D			0 OPE	R. MIS	IAKE		
		ORIFICE	D				N.A.			
SIZING	21	ORIFICE			INLET			3" S.S	1	
2	23	CONNECTION & NOMIN. PRESS	SUR	RЕ	OUTLET			4" C.S		
	24	BODY			o WCB	X 304 S.S. o 31	16 S.S.	+ C.		
	-	BONNET			o C.S.	A 50 1 5.5. 0 5	10 0.0.			
	_	SPRING			o C.S.	X 316 S.S. o T	UNGST	L ST.		
Materials		STEM & GUIDE			STD SS	110100.0.0	011001			
		NOZZLE OR SEAT			STD SS					
		PLUG			STD SS					
	-	BONNET: CLOSED - EXTENS	OPF	ENED	CLOSED					
	-	LIFTING LEVER	011		o WITH PACI	KING	0	PLAI	N	
		BALANC. BELLOWS - MATERIA	٩L		n YES					
	_	BALANC. PISTON - METAL			o YES					
	-	HEATING: JACKET - NOZZLE - 1	INJI	ECT.	NO					
	35	HEATING CONNECTIONS			NO					

				SAZ	CATALYS	T PLANT		D	OCUMENT 1	NUMBER
		Petrochemical Company search & Technology Company		PROC	ESS DESIGN	PACKAGE		SHEE	Г 10 OF 14	ISSUE 0
					PRES	SURE SAFE	TY V	ALV	Е	•
	1	Tag No.				F	PSV-80	101		
		Piping or Vessel					V-801	1		
	3	P&ID No. Cl	ass	Line No	800-DV	/G-PID-801	15	0	2"-WAG-80	1023-CS1
General Data	4	Fluid State			WAS	STE GAS			GAS	
	5	Pressure rating Piping	g ma	aterial		#150			C.S.	
	-	<u>.</u>	Rel.H	lumidity Max	(-20)°C /	50°C 0	.82 Ba	r a		36%
		Area Classification Area			_	N.A.			N.A.	
		SP. WEIGHT				7.621			kg/m3	
				IEAT RATIO	8	6.177			N.A.	
		INLET COMPRESSIBILITY FAC					N.A			
		OPERATING PRESS.		IIN - MAX		1 - 5			barg	
	12	SUPERIMP. BUILT-UP AT DI		IIN - MAX		0.1			barg	
OPERATING	13		ISCI	HARGE		N.A.			barg	
CONDITIONS		SET PRESSURE				6.5			barg	
		OVERPRESSURE					21%			
-		OPERATING TEMP.					60 °C	-		
-		TEMPERATURE RANGE			_		MB - 8	0 °C		
-	18	FLOW RATE TO BE DISCHARC	JED			8100			kg/h	
	19	CALCULATION HYPOTHESIS			X	FIRE o OP	ER. MI	STAK	o LIQ. EX E	
	20	AREA: CALCULATED-SELECTI	ED							
SIZING	21	ORIFICE					N.A			
SIZING	23	CONNECTION & NOMIN. PRES	SSU	RE	INLET OUTLET			2" C		
	24	BODY			X C.S.	o 105 C.S. A	105 C.			
		BONNET			o C.S.			~.		
	-	SPRING			o C.S.	A 105 C.S. o	FUNG	ST. ST		
Materials		STEM & GUIDE			STD SS					
		NOZZLE OR SEAT			STD SS					
		PLUG			STD SS					
		BONNET: CLOSED - EXTENS	- OP	ENED	CLOSED					
		LIFTING LEVER			o WITH PAC	KING		o PLA	IN	
		BALANC. BELLOWS - MATERI	AL		n YES					
-		BALANC. PISTON - METAL			o YES					
		HEATING: JACKET - NOZZLE -	· INJ	ECT.	NO					
	35	HEATING CONNECTIONS			NO					

Petrochemical Re	Petrochemical Company esearch & Technology Company Tag No. Piping or Vessel P&ID No. Cla	PROCE		PACKAGE SURE SAFET		T 11 OF 14 E	ISSUE 0
2 3 General Data 4 5 6 7	Piping or Vessel P&ID No. Cla		PRES		Y VALV	Е	
2 3 General Data 4 5 6 7	Piping or Vessel P&ID No. Cla	1					
2 3 General Data 4 5 6 7	Piping or Vessel P&ID No. Cla			PS	V-80102		
General Data 4 5 6 7	P&ID No. Cla			V	/-8012		
5 6 7		iss Line No	800-DW	/G-PID-801	150	2"-WAG-80	1039-SS1
6 7	Fluid State	•	WAS	STE GAS		GAS	
7	Pressure rating Piping	material	#	<i>‡</i> 150		S.S.	
	Amb.Temp Amb Press Amb.Re	el.Humidity Max	(-20)°C / 5	50°C 0.8	2 Bar a	8	6%
			1	N.A.		N.A.	
8	SP. WEIGHT			7.621		kg/m3	
		C. HEAT RATIO	80	6.177		N.A.	
	INLET COMPRESSIBILITY FACT				N.A.		
	OPERATING PRESS.	MIN - MAX		1 - 5		barg	
12		MIN - MAX		0.1		barg	
OPERATING 13		SCHARGE		N.A.		barg	
CONDITIONS 14	SET PRESSURE			6.5		barg	
	OVERPRESSURE				21%		
	OPERATING TEMP.				AMB		
	TEMPERATURE RANGE				B - 60 °C	1 /1	
18	FLOW RATE TO BE DISCHARG	ED		3100		kg/h	
19	CALCULATION HYPOTHESIS		X	FIRE	R. MISTAK	o LIQ. EX.	
20	AREA: CALCULATED-SELECTE	D		0.01.11	C. WHO IT IK	L	
21		~			N.A.		<u></u>
SIZING 22	CONNECTION & NOMIN. PRESS		INLET		2" S	.S.	
		SUKE	OUTLET		3" C	.S.	
	BODY		X S.S.	o 105 C.S. A 10)5 C.S.		
	BONNET		o S.S.				
Materials	SPRING		X S.S.	A 105 C.S. o TU	JNGST. ST		
	STEM & GUIDE		STD SS				
	NOZZLE OR SEAT		STD SS				
	PLUG		STD SS				
	BONNET: CLOSED - EXTENS	OPENED	CLOSED		DI A	DI	
	LIFTING LEVER	A T	o WITH PACK n YES	AING	o PLA	IN	
	BALANC. BELLOWS - MATERIA	AL	n YES o YES				
	BALANC. PISTON - METAL HEATING: JACKET - NOZZLE - 1	NIECT	NO				
	HEATING CONNECTIONS	INJECT.	NO				
Notes:	TILATING CONNECTIONS		110				

E SHEET 12 OF 14 ISSUE 0 FETY VALVE PSV-80201 T-8021 150 2"-WAG-802010-CS1 GAS 0.82 Bar a 86% 0.82 Bar a 86% 0.82 Bar a 86% N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N
PSV-80201 T-8021 150 2"-WAG-802010-CS1 GAS GAS S.S. 0.82 Bar a 86% N.A. N.A. N.A. N.A. N.A. barg barg barg barg barg J1% 70 °C
T-8021 150 2"-WAG-802010-CS1 GAS 0.82 Bar a 86% N.A. 0.82 Bar a 86% N.A. N.A. N.A. N.A. N.A. barg barg barg 21% 70 °C
150 2"-WAG-802010-CS1 GAS 0.82 Bar a 86% N.A. kg/m3 N.A. N.A. N.A. barg barg barg barg barg 21% 70 °C
GAS S.S. 0.82 Bar a 86% N.A. kg/m3 N.A. N.A. N.A. barg barg barg barg 21% 70 °C
S.S. 0.82 Bar a 86% N.A. Kg/m3 N.A. N.A. N.A. barg barg barg barg 21% 70 °C
0.82 Bar a 86% N.A. kg/m3 N.A. N.A. barg barg barg barg 21% 70 °C
N.A. kg/m3 N.A. N.A. barg barg barg barg 70 °C
kg/m3 N.A. N.A. barg barg barg 21% 70 °C
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barg barg barg 21% 70 °C
barg barg 21% 70 °C
barg 21% 70 °C
21% 70 °C
70 °C
AMB - 80 °C
kg/h
o LIQ. EX. DPER. MISTAKE
N.A.
2" S.S. 3" C.S.
A 105 C.S.
A 105 C.5.
0 TUNGST. ST.
0101001.01.
o PLAIN

				SAZ C	ATALYS	T PLANT		DOCUMENT 1	NUMBER			
		etrochemical Company search & Technology Company		PROCES	SS DESIGN	PACKAGE	SH	EET 13 OF 14	ISSUE 0			
					PRES	SURE SAFET	Y VAI	LVE				
	1	Tag No.				PS	V-80202	!				
		Piping or Vessel				v	V-8021	8021				
	3	P&ID No. Cla	ass	Line No	800-DW	/G-PID-802	150	11/2"-WAG-8	02026-CS1			
General Data	4	Fluid State			WAS	STE GAS		GAS				
	5	Pressure rating Piping	, materi	al	#	<i>‡</i> 150		S.S.				
	6	Amb.Temp Amb Press Amb.Re	el.Humio	dity Max	(-20)°C / 5	2 Bar a	8	36%				
		Area Classification Area]	N.A.		N.A.				
_	8	SP. WEIGHT			1	7.621		kg/m3				
				T RATIO	86.177			N.A.				
_	10	INLET COMPRESSIBILITY FAC	-		N							
	11	OPERATING PRESS.		- MAX	0 - 5			barg				
	12	SUPERIMP. BUILT-UP AT DIS		- MAX		0.1		barg				
OPERATING -	13		SCHAR	RGE]	N.A.		barg				
CONDITIONS		SET PRESSURE				6.5		barg				
		OVERPRESSURE					21%					
		OPERATING TEMP.					AMB					
1		TEMPERATURE RANGE					1B - 70 °C					
	18	FLOW RATE TO BE DISCHARG	ED			5000		kg/h				
	19	CALCULATION HYPOTHESIS			Х	FIRE	D MIGT	o LIQ. EX				
	20	AREA: CALCULATED-SELECTE	-D				R. MIST. 13.93	AKE				
		ORIFICE	сD				N.A.					
SIZING	21	ORIFICE			INLET			2" S.S.				
	23	CONNECTION & NOMIN. PRES	SURE		OUTLET			3" C.S.				
	24	BODY			X S.S.	o 105 C.S. A 1	05 C.S.					
		BONNET			o S.S.							
	_	SPRING			X S.S.	A 105 C.S. o T	UNGST.	IGST. ST.				
Materials		STEM & GUIDE			STD SS	I						
	28	NOZZLE OR SEAT			STD SS							
	29	PLUG			STD SS							
	30	BONNET: CLOSED - EXTENS	OPENI	ED	CLOSED							
		LIFTING LEVER			o WITH PACH	KING	o P	o PLAIN				
ACCESS.&	32	BALANC. BELLOWS - MATERIA	AL		n YES							
OPTIONALS	33	BALANC. PISTON - METAL			o YES							
	34	HEATING: JACKET - NOZZLE -	INJEC	Г.	NO							
	35	HEATING CONNECTIONS			NO							

				SAZ C	ATALYS	T PLANT	-	D	DCUMENT 1	NUMBER		
		Petrochemical Company search & Technology Company		PROCES	SS DESIGN	PACKAGE		SHEET	Г 14 OF 14	ISSUE 0		
					PRES	SURE SAFET	TY V	ALV	E	•		
	1	Tag No.				Р	SV-902	203				
		Piping or Vessel					ГК-902	9022				
	3	P&ID No. Cla	SS	Line No	900-DW	/G-PID-902	15	0	6"-WAG-90	2017-CS1		
General Data	4	Fluid State			WAS	STE GAS			GAS			
		Pressure rating Piping	mate	erial		#150			C.S.			
		<u>.</u>	el.Hui	midity Max	(-20)°C / 5	82 Bar	a		36%			
		Area Classification Area				N.A.			N.A.			
		SP. WEIGHT				17.8			kg/m3			
				AT RATIO	86 N				N.A.			
		INLET COMPRESSIBILITY FACT										
		OPERATING PRESS.		N - MAX	0 - 0.15				barg			
	12	SUPERIMP. BUILT-UP AT DIS		N - MAX		0	-	barg				
OPERATING	13		SCHA	ARGE		0	_	barg				
CONDITIONS		SET PRESSURE				0.2	1.50/		barg			
		OVERPRESSURE					15% AME					
		OPERATING TEMP.				41	MB - 5					
1		TEMPERATURE RANGE	CD		1	2400	VID - 3	0 C	kg/h			
	18	FLOW RATE TO BE DISCHARGE	ED			FIRE	-		o LIQ. EX			
	19	CALCULATION HYPOTHESIS			Λ		ER MI	STAK	-	•		
	20	AREA: CALCULATED-SELECTE	D			0.011	28.7					
		ORIFICE	D				N.A.					
SIZING				_	INLET		6" C.S.					
	23	CONNECTION & NOMIN. PRESS	SURI	E	OUTLET			8" C.S.				
	24	BODY			X C.S	o 304 S.S. o 3	16 S.S	S.S.				
	25	BONNET			o C.S							
Matariala	26	SPRING			o C.S	o 316 S.S. o T	UNGS	IGST. ST.				
Materials	27	STEM & GUIDE			STD SS							
	28	NOZZLE OR SEAT			STD SS							
	29	PLUG			STD SS							
	30	BONNET: CLOSED - EXTENS (OPE	NED	CLOSED							
	31	LIFTING LEVER			o WITH PACH	KING		o PLAIN				
ACCESS.&		BALANC. BELLOWS - MATERIA	L		n YES							
OPTIONALS		BALANC. PISTON - METAL			o YES							
		HEATING: JACKET - NOZZLE - I	NJE	CT.	NO							
	35	HEATING CONNECTIONS			NO							

PROJECT	PP-PE PILOT PLANT	
TITLE: INSPECTION & TEST PL	AN FOR PRESSURE SAFETY/RELIEF VALVE	شرکت ملی صنایع پتروشیمی شرکت پژوهش و فناوری پتروشیمی
	N & TEST PLAN FOR PR AFETY/RELIEF VALVE	ESSURE
	Document No.:900-ITP-A4-IN-	0007 Rev.: 0
	Owner Job No.:	Type: ITP
	Contract Job No.:	Page A
PA GE V.	PAGE	

REV. PAGE	0	1	2	3	4	REV. PAGE	0	1	2	3	4
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	ITP FOR PRESSURE SA	FETY RELIEF VALVE	میں منابع ہتروشیمی وہش و فناوری پتروشیمی	
3.	ion/Tests by Purchaser and/or Purchaser's Representative Inspection/Tests to be Performed by Vendor as a Minimum 4. Certificate/Data to be Provided by Vendor	ABBREVIATION ON TYPE OF INSPECTION H: Hold Point, inspection notification required. During hold poi The Vendor shall not proceed with the work until presence of W: Inspection activities performed by the Vendor and witness. If the Inspector is not present, the Vendor may perform the S: Witness, but spot check basis, inspection notification requi operation will be witnessed at discretion of the inspector c inspection % specified. R: Review of inspection records and/or specified document M: Vendor's inspection and tests X: Required	of the inspector or written consent of ed by the inspector. Inspection notific inspection/tests as scheduled unless red. Initial operation will be witnesser considering the results of previous ins	the inspector. ation required. s otherwise requested. d and subsequent pection unless otherwise
No. R W M 01 R S M 02 R S M 03 R R M 04 R R M 05 R W M 06 R S M 07 W W M 08 H H M 09 H H M 10 R R M 11 R W M 12 R S M 13 R R M 14 R S M 15 R S M 16 R W M 17 W H M 18 H H M 19 R R M	Inspection/Test Items (Pressure Safety Relief valve) Visual inspection X Dimensional inspection X Mill test reports for body and trim X Non-destructive examination, when specified X Pressure test X Prepumatic test, when specified X Seat leakage test X Perperation for shipment X Documentation review prior to release (Vacuum breaker, atmospheric valve) Visual inspection X Dimensional inspection X Mill test reports for body and trim X Non-destructive examination, when specified Pressure test X Seat leakage test X Performance test Preparation for shipment X Documentation review prior to release	Approved procec Approved procec	ocedure & Standards dure and drawings dure and drawings	Remarks



PP-PE Pilot Plant



Title:

INSTRUCTION FOR VENDOR DOCUMENTATION

Page: A

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- ۳. Content
- ٤. Instructions concerning vendor's data books presentation
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 - ٤, ۰ Identification
 - ٤,٦ Internal presentation
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- •. Number of vendor's data books per purchase order
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- V. Transmittal of documentation
- ^A. Documents for engineering
 - A, Vendor drawing and documentation list
 - ۸,۲ Plate arrangement drawing and material list
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 - ۸,٤ Detail drawings
 - ۸,۰ Calculation notes
 - ۸,٦ Spare parts list
- ⁹. Description of inspection and / or acceptance documents
 - ۹,۱ Material certificates
 - ۹,۲ Welders qualification
 - ۹,۳ Hydraulic test report
- ۱۰. Issuance schedule





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۱. Purpose

The purpose of this procedure is to give instructions for preparation of Vendor's data book (mechanical catalogue) applicable to the contract.

۲. <u>Difinition</u>

VENDOR	Companies Awarded by Owner for Procurement Services, Inspection
	Affairs or Transportation, Providing of Project's goods, following up all
	transport activities from VENDOR workshop to final destination as
	defined in the purchase order.

OWNER: Petrochemical Research & Technology Company

۳. <u>Content</u>

The Vendor's Data Book shall contain comprehensive detailed information covering design and engineering, inspection and testing, installation, operation and maintenance manual of the equipment and accessories included in, and supplied for the plant.

In addition, VENDOR shall submit the drawings and documents according to the "LIST OF DOCUMENTS REQUIRED FROM VENDOR "given in the requisition / purchase order.

For a sample of the contents of VENDOR's data book refer to Attachment No. 1.

4. Instructions Concerning Vendor's Data Books Presentation

٤, \ Language / Units

All documents and drawings for design and fabrication shall be written in English as well as all Maintenance and Operating Instructions.

All units and dimensions shall be in the metric system except for the following:

- Size of pipe and valve (Inch)
- Flange rating (Pound)

If necessary, other units and dimensions shall be used with OWNER approval.





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٤,٢ Size Of Documents

• All drawings shall be prepared on ISO standard size sheets, i.e.

A۰	:	$\lambda \epsilon \cdot x \mapsto \lambda \lambda mm$	
A١	:	٥٩٤ _X ٨٤٠ mm	
A٢	:	٤٢٠ _x ٥٩٤ mm	
A٣	:	۲۹۷ _X ٤٢٠ mm	
A٤	:	۲۱۰ _X ۲۹۷ mm	

- Size A should be used only with OWNER approval. Larger sizes are not allowed.
- In general all drawings shall be reduced to $\gamma \gamma \gamma$ mm x random length size for convenience in handling.
- All documents other than drawings shall be prepared on standard A^r or A^ε size sheets suitable for insertion in an A^ε hard-core binder.
- All reduced drawings, data, etc. shall be legible.

۶, ۳ Class Of Documents

All drawings / data submitted must be of good quality that will allow production of legible copies.

• Documents submitted to OWNER for comments:

These documents give all data necessary to understand operation and to appraise the construction method, assembly, disassembly, fastening and connections of equipment. They clearly indicate the scope of supply and specify all details necessary for installation.

• Final documents:

These documents are certified, "As built" documents finally reviewed without comment by OWNER.

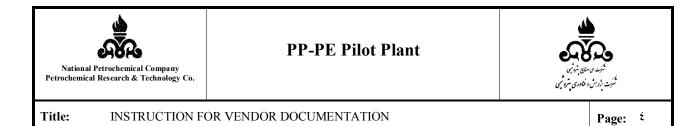
OWNER comments on VENDOR documentation shall in no way relieve the VENDOR of his responsibility especially concerning the design of the equipment or facilities.

٤,٤ Books Form

All the documentation shall be inserted in A^{ξ} (Yav mm x Y) mm) white color binder (Punch holes shall be two).

Other types, such as folders or boxes with loose sheets, are not acceptable. The thickness of each volume shall under no circumstance exceed that of a normal file (^V cm). The paper level inside each file shall be at least ° mm below the opening point of the

binder.



Drawings and documents with sizes larger than A^{r} will be folded in plastic jackets inserted in the file, with opening upward.

٤,٥ Identification

Each Vendor's data book shall be identified on its back and on the cover by a standard label, the format of which is given in Attachment No.^{γ}.

٤,٦ Internal Presentation

All drawings and documents shall be written in English. Cardboard division sheets shall separate different groups of documents, sheets and directions. At least rigid index sheets with numbering shall separate the different chapters.

The wording and presentation of the reports will be controlled with utmost care.

Consequently, any loose presentation, which may give the OWNER impression of careless work, will be rejected. This applies in particular to:

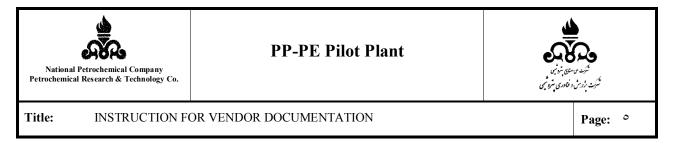
- All manuscripts or type texts with handwritten comments (except for technical documents on OWNER or Vendor's standard forms).
- All texts in any language other than English, unless they are transmitted together with a translation in compliance with the above requirement.
- All copies that might be questionable: writing too light, dark background areas, dark edge due to poor centering, titled copy, perforation marks, etc.

٤, ٧. Vendor Document Numbering

In addition to the Vendor's document number, VENDOR shall add OWNER's document number.

The block shown here below will be placed on each "first page" of specification, data sheet and each drawing in addition to the Vendor's label.

National Petr	ochemical Company / Petrochemical Reso	earch & T	Fechnolog	gy Company
National Petr	PP-PE Pilot Plant			
	Owner Project No.	Rev.	Date	Signature
NPC-RT	Owner Doc/Dwg. No.			
PP-PE Pilot Plant	Sh. Of			



All other pages of the specifications and data sheets shall have the following block.

Project No.	Owner Project No.	Rev. Sh. Of
OWNER DOC. N	lo.	

•. <u>Number Of Vendor's Data Books Per Purchase Order</u>

If the purchase order includes several separate requisitions or covers several items, which are to be shipped with different vessels, the VENDOR shall supply as many separate Vendor's data books, as there are separate requisitions and/or shipments.

If the requisition covers a large number of items, a common part and specific chapters by item may be planned in agreement with OWNER.

VENDOR shall prepare:

- [°] Copies of the complete VENDOR Data Book.
- Copy of electronic file in CD
- Y Reproducible copy of final drawings / documents

Delivery Time

Documents submitted for review are forwarded in compliance with the dates specified on the Attachment $\# \gamma$ of requisition.

Final documents shall be forwarded 1° days after receipt of documents commented by OWNER.

Delivery dates are mandatory and a payment installment may be conditioned by the receipt of documents and/or drawings (refer to the order provisions).

V. <u>Transmittal Of Documentation</u>

All drawings and documents shall be transmitted with a transmittal note to the address indicated in the Purchase contract. Purchase order number should be clearly indicated.

Any drawing, which is unreadable, will be returned without fail to the VENDOR who shall in no case use this as an excuse for delivery delay.

Any revision made on documentation should be highlighted with a cloud mark.





Page: 7

A. <u>Documents For Engineering</u>

This paragraph is to clarify OWNER requirements concerning the presentation of some essential engineering documents and drawings submitted for approval. The items indicated below refer to the items listed in the "LIST OF DOCUMENTS REQUIRED FROM THE VENDOR" shown in the attachment # γ of requisition.

A,V Vendor Drawing And Documentation List

The VENDOR'S shall provide an exhaustive list of the documentation to be delivered. It should be sent together with the first issue of documents.

۸,۲ Plate Arrangement Drawing And Material List

This drawing shall be in proper scale.

The plate arrangement drawing or sketch shall indicated as a minimum:

- A general outline of the equipment (shells, heads, supports, skirt, lugs, saddles, stiffeners, etc.);
- For columns, shell / cone / skirt development including all internal & external attachments;
- Position of circumferential and longitudinal weld seams in accordance with plates sizes;
- Head shape (and plate arrangement in case of composed head);
- Shape of reduction cone (straight flange, knuckle radius, etc.);
- Plate thickness after plate forming;
- Material specification;
- Material list

Approval of this document enables order of main materials to be finalized.

The material list for nozzles shall be presented in schedule form. It shall be established from the nozzles list shown on the engineering arrangement drawing or process data sheet, and shall include:

- Identification (or item), quantity and diameter of nozzles;
- Type, rating, facing and material of flanges;
- Schedule or thickness of nozzle necks;
- Diameter, thickness and material of reinforcements;
- Material, thickness, rating of blind flanges (if any);
- Diameter, quantity, length, thread type, material of stud bolts and nuts;
- Definition, rating, materials of gaskets





Page: V

This document is prepared from information known when equipment is ordered. Its approval will allow the above accessories to be supplied.

Any modifications of one of the items listed above will involve revision of the documents and be followed by new approval.

After approval, the material list shall be transferred on the VENDOR general arrangement drawing.

Note: these documents do not apply to storage tanks.

۸,۳ Item: General Arrangement Drawing

The VENDOR can start fabrication only after receiving OWNER approval of this document as a minimum.

This drawing shall be in proper scale.

This drawing shall give the following technical information:

- Main dimensions, overall length, minimum thickness of major components;
- Design code, design pressure and temperature, hydrostatic test pressure, nondestructive tests, heat treatment, etc.;
- Corresponding material specification;
- Location and orientation of weld seams (shells, heads, skirt, etc.);
- Shape of heads or, type/ angle of roof for storage tanks;
- Location, orientation of nozzle gussets and other external welded Attachments;
- Location & orientation of internals (trays supports, coils, demisters, baffles, etc.);
- List of nozzles and connections in accordance with material list (dia., type, rating, schedule, etc.);
- Gaskets and bolting (type, material, etc.);
- All information of scope of supply;
- All information on anchoring system;
- Fabricated weight;
- Empty weight;
- Hydro test weight;
- Operating weight;
- Net weight of removable parts;
- Type of paint and its surface preparation;
- North direction;
- List of detail drawings;
- Insulation / fire proofing support detail;

Note: OWNER guide drawings shall not be used as construction drawings.





۸,٤ Detail Drawings

These drawings shall include references to general arrangement drawing and show:

- Detail of all accessories, internal and external attachment (gussets, etc.): With weld geometry and specification in accordance with approved welding procedure;
- Weight and dimension of removable internals;
- Part list of the various elements;
- Weld geometry and specification in accordance with approved welding procedure;
- All information required on manufacturer name plate;
- Insulation / Fire proofing support detail;
- All construction details not covered above;

All this information may be shown on general arrangement drawing, at Vendor's choice.

۸,۰ Calculation Notes

Calculation notes shall be in accordance with general arrangement drawing. VENDOR shall establish calculation notes for each equipment. They shall in all cases be included in "manufacturer file".

These documents shall be clearly marked with identification numbers as other VENDOR documents.

They shall include full reference to information sources (codes, formulas, etc.) used for design.

These documents shall be transmitted for review / approval to OWNER. These documents shall be approved prior to general arrangement drawing approval. OWNER approval shall in no case relieve the VENDOR from his responsibilities.

۸,۶ Spare Parts List

SPARE PARTS LIST AND INTERCHANGEABILITY RECORD (SPIR form) to be filled out by VENDOR according to it's filling procedure.

4. <u>Description Of Inspection And/Or Acceptance Documents</u>

This paragraph clarifies OWNER requirements for documents relating to inspection and acceptance of equipment.

The items indicated below refer to the items listed in the "LIST OF DOCUMENTS REQUIRED FROM THE VENDOR" included in the requisition.





Page: 9

9,1 Material Certificates

All pressurized parts shall be considered as main components requiring certificates type ^{γ} . ^{γ} . B including:

- Shell, heads, cones
- Skirt, saddles, support brackets
- Tubes, flanges, forging, internal piping, nozzle necks
- Bolting for nozzle and shell flanges
- Welding material

4,7 Welders Qualification

This document shall contain all the information concerning:

- Welders (name, number, mark)
- Welding procedure
- Base material (specification, thickness, etc.)
- Welding material (specification, diameter, etc.)
- Electrode type
- Destructive tests results (bending, tensile, impact tests)

All information required on the QW $\xi \wedge \xi$ forms given by ASME section IX shall be considered as a minimum.

۹,۳ Hydraulic Test Report

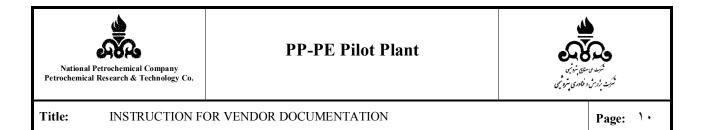
This document shall contain the following information:

- Type and volume of equipment
- Contained gas analysis
- Description of equipment (length, width or diameter, nature of base material, thickness)
- Construction number and date
- Hydrostatic test pressure in letters
- Date of inspection (before test) and inspector's name
- Hydrostatic test data
- Signatures of inspectors

1. <u>Issuance Schedule</u>

Final Vendor's data books should normally be shipped to the OWNER as per agreed delivery schedule specified in PO of the relevant equipment.

Such final Vendor's data books shall be an integral part of the Vendor's services set forth in the purchase order and the following precautions must be taken in order to meet the above shipping requirements:

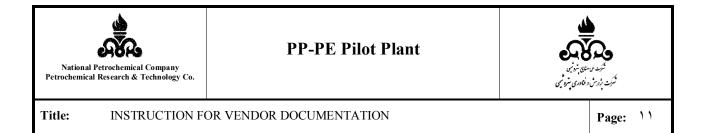


At the latest \uparrow months before the scheduled delivery date, the VENDOR shall transmit the Vendor's data book model to OWNER for comments and approval.

The model shall be in conformity with the final internal and external presentation and shall contain all documents required for the final report.

A non- completed form will replace the final acceptance documents, which do not exist at that stage.

Note: Recommendation for handling, transport and storage shall be shipped in box together with the equipment.



ATTACHMENT # \

VENDOR DATA BOOK'S CONTENT (SAMPLE)





Page: 17

PART 1: General Descripton Of The Equipment

- V. OWNER's requisition
- 1,7. General description including OWNER's specifications and data sheets and drawings

PART Y : Recommendations For Storage, Handling And Lifting

- (1), Special precautions for handling prior erection (1)
- Y,Y. Recommendations for storage prior and during erection

PART ": Erection

- r, i. List of components to be erected/installed on site
- ", Y. Detailed schedule of the erection including hypothesis taken into account
- r,r. Procedures for erection and installation of the equipment
- ۳, ٤. Schedule of connection points detailing locations and dimensions
- ۳,۰. Electrical terminal wiring diagrams
- r, τ . Details of site assembly, and filed welds
- r, v. List of special tools for site erection and assembly
- r,Λ . Procedures for site assembly, leveling and welding
- ۳,۹. Welding specifications for field welds
- (,). List of checks and tests to be performed on site
- (,,). Site testing and acceptance procedures
- **", 11**. Procedures for preparation of the equipment for commissioning (including the calibration of instruments)
- ", ". List of works to be implemented on site instead of Vendor's shop (When required)
- $r, 1 \xi$. Weight (empty, full of water)

PART : Start-Up Running Instructions

- ٤, ۱. General
- ٤, ۲. Principle
- ٤,٣. Operation
- ξ, ξ . Description of the apparatus
- ٤, °. Commissioning
- ٤,٦. Running instructions





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PART • : Maintenance Instructions

- o, Maintenance
- o, Y. Safety instructions
- °, ^r. General maintenance
- o, *٤*. Lubricant table and equivalence
- o,o. Trouble shooting check lists and diagrams
- o, 7. Maintenance Schedule

PART ': Spare Parts ('), (')

- **1,1.** Spare parts for erection, precommissioning, commissioning and start-up
- 7,7. Spare parts for 7 years operation
- ٦,٣. Sectional drawings

PART ^V: Manufacturer's Documents / Drawings (^{*})

- \forall, γ . List of drawings (ξ)
- ۲,۲. Manufacturer's data report
- v,٣. Drawings (°)
- ۲,٤. Calculation notes
- V, o. Curves and technical data (including P.W.H.T. if applicable)
- ۲,٦. MANUFACTURER name plate photography

PART A: Quality Assurance And Manufacturing Documents

- Λ , Λ . Material test certificates
- Λ, Υ . Welding Inspection controls and test reports
- Λ, τ . Welding procedure specification
- Λ, ξ . Welding procedure qualification reports
- Λ, \circ . Welder qualification reports
- ۸,٦. Weld identification
- Λ, V . Plate identification sketch with heat numbers
- $^{\Lambda,\Lambda}$. Certificate of shop inspection (before hydrostatic test)
- ۸,۹. X-Ray identification
- A.V. Radiographic procedure qualification
- A, 11. Radiographic reports along with radiographs
- Λ , Υ . Batch test certificates from manufactures for electrodes
- ۸, ۱۳. Hydrostatic and other test results and reports (such as visual control and N.D.T., etc.).
- ۸, ۱٤. Precommissioning / commissioning check Lists & procedures
- $\lambda, 0$. All other requirements as specified in the respective specifications

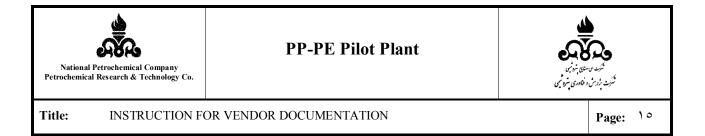




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Remarks

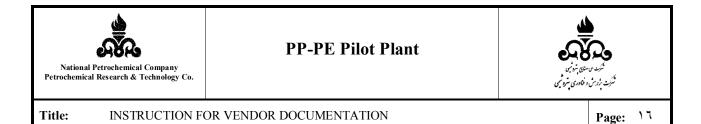
- () Including a copy of transportation drawing
- (Y) No spare parts price must be incorporated in this book
- (^r) Only issues approved by as "FINAL"
- (ϵ) Only the drawings included in this part \vee .
- (•) Drawings larger than A^{r} format must be folded and inserted in individual plastic skirts.
- Sufficient information to be prepared for spare parts Such as: materials of construction sizes / three proposed Vendor's, etc.

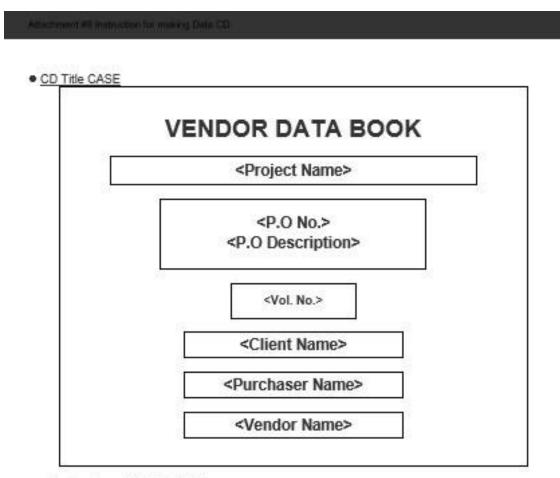


ATTACHMENT # ۲

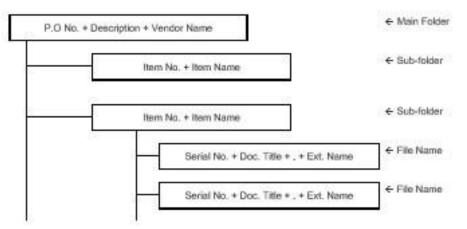
VENDOR'S DATA BOOK

COVER





Construction of the Data Folder





PP-PE Pilot Plant



Title:

PACKING AND MARKING PROCEDURE

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- **£.** Packing for Equipment and Materials
- •. Packing and Marking for Electrical Panels And Instruments





Title: PACKING AND MARKING PROCEDURE

Scope

This procedure gives the information for Packing and Marking and it is to be applied to vendors for the preparation, protection and packaging of materials, equipment, requiring export shipments for the PP-PE Pilot Plant Project to be built in Petrochemical Research & Technology Company, Arak/Iran.

The following instructions are intended as minimum requirements, and adherence to these instructions in no way, absolves or relieves Vendors of any responsibility or obligation outlined in the Purchase Order.

۲. <u>Purpose</u>

This document defines the criteria required by the Project in relation to the packing and marking of both Project's Equipment and materials including Electrical Panels and Instruments.

۳. <u>Definitions</u>

OWNER	Petrochemical Research & Technology Company
PROJECT	PP-PE Pilot Plant
GOODS	All kind of materials and equipment to be incorporated in the Project.
VENDOR	Companies Awarded by Owner for Procurement Services, Inspection Affairs or Transportation, Providing of Project's goods, following up all transport activities from VENDOR workshop to final destination as defined in the purchase order.

4. Packing For Equipment And Materials

£, **1** Equipment and material shall be exported packed in compliance with General Purchase Conditions and the best established practice for overseas construction jobs in accordance with the following directives. In the event of any divergence between this specification and the established practice, this specification shall govern.

£,1,1. "Seaworthy and tropical proof" according to international standard.

£,**1**,**7** Packing and conservation of goods shall be sufficient to protect them from damage during transit from point of manufacture to the delivery at job site under conditions





which may involve multiple handling, extended storage, exposure to moisture and the possibility of pilferage. The contents must withstand one year transit conditions without suffering damage and Vendors shall give recommendations for a further two(r) years storage under SITE conditions.

Required storage facilities and procedure shall be advised by manufacturer/seller in advance.

- **t**, **1**, **r** The packing of the equipment and materials shall be carried out in order to comply with transport conditions.
- **£**, **1**, **£** Individual packages shall be kept as small in bulk as possible.
- t, t, \bullet Individual packages exceeding a gross weight of $\tau \cdots kgs$ shall be avoided, if possible.
- **4.1.7** Kind and dimension of packages shall be chosen to suit overseas transport in contáiners and to fully utilize the size of containers.
- \$,1,Y The following inside dimension of containers are to be observed :
 \$\frac{1}{2}\$ ·-feet-containers : 1190x77 · x7 · 0 cms.
 \$\frac{1}{2}\$ ·-feet-containers : 090x77 · x7 · 0 cms.

٤,٢ Modes of Packing

In accordance with the nature of the contents, the following modes of packing shall be considered:

- a) wooden cases
- b) wooden crates
- c) skid-construction (for vessels etc.)
- d) non-returnable steel drums (export variety)
- e) non-returnable cable reels
- f) bales
- g) $\gamma \cdot \text{ft} \epsilon \cdot \text{ft}$ non-refundable containers

٤,٣ General Rules for Packing

 ξ, τ, τ Cases and crates shall be made from new, sound and seasoned lumber. Sheathing shall be of min $\tau \xi$ mm thickness.

If so required for static reasons, thicker sheathing shall be used, in accordance with size and weight of the package. Timber crates and boxes shall be strong enough to withstand without any damage, transport on ship board at sea and numerous handling between the works and the port of origin and between the port of destination and the site.





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- ۲,۳,۲ Cases and crates with gross weight up to ۲۰۰۰۰ kgs shall be provided with bottom cleats of min. ۲۰ mm thickness to ensure clearance for handling by forklift.
 Cases and crates exceeding gross weight of ۲۰۰۰۰ kgs shall be provided with skid runners, number and size according to weight of package.
- *, ", " The contents of cases shall be protected by waterproof and strong plastic foil which shall be sealed by welding. An adequate quantity of moisture absorbent (silica gel) shall be added to protect the contents for sufficiently long time from corrosion.
- *, *, *Felt, cellophane paper, polyester cuttings, crepe cellulose and some equally efficient materials may be used for padding or cushioning.Wood shavings and other paper shall not be used for padding or cushioning.
- £, *, Materials shall be protected against corrosion during transit as necessary. All bright and machined parts shall be coated with a recognized rust preventative suited to the particular application concerned. All internal parts of machinery shall be treated with lubricant containing rust and oxidation inhibitors to protect equipment from any damage possible. Such lubricants shall be compatible with those which will subsequently be used in service and shall be identified by appropriate tagging.
- ۲,۳,۰ When required, materials shall be painted or coated in accordance with the particulars contained in the purchase order and/or specifications.
- ۲,۳,۷ All flanges, machined working surfaces and threaded parts of all equipment shall be suitably protected . All flanged connections of vessels shall be protected by metal plates correctly gasketed by wooden plugs or plastic caps suitably secured in position.
- ۲,۳,۸ Units or parts belonging to main equipment but separately packed shall be clearly marked for easy identification with the main equipment to which they relate.
- ٤,٣,٩ Packages containing "FRAGILE" articles shall be appropriately packed and in addition to the words "FRAGILE-HANDLE WITH CARE" being stenciled on two opposite sides, internationally recognized symbols shall also be used "This Side Up".
- ۲, ۳, ۱ Pipe, structural steel sections and plates shall be strapped in bundles of convenient size and weight for handling. Rolled and shaped plates shall be provided with suitable bracing to eliminate distortion during transit, and shall be bundled in uniform lengths. The weight of each bundle shall be within the breaking strain of the steel wrapping. Each bundle shall be marked with a metal tag ,hard stamped, secured under steel wrapping. A ۲۰۰۰ kg limitation shall be imposed for lifts in this category. Where praticable long lengths shall be limited to ۱۲, ۲ meters to avoid long length carriers. All small steel sections, handraíl stanchions, gusset plates etc. shall be boxed.
- ٤,٣,١١ Black steel pipes with an outside diameter of up to ١٦٨,٣ mm shall be bundled by strapping cleats above and below the load, with boards between each pipe layer and secured by bolts.





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Black steel pipes exceeding the above outside diameter shall be treated as an individual package and marked accordingly.

All black steel pipes shall be protected by means of TECTYL spray. The pipe ends shall be closed with plastic caps.

If, in case of pipes with large diameters, the pipe ends cannot be closed with plastic caps, the interior of the pipes shall also be protected and sprayed with TECTYL.

- ۶,۳,۱۴ Bitumen coated pipes shall be prepared, packed and handled according to established practice.
- ۶,۳,۱۳ Stainless steel pipes shall be packed in wooden cases. Protection with TECTYL is not necessary.
- ٤, ٣, ١ ٤ All valves and fittings (pipe elbows, flanges, etc.) shall be suitably protected and their method of shipment shall be:
 - a) All valves and fittings shall be suitably packed and shipped in metal strapped or wood re-enforced waterproof wooden cases with metal corner protection .
 - b) All treaded fittings shall be greased and provided with plastic caps.
 - c) Control valves shall be packed in wooden cases having adequately designed interior support with interior water proof protection .
- ٤, ٣, ١ Apparatus and vessels shall, where possible, be packed on skid constructions and secured with adjustable steel straps. All unprotected surfaces shall be sprayed with TECTYL. Manholes and other major openings shall be protected with either plastic caps or wooden lids, which shall be firmly secured. Smaller openings shall be closed with plastic plugs.
- 2, ", " All vessel internals and items not installed by the vendor at works including accessories such as small parts, bolts, nuts, gaskets etc. shall be packed in wooden cases separately for each vessel or apparatus and marked with the same item number as the vessel/apparatus in order to protect all parts from loss or damage in transit. Internals, bolts and gaskets for service/ testing operations shall be supplied with the vessels/items by the vendor and all internals, boxed separately and marked according to marking procedures. Each item shall be supplied correctly and identified for field installation by others.
- NOTE: It is imperative that all these items be clearly listed on the packing list.
- £, ٣, ١٧ Fire bricks, special tiles and insulation refractories shall be boxed after sealing in a polyethylene liner. These boxes shall be skid mounted. Instructions regarding storage prior to installation shall be stenciled on each box with particular reference to adverse weather/temperature/humidity conditions.
- £, ٣, ١ All electrical motors whether coupled or uncoupled, generatorors and electrical equipment shall have all openings sealed with protective tape, shall be packed in suitable weather proof skid mounted boxes, and protected from moisture ingress by desiccant as described above.





Items with brushes shall be brushed and rust removed before shipment.

All electrical equipment shall be suitably protected to withstand $\$ year transit conditions and Vendors shall give recommendations for a further , $\$ years storage under site conditions

Batteries shall be shipped dry with electrolyte packed separately and shall include charging instructions.

- ٤,٣,١٩ All electronic and pneumatic instruments to be packed in accordane with given instructions and must be suitably protected to withstand ' year transit conditions and Vendors are to give recommendations for a further ' years storage under site conditions.
- ٤,٣,٢ Pipeline / vessel insulation shall be packed in double water-proof wooden plywood cases and secured to pallets. Drums of insulation mastic will also be shipped on pallets.
- ٤, ٣, ٢ Spare parts for two years operation, which shall be individually tagged, must be covered with a suitable preservative and wrapped with greaseproof paper and be packed in separate cases from the base item. The cases are to bear the markings as specified and in addition the words "SPARE PARTS FOR TWO YEARS OPERATION".
- ۶,۳,۲۲ Commissioning spares shall be individually tagged and marked "COMMISSIONING SPARES" and shall be packed and shipped with the base item.
- ٤,٣,٢٣ All vessels/heat exchangers or items of such kind shall be dried, thoroughly cleaned inside and be free of all dirt and loose materials.
- £, ٣, ٢ £ Should any materials be scheduled to be freighted as deck cargo, additional packing instructions may be required; the Vendor will advise, for vessels and columns, which shipment cradles will be used throughout the transportation. Cradles to be secured to vessels and columns, by strapping.
- ٤,٣,٢• Paper bags suitably boxed, or water tight Steel Drums will be used for shipping cement, special aggregate, etc. Paperbags must not be less substantial then ٦٠ lbs outer wall, ٤٠ lbs inner wall and one moisture craft inner wall.
- ٤,٣,٢٦ Unless otherwise specified, all export cases, boxes, bundles and containers are to be securely metal strapped with a minimum of two unanealed steel straps in each of two right angled and opposite directions, or where applicarle wood re-enforced.

NOTE: Should consignments arrive at the shipment point of origin visually damaged, the shipping agent will advise and await instruction before onward shippings.

٤,٣,٢٧ All bulk items, lighting, fittings, cable glands, switches etc. are to be packed in batches sufficient for a specific volume of work.



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- $\mathfrak{L},\mathfrak{P},\mathfrak{P},\mathfrak{P}$ Cases and crates shall, according to their weight and size, be provided with two or more steel straps made of unannealed steel, applied with a stretching tool and secured with crimped steel seals.
- ξ , γ , γ , Fittings (valves, pipe elbows, flanges, etc.) must be packed in wooden cases and must be protected.
- ٤, ٣, ٣. Accessories for apparatus and vessels (small parts, bolts, nuts, washers, gaskets, etc.) are to be packed in wooden cases, separatelly for each apparatus or vessel. These cases must be marked with the same item No. as the apparatus/vessel to which it belongs (see also Item ° - packing lists).

All commissioning spare parts to be packed separately, being the packing marked with the relevant main item.

٤٤ **Marking of Packages**

- **i**,**i**,**i** All packages shall be clearly stencilled on two opposite sides with black, indelible and seawater proof paint, as follows: Wherever possible, the stenciled characters shall be $^{\wedge}$ cms high. In case the surfaces of a package are too small to permit stenciling, sheet metal tags shall be embossed with the above marking and shall be securely fastened on two opposite ends of the package.
- ٤,٤,٢ If necessary, packages shall be additionally marked with cautionary symbols on two opposite ends.
- $\mathfrak{L},\mathfrak{L},\mathfrak{T}$ Packages which may be stored in the open but under a tarpaulin, shall be marked with a red "double roof" symbol.
- t, t, t Packages which are to be stored in closed and dry places shall be marked with a red "double roof" symbol.
- $\mathfrak{s},\mathfrak{s},\mathfrak{o}$ The system of package-numbering shall be indicated to the OWNER in due course of time.
- ٤.٤.٦ The gross weight shall be determined by the party who is responsible for the packing of the items/materials.

£.£.V Example for marking of packages is shown in attach \.

٤,0 **Packing list**

The packing lists shall be prepared on standard forms : The necessary number of forms will be made available to OWNER, who shall advise about the quantity required. The packing list forms shall be filled in ENGLISH language.





Title: PACKING AND MARKING PROCEDURE

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OWNER shall supply VENDOR with a specimen packing list showing how it is to be filled in.

At the same time OWNER shall be informed of the package numbers required for marking the packages. one column of the packing list shall be filled in with OWNER "ITEM NO. " These item numbers shall be taken from the order form. Special attention shall be paid to the order form that the item number is correctly attributed to the goods to which it belongs . If any question should arise in this respect VENDOR shall contact the OWNERS Representative.

Special care shall be taken that all accessory parts loose or detachable, belonging to the main item under dispatch, shall also be individually listed in the packing list. In the event these accessory parts are not listed in the packing list, they shall be considered by OWNER as not delivered.

Two copies of the packing list in a water-proof plastic envelope shall securely be mailed under a galvanized steel sheet on the outer surface of the package The final packing list in \checkmark -folds shall be available in OWNERS office \checkmark (TEN) working days prior to dispatch of the goods from the manufacturer's premises.

٤,٦ Liability and Guarantee

The party responsible for the packing shall be fully liable for and guarantee proper, sufficient and adequate packing, completeness of the contents, protection of the contents for a storage time of $\gamma\gamma$ month starting from the date when the equipment is loaded on the ship, and the correct preparation of the packing list.

All cost whatever resulting from inadeguate or insufficient packing shall be fully charged to the responsible party.

•. <u>Packing And Marking For Electrical Panels And Instruments</u>

o, Scope

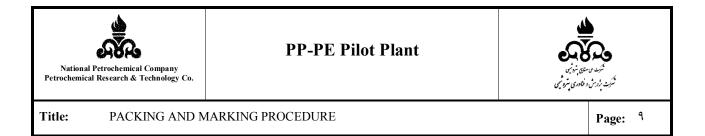
This section covers the method for packaging of electric and instrument panels for export delivery, which are to be provided with full protection against physical damage and atmospheric attack during transit and possible long periods under adverse storage conditions which may extend to two years.

٥,٢ General

This specification is for the package Vendor's guidance only.

Vendor shall remain fully responsible for selecting suitable materials for proper packaging and shall comply with the latest issues of the following European or British Standards: Where standards conflict with this specification, specification shall govern.

- Packing Code
- Silica gel for use as desiccant for packages
- Method of determining the permeability of materials used for packaging.



The Vendor shall provide written instructions for the removal of protective coatings and devices.

٥,٣ Method

- •, ", " The instrument or panel which shall be thoroughly clean, dry and free from rust shall be totally enclosed in a polythene shroud after sharp projections on the instrument or panel have been padded. Silica gel or other approved desiccant shall be strapped inside the shroud, but shall not come into contact with the paint work. After the desiccant is strapped into position, the open ends of the shroud shall be heat sealed , only leaving an opening large enough for the insertion of an air extracting pipe. After extraction of the air from the shroud, the opening shall be completely sealed.
- •, •, Packing Case Materials

- All wood shall be thoroughly seasoned and thoroughly sound without knots, knot holes, shakes and checks .

- Wood which can cause metallic such as oak , western red cedar and sweet chestnut shall not be used .

- The case shall be of sill base type. All sheating shall be tongued and grooved.
- •, •, Packing Case Lining

The packing case shall be lined with completely multilayer waterproof.

The lining shall have as few joints as possible. If joints are necessary, the pieces shall be overlapped so that any rain water which may penetrate the case is shed automatically when the case is upright. Overlaps shall be $\forall \circ$ mm minimum Joints shall be made with Bostik 'C".

- •,*,* Securing Instruments or Panels Inside Packing Case.
 a)The instrument or panel shall be completely secured by wooden battens faced with suitable rubber or other shock absorbing materials.
 b)Wood, wool and other hydroscopic shall not be used.
 c)Hay and straw shall not be used.
- •, •, Sealing of Packing Case

After nailing, joints in the case shall be sealed with Bostik Sealing Compound and the outside bound with steel strapping .

o, f Marking of Packing Cases

- •, £, 1 Cases which are for Carriage by sea shall be marked "HOLD STORAGE".
- •, £, Y All cases shall be marked to indicate the correct way up and bear the marking described here in above.





Title: PACKING AND MARKING PROCEDURE

Page: 1.

ATTACHMENT No.)

MARKING OF PACKAGES

PROJECT :

PROJECT No. :

L/C No. :

OWNER :

ORDERED BY :

ORDER No. :

FINAL DESTINATION : Pouyesh Site, Arak / Iran

STORAGE CODE :

DIMENSION : L x W x H

GROSS WEIGHT :

NET WEIGHT :

PACKAGE No. :____OF____.

MADE IN :

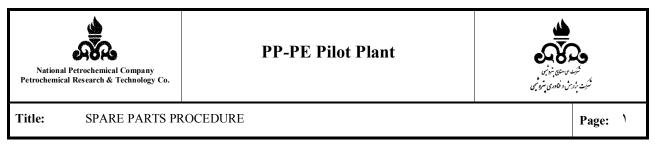




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These instructions outline the requirements for providing original manufacturer's precommissioning, commissioning and two years operation spare parts for a PP-PE Pilot Plant to be built in Petrochemical Research & Technology Company, Arak/Iran.

CONTENTS

-)) General information
- **Y**) Definitions
- *****) Spare parts required
- **£**) Required information
- •) Identification
- **5)** Packing and protection
- V) Special storage items

Attachments:

- 1. Erection, precommissioning, commissioning and start-up phase spare parts
- Y. Two years operation spare parts
- **°.** Guidelines for the compilation of Spare Parts Interchangeability Record (SPIR)
- ٤. SPIR form





1) <u>General Information</u>

These instruction outline the requirements for providing original manufacture's precommissioning, commissioning and two years operation spare parts for PP-PE Pilot Plant to be built in Petrochemical Research & Technology Company, Arak/Iran.

The Vendor is obliged to provide with an original equipment manufacturer spare parts data package, containing full and complete spare parts information and prices for each item of equipment supplied.

The Vendor shall recommend those spare parts that are deemed necessary on the basis of Vendor's recommendations and experience.

۲) <u>Definitions</u>

- "Erection, Precommissioning, Commissioning and start-up spare parts" are those material, equipment or components necessary during the erection, precommissioning, commissioning and start-up activities of the Plant.
- ^Y,^Y "Operating Spare Parts" are spare parts material, equipment or components necessary for the continuous operation of the plant after commissioning completion for a period of two years.
- ^Y,^T GOODS: All kind of materials and equipment to be incorporated in the Project.
- Y, ٤ VENDOR: Companies Awarded by Owner for Procurement Services, Inspection Affairs or Transportation, Providing of Project's goods, following up all transport activities from VENDOR workshop to final destination as defined in the purchase order.
- Y, OWNER: Petrochemical Research & Technology Company.

^γ) <u>Spare Parts Required</u>

۳,۱ <u>Capital spare parts</u>

Capital spare parts are defined in documentation prepared by technical department.

F, **F** <u>Erection, precommissioning, commissioning and start-up Spare Parts</u>

Vendor is requested to submit a Spare Parts proposal togheter with base quotation. Such spare parts shall be packed in separate boxes and shipped together with the main equipment/material purchased in order to be available at the site together with the base order supply.

Minimum required quantities are shown in attachment \.





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۳,۳ <u>Two years operation spare parts</u>

Vendor is requested to submit a Operation Spare Parts quotation based on his experience together with base quotation

The necessary and sufficient two years spare parts include those parts that are normally required to mantain the plant in a satisfactory working condition for a period of two years of continuous operation after plant start-up.

These Operation Spare Parts shall be packed in separate boxes.

Guidelines for selection of two years spare parts are shown in attachment ^Y.

٤) <u>Required Information</u>

- ξ , All information and drawings must be in English language.
- ٤,٢ Data sheets, engineering drawings. manufacturer's catalogs and operating and maintenance manuals required to identify the function of and fully describe all parts associated with the equipment
- ξ , " The interchangeability of spare parts must be completely assured between all units contained on the parent equipment purchase order.
- ξ, ξ The Vendor shall guarantee the spare parts in accordane with the requirements requested for the parent equipment.
- ξ , \circ The offer must be valid for supply either for total or partial quantities.
- All Spare Parts list shall be filled-in using the attached "Spare Parts Card" according also to the instructions attached herein.
 Photocopied or hand-written documents are not acceptable.
 Twelve (17) months price validity is required

•) <u>Identification</u>

All spare parts shall be individually identified by one of the following methods:

- •, A stainless steel label imprinted with letterine approximately $7 \text{ mm}(1/\epsilon)$ high and secured to the part with S.S. wire.
- o,7 Inscribing with an electric spark erosion pencil
- •, " On large items inscribing with non-fading, moisture resistant marking ink, figures/ letters to be at least 'o mm () high. Ink shall be Pannier '... Yellow Industrial or equal.





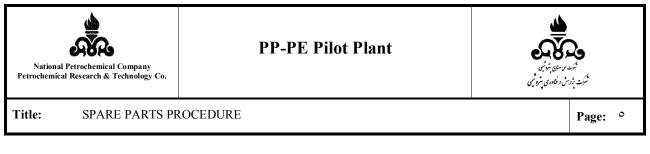
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- o, t Items such as Ball Bearings which in actual storage will remain in their packing may be identified with an adhesive label firmly attached to the outside of the carton.
- •,• Alternative methods which are standard industrial practice may be used provided SP's approval has been obtained in writing in advance. Stamping directly into spare parts will not be allowed.
- The following shall appear on each spare or spare part label: Manufacturer's real part number. Short description (one word will suffice if space is limited). Tag number of equipment (if applicale).

T) <u>Packing And Protection</u>

- Packing protection and marking of the packing container shall be as described in Project Packing and Marking Procedure ···-PCR-PRC-···· . Spare parts shall be packed separately from main equipment and the packing containers shall clearly be marked "erection, precommissioning, commissioning, and start-up spare parts" or "two years operating spare parts" as applicale. The following additional comments apply :
- 7.7 Packing cases and other shipping containers must be capable of giving adequate protection to contents for a period of one year after despatch from Vendor work-shop (i.e. cases may after receipt at the Plant Site be stored outside before being unpacked).
- Two years operating spares are to be protected and packed in such a manner as to ensure a minimum shelf life of four years in an un-air-conditioned warehouse sited in extremely dusty heavy industrial and coastal area with salt pollution location where the maximum shade temperature may exceed $-1 \xi + \xi \circ C$. and where relative humidity reaches 9.%.
- $7, \epsilon$ Consumables items such as bolts and nuts shall be adequately oiled to prevent corrosion.
- 7, Other unpackaged items shall be protected by a rust preservative oil, hard drying type. if the nature of the item permits the removal of the deposited tar oil skin by means of petroleum based solvents or the use of hot dip strippable coating.
- Any protection for stainless steel parts shall not contain chlorides or harmful metal salts such as Zinc, Lead, Copper. etc. Also marking paint or ink shall not contain similar harmful components.
- 7,V Electronic and instrument parts shall be packed in sealed clear plastic bags along with a bagged amount of dessicant.

V) <u>Special Storage Items</u>



- Vendor must advise of any spares which cannot be stored under the conditions stated in para.
 ۲,۲ and which require special storage conditions
- V,Y Special Storage Items are to be clearly labelled with storage instructions such as: STORE IN A COOL DRY PLACE AT C
 STORE IN DARK PLACE
 KEEP HUMIDITY BELOW %
 etc.
- ۷, ۳ Owner must be notified of all such items without delay before order placement since a restricted shelf life may require an amendment to order quantity and an appropriata reordering procedure.





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ATTACHMENT \

ERECTION, PRECOMMISSIONING, COMMISSIONING AND START UP SPARE PARTS

١)	<u>FURNACES</u>	
	Gaskets for coil:	0.%
	-Burner Tiles	1
	-Burner Tips	٥٪
	-Fire eyes	١٠٪
	-Gas valves seat	1
	-Solenoid valves	٢٥٪
۲)	EXCHANGERS, REACTORS & DRUMS/TANKS	
	Gaskets for Girth Flange, M/H& H/H	1
	Stud Bolts and Nuts for the Above	٥%(Min. ۲ Sets)
	Field-Installed Trays:	
	-Bolts and Nuts	۱۰٪ (Min. ۲ Sets)
	-Washers (Metal and Asb.)	ヾ・٪ (Min. ヾ Sets)
	-Tray Clamps	ヽ・ ^パ (Min. ^ィ Sets)
	-Asb. Rope and Tape	۲٥٪ (Min. ۲ Sets)
	Field-Installed Internals, Piping and Other Bolted Internals:	
	Stud Bolts (Alloy and C.S.)	ヽ・% (Min. ^v Sets)
	Washers and Nuts	ヽ・% (Min. ^v Sets)
	Packing:	
	-Inert Balls	10%
	-Raschig Rings / Sllotted Rings	10%
	-Gaskets Sets And O-Rings	۱۰۰٪
	-Fan for Air Cooler	

^ψ) <u>STEEL STRUCTURE AND PLATFORM</u>

Bridge Crane:

-Bolts & Washers

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Title: SPARE PARTS PROCED	URE	Page: V
-Gashels	۱۰٪	
-Contactors	٥٪.	
-Tension Springs	١٠٪	
-Fuse Elements	۱۰ <i>٪</i>	
-Gaskets	۱۰٪	
-Oil Seals	Y 0 /	
-Relays	<u>ه/</u>	
-Collectors	۱ set Each Siz	ze
-Contact Shoes	v set Each Size	
-Limit Switches	۱ set Each Siz	ce
-Welding Rod	١٠٪	

٤) <u>MACHINERY / PACKAGES</u>

٥)

Please see the relevant engineering specifications of each equipment for commissioning spares.

Electrical Equipment:	See item ⁹
Instrumentation:	
- Control panel	See item \ .
- Board instruments	See item) •
- Field Transmitters	See item) •
- Field instruments	See item \ .
- Others	•%
H.V.A.C.	
Bolts, Nuts, Gaslets for Field installation of Pipe/Duct	٥٪
Rotating Equipment	See item °
Heat Exchangers	•%
Filter Element	Set Each Size/Material
Electrical	See Item ⁹
Instrumentation:	
-Control panel	See Item \.
-Board Instruments	See Item \.
-Field Transmitters	See Item \.





Title: SPARE PARTS PROCEDURE

	-Field Instruments		See I	tem) •
	-Others		0;	
٦)	SPECIAL EQUIPMENT			
	Heat Exchanger		See I	tem ۲
	Rotating Equipment		See I	tem °
	Filter Element		۱ Set Each	Size/Mat'l
	Piping		• 7	
	Electrical		See It	em ۹
	Instrumentation:			
	-Control panel		See Ite	em ۱۰
	-Board Instruments		See Ite	m ۱۰
	-Field Transmitters		See Ite	m١٠
	-Field Instruments		See Ite	em).
	-Others		• 7.	
۷)	<u>PIPING</u>			
	Gaskets, all sizes		۲.,	
	Stud Bolts less than'"		10;	
	Stud Bolts 1" to 1 Y/A"		١٠)	Υ.
	Stud Bolts [*] " and over		0;	Υ.
	Welding Rods		١٠)	Υ.
	Coating and Wrapping		۱۰/	
		Carbon Steel	Alloy/SS	Cast Iron

	Carbon Steel	Alloy/SS	Cast Iron
Pipe ^Y " and below	10%	٤%	• %
۳" to ٦"	۱۰٪	۲%	٥٪
^" and over	٥٪	١%	٥٪
(*) Valves ^۲ " and below			
screwed and welded	١٠٪	٥٪	• %
(*) flanged	۲%	۲%	• %

Page: A

National Petrochemical Company Petrochemical Research & Technology Co.	PP-PE Pi	lot Plant	e ¢,	میک محمد وساعی توانس مکوند زندش و خاصی بن
Title: SPARE PARTS PROCEDURING	E			Page: ⁹
(*) Valves ^r to ¹ ."	۲%	۲٪	• 7.	
(*) Valves over ``	• %	• %	• 7.	
(*) Flanges up to <i>\Y</i> "	٥٪	٣%	• 7.	
(*) ¹ [£] " and over	۲%	۲%	• %	
(*) Fittings welded up to [*]	۱۰٪	٦%	• 7.	
(*) ¹ / ₂ " to 1."	٥٪	٣%	•%	
(*) [\] [\] and over	٣%	۲%	•%	
(*) Fittings Screwed up to ^Y "				
(*) [*] " and over	٥٪	٣%	• %	
(*)Flanged all sizes	٥٪	٣%	• 7.	
(*) Hub and Spigot "" to ""	• 7.	• %	٥٪	
(*) ξ " and over	• 7.	• %	۳%	

Note: as indicated with (*), where the percent gives the quantity consisting of a whole number plus a decimal less than \cdot, \circ , the decimal portion will be dropped; where the decimal portion is \cdot, \circ and more, the next higher whole number quantity will be selected.

^) <u>ELECTRICAL EQUIPMENT</u>

Switchgear, Motor Control Centers MV/LV:	
-Fuse elements	0.%
-Bulb for Signal Lamps	0.%
Local Control Panels & control stations:	
-Fuse elements	0.%
-Bulb for Signal Lamps	o . %
Electirc Motors:	
-Grease Nipples where applicable	۱۰٪+power
-Grease Nipples where applicable Lighting Fixtures	۱۰٪+power terminal (in J.B.) ۲٪ ۳٪
	terminal (in J.B.) ۲٪
Lighting Fixtures	terminal (in J.B.) ۲٪ ۳٪
Lighting Fixtures Flag Relay	terminal (in J.B.) ۲٪ ۳٪ ۲٪
Lighting Fixtures Flag Relay Time Relay	terminal (in J.B.) ۲٪ ۲٪ ۲٪ ۲٪

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Title: SPARE PARTS PR	OCEDURE		Page:).
Fixed Contacts		10%	
Coils for Contactors		١.٪	
Boucholz Relay	one of ea	ach type and si	ze
Thermometer			
Local Control Station:		٥٪	
-Ammeter			
-Push button		٥٪	
-Selector Switch		٥٪	
<u>UPS:</u>			
-Fuse		*	
-MCB (miniature circui	t breaker)	*	
-SCR		*	
-DIOD		*	
-Transistor		*	
-Control cards		*	
-Signaling lamps		*	
-Batteries		*	
Battery Charger:			
-Fuse		*	
-MCB(miniature circuit -SCR	breaker)	*	
-DIOD		*	
-Transistor		*	
-Control cards		*	
-Signaling lamps		*	
-Batteries		*	
Fire Alarm System		*	
Telephone System		*	
Paging System		*	
Radio System		*	
Emergency Diesel Gener	rator	*	
Sockets $(\cdot \cdot \cdot V, \gamma \tau \cdot V, \gamma$		٥٪	





Title: SPARE PARTS PROCEDURE

$Plugs({}^{\sharp} \cdot \cdot V, {}^{\forall} \tau \cdot V, {}^{\forall} {}^{\sharp} V)$	٥٪
Portable \) · V AC, ° · Hz, with transformer	۰٪ each type
Socket and plug (ex-type)	
Hand lamp Y ^t V AC, ^o · Hz(ex-type)	۱۰ no.

All special tools, equipment and spare parts required for commissioning and start-up shall be provided.

These are the spare parts that VENDORS shall recommend based on experience.

۹) <u>INSTRUMENTATION</u>

For control Panel:	
- Bulbs For Signal Lamps	o . %
- Fuse Elements	0.%
Boards instruments:	
- Fuse elements	0.%
- Chart paper for recorders	۳ boxes each type
- Ink for Recorder	[∨] sets each type
- Pens for Recorders	0.%
Field transmitters:	
- Gasket	10%
Field instruments:	
- Air pressure regulators	०٪
- Temperature Indicators	ヽ・ ^½ each range
- Pressure gauges	ヽ・½ each range
Solenoid Valves	۲٪ each type(min ۱ set)
Selonoid coils	۳ coil each type
Valve positioners	۲٪ each type(min ۱ set)
Cable – Single Pair	۲.٪
Cable – Multi Pair	10%
Cable Glands	۲.٪
Junction Boxes – Large	۱ min.
Pipe and Tube	۱۰٪

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Title: SPARE PARTS PROCEDURE

Fittings all type	۱۰٪ each size
Valves	۲۰٪
Manifold Valves	ヽ・ [/] . each size
Cable Tray	۲ • ٪
DCS:	
- Bulbs for signal lamps	o . <u>/</u>
- Fuse elements	0.٪
- Printer paper, Chart paper	٤ boxes each type
- Printer Ribbon	• sets each type
- Blank Floppy disks/magnetic tape cartridge) · pieces
Gas Chromatograph:	
-Filter elements	ヽ・%
-Calibration gas cylinders	۲ cylinder (۲۰۰ liter) each type
-Standard gas cylinders	۲ cylinder (۲۰۰ liter) each type
-Other gas cylinders	۱ cylinder (۱۰۰ liter) each type
Other Analyzers:	
-Filter Elements	۱۰٪
-Calibration Gas Cylinders	۲ cylinder (۱۰۰ liter) each type
-Standard gas cylinders	۲ cylinder (۲۰۰ liter) each type
-Other gas cylinders	۲ cylinder (۲۰۰ liter) each type

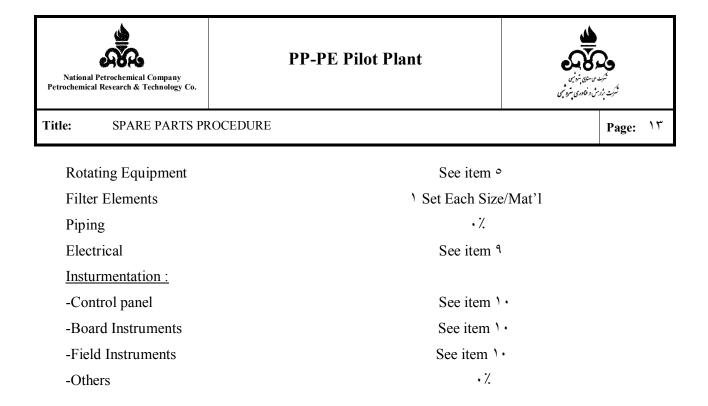
)·) PAINT AND INSULATION

Insulation material١.٪Insulation Band & Seal١.٪Insulating Cement١.٪Insulation Sheet Metal١.٪Insulation Wire١.٪	Paint	۱۰٪
Insulation Data & Sear 1.7 Insulation Sheet Metal 1.7	Insulation material	۱۰٪
Insulation Sheet Metal	Insulation Band & Seal	١٠٪
	Insulating Cement	١٠٪
Insulation Wire V·%	Insulation Sheet Metal	10%
	Insulation Wire	۱۰٪

い) <u>UTILITY EQUIPMENT</u>

Heat Exchanger, Vessel, Tank and Tower









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ATTACHMENT Y

GUIDELINES FOR SELECTION OF Y YEARS OPERATION SPARE PARTS

Spare parts for equipment are shown in the following tables:

Table \ - Spare parts for machinery/packages.

Table ^Y – Spare parts for electrical equipment

Table r – Spare parts for instruments

Table ϵ – Spare parts for pressure vessels and heat exchangers

Table ° – Spare parts for piping.





Title: SPARE PARTS PROCEDURE

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TABLE \

SPARE PARTS FOR MACHINERY / PACKAGES

Note 1: Please see the relevant engineering specifications of each equipment for recommended Y-years spares.

Note Υ : Please see tables Υ and Υ of attachment- Υ for the electrical and instrument spare parts requirements of machinery / packages for Υ -years.





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TABLE 7

MINIMUM SPARE PART FOR ELECTRICAL EQUIPMENT

Item:		<u>Quantities</u>
) Switchgears:	MV Fuses	10%
	Protecting and Flag Relay	۲ ٪
	Time Relay	۲٪
	Lamps	N•%
	Space Heaters	١٠٪
	L.V. Fuses	۲٪
	Auxiliary Relays	١%
	Moving Contacts	N 0%
	Fixed Contacts	10%
	Circuit Breakers(MCCB,M	CB) V·%
	Contactors	10%
	Metering	10%
	СТ	۲.٪
	РТ	۲.٪
^(Y) Power Motors Control Center:	L.V. Fuses	10%
	Time Delayed Relays	٨%
	Lamps	١٠٪
	Space Heaters N.%	
	Terminal Blocks V?	
	Auxiliary relays	To be
	Contactors	determined later
	Thermal	in conjunction
	overload Relays	with the equipment vendor
	Isolators for each trip	21%
	Current Setting	11%



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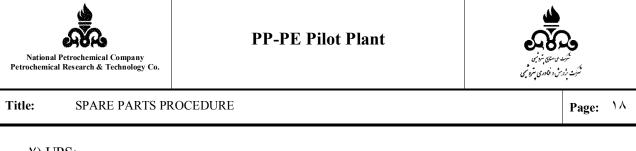
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SPARE PARTS PROCEDURE

	Motor Circuit Brakers		
	Complete Unit for Each	1	۱۰٪(min ۱)
	Type & Size(incoming of	& bus tie)	
	Moving Contacts ۲۰%		
	Fixed Contacts		۲.٪
	Metering		10%
	СТ		۲.٪
	РТ		۲.٪
	Circuit Breaker	one per ea	ach type
۳) Transformers :	Bucholz Relays	one each t	ype & size
	Thermometer		۱·٪
	Bushing HV/LV		0.%
	Measuring and cintrol de	evices	۲.٪
	CT of natural resistor	ヽ・٪ (of eac	ch type)
٤) Power Material:	a) Local Control Stations	ł	0%
	b) Sockets $ \cdot \cdot \cdot V AC $		1.%
	c) Plugs $ \cdot \cdot \cdot V AC $		١٠%
•) Lighting Materials:	a) Switches		۱.٪
	b) Fuses		۳.٪
	c) Sockets($\forall \forall \cdot V, \forall \epsilon V$)		1.%
	d) Plugs(۲۳۰ V, ۲٤V)		1.%
	e) Lighting Fixtures		1.7
	f) Ballast Lamps		0%
	g) Lamps		۲.٪
	h) Portable 11 · V AC, • ·	Hz with	
	transformer (ex-type)socket and plug いん		
	i) hand amp ۲٤V AC, ۰۰	Hz (ex-type)	
٦) Motors:			
No of Machines) Y W	٤	more
set of Bearing)))	۲	٤ • ٪
Fan terminal blocks sn	nce hester (MV) per type		07

Fan, terminal, blocks, space heater (MV)per type



Y) UPS:

	Fuses	٣.٪
	MCB(miniator circuit breaker	r) 10%
	SCR	٣.٪
	Signaling lamps and protection	on
	device	10%
	DIOD	١٠٪
	Transistor	٣.٪
	Control cards	one per each type
	Batteries	٥٪
	Isolator switch	
	(make before break)	one per each type
∧)Battery charger:		
	Fuse	۳.٪
	MCB	10%
	SCR	۳.٪
	DIOD	1.%
	Signaling lamp	10%
	Control cards	one per each type
	Batteries	०٪
⁹)Telephoned system		*
() ·) Paging system		*
)) Radio system		*
۲) Fire alarm system		*
۳) Neutral grounding system		*
۱٤) Bus duct		*

These are the spare parts required for two years operation. Vendor shall recommend the spares based on their experience.

(*)The Quantities indicated are only preliminary estimation, so the firm quantities will be specified later in conjunction with recommendations of equipment vendors.

The quantities which shall be ordered by VENDOR shall be approved By OWNER.

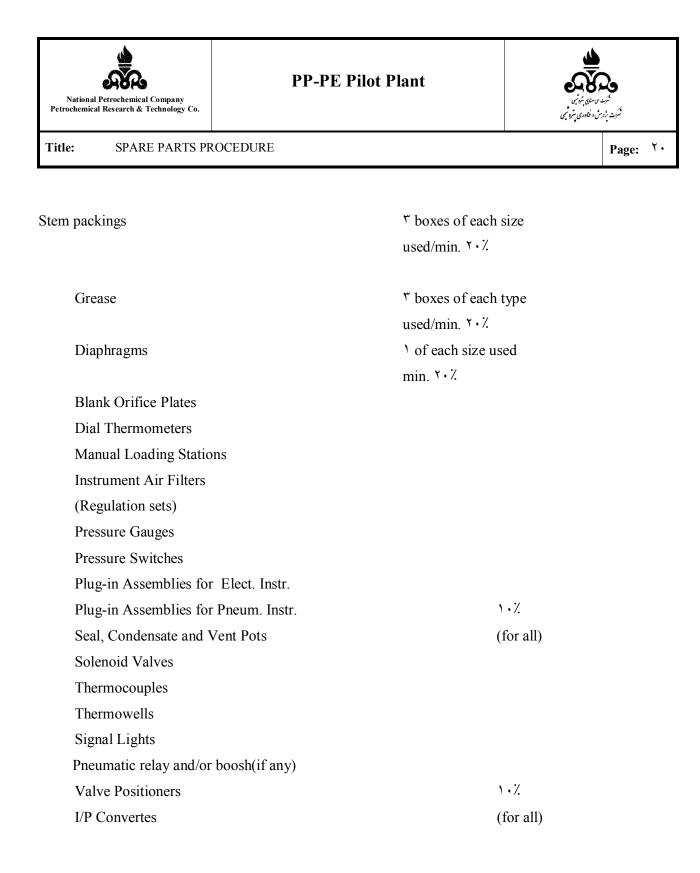




TABLE *SPARE PARTS FOR INSTRUMENTS

Item	Quantities
Flow Instruments	To be determined
Level Instruments	in conjunction with
	the equipment Vendor
Temperature Instruments	(based on Vendor's
	experience on similar
Pressure Instruments	type of plant)
Analyzers	
Control Valves : Valve Bodies	None unless service
	is corrosive or erosive.
	For corrosive or
	erosive services,
	shall be determined
	in conjunction with
	the equipment Vendor.
Valve Plugs) of each size/min.
	۱۰٪ or ۱
Seat Rings) of each size/min.
	ro% or 1
Actuators	ヽ・ ['] . (min ' per type / size)
Valve Stems) of each diameter.
	These vary in length
	depending on valve
	size. Purchase the
	longest of each dia.
	These can be cut to
	the correct size.

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DCS/ESD/PLC (for each system the following items):

-I/O cards	۰٪ for each type (min) for each type)
-Main cards	one set
-Power supply (AC, if any)	one set
-Power supply (DC, if any)	one set
-Barriers cards	۰٪ for each type (min) for each type)
On-line gaschromatographs:	
-Main mother board	one set
-Column	one per type





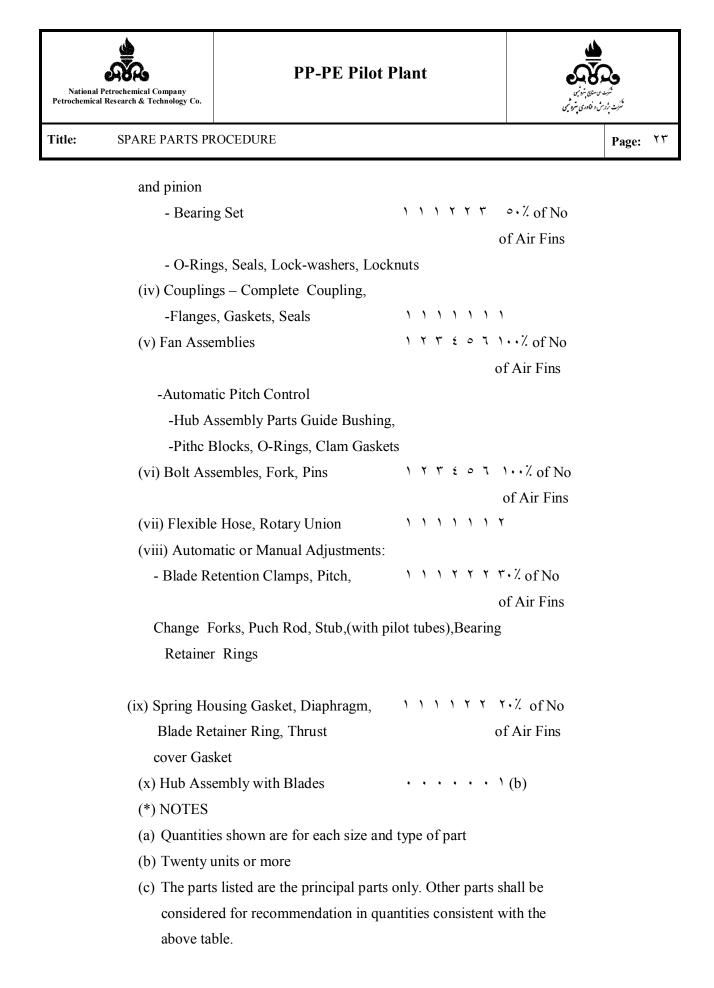
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TABLE ٤

SPARE PARTS FOR

PRESSURE VESSELS & HEAT EXCHANGERS

ITEM	QUANTITIES
) Heat Exchangers-Shell and Tube	
(U Type included)	
- Tubes	Straight tubes sufficient to retube the
	largest bundle of each tube size and
	material.
- Bolts and nuts	(Special or Alloy) of each exchanger
	minimum one set.
- Gaskets	۲۰۰%
Y) Pressure Vessels	
- Gaskets	۲
- Bolts and nuts	۱۰٪ (Special, Alloy or size ۲» diam or
	greater), minimum one set.
۳) Air Cooled Exchangers	
- Plugs	Steel ۱٪; Non-ferrous ۲٪
	(min. one number)
- Plug Gaskets	۰٪ (min. one number)
-Cover plate gaskets	۱ • ٪
-Tube support boxes	ヽ・ [×] (min. one number)
٤) Number of Air-fin Coolers Using Part.	ヽヾヾ ٤ ° ヽ ヾ or more
(i) V-Belts-Sheaves (Driven &	Driver) \cdot \cdot \cdot \cdot \cdot
- Set of Belts	1 7 7 2 0 7 1%
(ii) Fan Shaft Bearing (Upper	& Lower) ヽ ヽ ヽ ヾ ヾ 。・% of No
	of Air Fins
(iii) Speed Reducers (Gear Box) Shaft



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•) Plate type Exchange	rs	
Plat gasket	· · · /.	
Flow Plate	١٠٪	
Nozzle Gask	et ۲	
Glue () Kg.	Pot)	

Special spanner tool

۱ for each size/type





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<u>TABLE •</u> <u>SPARE PARTS FOR PIPING</u>

Item	Quantities
Valves up to $1/2$ "	۰٪ for each size, type and material
	complete units
Valves from ^۲ " to [¬] "	$\tilde{\}$ (minimum $\tilde{\}$ pieces) for each size , type
	and material
Valves above "" to ".") piece for each size, type and material
	complete units
Valves above \.") only if installed valves quantity is more than γ .
Valves up to \."	
Gland packing and	
bonnet gasket)•%
Valves from ^۲ " to ^۱	$^{\gamma}$ for each type , size and material set of
	changeable inner parts
Valves above \.") for each type, size and material
Set interchangeable	
inner parts: bonnet gasket and	1
stem packing	
Piping gaskets and bolts	
set for each size and type	N•%





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ATTACHMENT "

GUIDELINES FOR THE COMPILATION OF SPARE PARTS INTERCHANGEABILITY RECORD (SPIR)

The manufacturer/supplier shall complete the following parts of th SPIR form as per listed sequence and in the English language:

- Line 1: PLANT registration/item number or tag number of equipment/instruments, etc. as stated on requisitions and/or Purchase Orders.
- Line Y: Mode, type or other identification of eqipment/instruments, etc. ordered.
- Line \mathcal{T} : Serial number of each equipment/instruments, etc. ordered.
- Line 7: Purchase Order number reference of equipment/instruments, etc.
- Line 7a: Unit of measure, i.e. No., set, pair, kg,roll, etc.
- Line ξ : Number of identical equipment, etc. of particular model or type being supplied against Purchase Order number mentioned under line 3.
- Line A: Parts description of all component parts considered by supplier as being required for maintenance of equipment, etc. listed in lines 1, 7 and 7. However, all items specified in the appropriate equipment list shall be shown separately.
- Col. ⁹: Drawing number/part number as per supplier's parts list or drawing.
- Col. **\.**: Part identification number shoeing interchangeability within equipment manufacturer's organization.
- Note: Identical parts, regardless of whether they have the same part number or drawing number, should be shown only once (see also line °).
- Col. \mathcal{V} : Material specification of parts listed in column \wedge .
- Line •: Enter in appropriate sqare the nuber of parts (listed in column) fitted in each applicable unit. For groups of identical units, denote quantity per unit below quantity shown in line ξ .
- Col. ^V: Total number of identical parts listed in colimn [^] for all equipment, etc. For identical units multiply quantity in line ^o by number in same column in line [£] and enter overall total of each line in column ^V.





- Col. 17: Total spar parts recommended for 7 years operation and commissioning period.
- Col. 1A: Unit price (up to two decimals) for recommended spare parts of column 17.
- Col.^Y·: Original identification number for all items of third party manufacture (bought-out items) such as : ball/-roller bearings, mechanical seals, coplings, bearing lock nuts, bearing lock washers, V-bels, bolts/nuts, gaskets, O-rings, and the like. These items should be fully identified by manufacturers' numbers, types, sizes, etc.
- V for: Vital equipment, a breakdown of which would mean an immediate and serious interruption of vital operations in field or plant and with which no risk in the ordering and stocking of spare parts can be justified.
- E for: Essential equipment, engaged in primary operations, but with which a calculated risk can be taken in ordering and stocking of spare parts.
- A for: Auxiliary, general purpose and stand-by equipment, for secondary operations, the temporary lack of spare parts would not have a serious effect.
 Under this heading also comes the equipment of which there is a large number of units in used, thus ensuring a sufficient degree of protection in case of failure of one or more units.

The Owner MESC project team should complete the following part of the SPIR form

- Col. ¹⁷: For allocation of the final MESC number.
- Col. *YY*: For the classification of spare parts, i.e.:
- C for: Parts wearing out or deteriorating during normal operations, thus shown a fairly regular consumption.
- Q for: Parts not normal stocked, but ordered on request only.
- I for: Insurance items.
- O for: Temporary code number.

THE VENDOR SHALL COMPLETE THE FOLLOWING PART OF THE SPIR FORM:

Col. 17: VENDOR'S recommended spare parts for ^Y years operation.





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- Col. 15: VENDOR'S recommended spare parts for the precommissioning, commissioning and start-up period.
- Col. YY: This column has to be filled out for the respective parts purchase order-item reference. This number should be tagged to the respective material fro easy identification upon receipt at site.
- Col. 19: Total price (up to Y decimals) of the spare parts for Y years operation and the commissionng period based upon the quantities approved by the OWNER'S Project Engineer (see column 10)

NOTE: Columns 10, 14 and 11 should be left blank, these are for OWNER's use. THE OWNER'S PROJECT ENGINEER SHOULD COMPLETE THE FOLLOWING PART OF SPIR FORM:

- Col. 10: Final quantity to be ordered and Approved by the OWNER's Project Engineer.
- Col. Y): This column has to be used to indicate the equipment classe, i.e.

IMPORTANT NOTE:

The necessary provisions shall be made to fix the prices of spare parts for all equipment and materials for future purchasig of the spare parts by OWNER more than which shall be purchased by VENDOR for two years operations of the PLANT all EQUIPMENT AND MATERIALS for future purchasing of the spare

ATTACHMENT ٤





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Title: SPARE PARTS PROCEDURE

