

wood.

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA

Hojas de datos Válvulas ESDVs, BDVs, XSVs

	wood.										
NÚMERO DE	CONTRATO:	2021-303	7741-0	15							
\square	1. APROBAL	OO PARA DISEÑO									
		OO CON COMENTARIO									
		PORACIÓN DE LOS CA O Y REVISADO, NO PL									
		RA INFORMACIÓN									
FIRMAS	- Juin		FECHA:	27-09-2021							
$\overline{}$											

			full-	1	73
D1	27-sep-21	Emitido para Diseño (Modificado Donde se Indica)	JCPM	DJCF	JRDM
D	20-sep-21	Emitido para Diseño	JCPM	DJCF	JRDM
А	19-sep-21	Documento Interdiciplinario	JCPM	DJCF	JRDM
REV	FECHA	DESCRIPCIÓN	ELABORÓ	REVISÓ	APROBÓ

PROYECTO WOOD No.	DOCUMENTO No.
07220100 20.00.041.000	FFM-F-PCF-GN-ICX-29-001

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA

FFM-F-PCF-GN-ICX-29-001 Documento No.

Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: D1

SHUTDOWN VALVE (ESDVs)

					эпоп	DOWN VALV	E (ESDVS)	,						
	1	Tag No.					SD\	V-2505						
GENERAL	2	Service					Valve shutdown Acid gas to fuel gas							
GENERAL	3	Line, Vessel, or Eq	uip No.				12"-PG-25038-B2A1-VA							
	4	P&ID No.					CGPFSGP1PF	RE25001.6-10 (AC	ID GAS	COMPR	ESSOR A	33.5 335.7 124.9 5 1.288 0. 0.01318 ador By vendor ador By vendor ador By vendor by vendor control B	RCOOLER)	
	5	Line Size and Sche	edule				12"	- SCH XS						
LINE	6	Pipe Material		Pipe Insulatio	n		Car	bon Steel			١	I/A		
	7	Run of pipe	Design	Press. Design Temp.					740 Psi	g @ 100)°F -:	20 a	500 °F	
	8	Fluid and State		· ·			Gas	ácido						
	9							@ Min. FI	ow	@ No	rm. Flow @ Max. Flow			
	10	Flow Rate					MMSCFD	15.2		3	33.5			
PROCESS	11	Oper. Pressure					psig	335.7		3:	35.7 335.7			
CONDITIONS	12	Oper. Temperature	1				°F	124.9		1:	24.9 124.9			
	13	Density		Specific Grav	rity		lb/ft3 -	1.288	0.755	1.288	0.755	1.2		
	14	Viscosity					cP	0.01318		0.0	1318		0.01318	
	15	Molecular weight	21.84 lb/lbmol											
	16	Max. Shut-off Diffe	rential Pres				335.7 psig						T	
	17			API 6D / BS 5				54 Yoke		Stem	By vendo			
VALVE	18	Model		Long Pattern Cast Steel		ACTUATOR	55 Casing		Spring	By vendo	ıc	By vendor		
	19	7 71			arragmer	nt Trunnion ball	MATERIALS	56 Protective c			Yes			
	20	Body Size Po	12" Full Port				57 Painting spe		S	By vendo				
	21	· · · · · · · · · · · · · · · · · · ·		12" - 300# Ra				58 Supply med						
	22			ISO 5208 Rate A/Class VI Tight Shut-off				59 Volume per stroke			By vendor			
VALVE	23	Running torque, units		By vendor		HYDRAULIC	60 Supply min/norm/max			80/120 psig				
	24	Breaking torque, units		By vendor		PNEUMATIC	61 Control Signal D1			est IS (EX i).				
	25	Fire Safe C	ode	Yes API 607 Antistatic		ACTUATOR	62 Diaphragm/Piston size			By vendor				
	26	Valve Characteristi	ic					63 Diaphragm/			By vendo			
	27	Installation		Horizontal				64 Conn. Supp	ly Retur	n	By ven	dor	Spring	
	28	Packing type		By vendor				65 Tag number	s		ZSO/ZS0	C-250)5	
-	29	Bonnet Type		Bolted				66 Qty.	Actuation	n points	s 2 Open / Clos			
	30	Body Material		ASTM A216 GR. WCB			67 Type		D1					
	31	Bonnet Material		ASTM A216 (GR. WCB		SWITCHES	68 Contacts / R	ating		24 Vdc I	S (EX	i)./ D1 \	
	32	Trim (moving parts)		NA		SWITCHES	69 Electric conn.size/type			1/2" NPT				
MATERIALS, VALVE AND TRIM	33	Stem Material	A182 GR F6 (Note 3)				70 Enclosure D1		NEMA 4X, IS (Ex i) Intrínsecamentre seguros					
	34	Plug/Ball/Disk Material		A182 GR F6 (Note 3)				71 Area classification			Cl 1, Div	2 Gr	C & D	
	35	Packing / Seal		Viton (Note 3)				72 Housing Coating		ating	By vendor By vendor			
	36	Seat / Seat Spring		Filled PTFE (Note 3)				73 Tag number			SY-2505			
	37	Gasket Material		(Note 3)				74 Type			3 Way			
	38	Mfr. and Model		By vendor				75 Power Supply Body patrl.			24 Vdc Low Power SS			
	39	Type		Spring return - simple, Stroke test			SOLENOID	76 Electric conn.size/type		1/2" NPT				
	40	Orientation		Top Mounted			VALVE	77 Enclosure / D1		/ D1	Vema 4X, IS (EX i)			
	41	Dimension		By vendor				78 Area classifi			Cl 1, Div 2 Gr C & D			
	42	Connections: Act -	Body	By vendor				79 Housing Coating		ating	By vendo		By vendor	
	43	Act - Stem		By vendor				80 Side Body/ Parts		$\langle \rangle$	By vendor			
ACTUATOR	44	Torque@min/max			laximum p	ressure ANSI)		81 Accumulato		/ D1	_	trok	(Note 5)	
, io to A to it	45	Thrust@min/max s	upply	By vendor			82 Position ind./trans.			Yes /	λ			
		Time: Open / Close	9		5-10 Seg.	(Adjustable)		83 Handwheel			No / L	<u>'\</u>	\ <u>\</u>	
	47	Failure Position			Open		MISC.	84 Reset Ext Push Button			Yes	$\langle \cdot \rangle$	\	
	48	Actuator mounted be Frequency of opera	,	By vendor Emergency				85 Filter/Regulator/Gauge 86 Stroke test device		$\overline{}$	Yes 4-20	mA		
					Emergency							505) IS (EX i)		
	50	Fire Safe	11.1.1	Yes - firepro			.,	87 Positioner T	уре	V	No		V	
CERTIFICATES	51	Mfr Calculations Calibration	Hydrote			nterial	Ye			Yes				
CENTIFICATES	52		Seat le	an 1851	Co	nformance	Ye			Yes		4FI 5	30	
Notes: 1. Shu	53	Dimensional Drawi	ly attached S S tag stamped with the follow			Yes ng information as a minimum: Identification tag and P.O number.								

1. Shutdown valve shall have a permanently attached S.S tag stamped with the following information as a minimum: Identification tag and P.O number. 2. Seller shall provide a complete valve sizing calculation, and certifications according to the process data. Notes:

- 3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical compatibilities with the process.
- Valve shall be fire safe tested according to API 607.
- 5. To confirm according to recommended installation by vendor.
- 6. The seller should supply the actuator valve, filter and regulator assembled as a set.

 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion. 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
- 9. Shutdown valve must be provided with the certification of materials and constructive certificates.
- 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5) 11. The shutdown valve (SDV) does not require any SIL level.
- 12. Require Intrisecally safe according to ANSI/UL 913

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE FFM-F-PCF-GN-ICX-29-001 **ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA** Documento No. Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: SHUTDOWN VALVE (ESDVs) Tag No. SDV-2504 2 Service Valve shutdown Acid gas to Sweetening package GENERAL Line, Vessel, or Equip No 3 10"-PG-25400-B2A1-VA 4 P&ID No. CGPFSGP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER) Line Size and Schedule 10" - SCH XS LINE 6 Pipe Material Pipe Insulation Carbon Steel 7 Run of pipe Design Temp -20 a 500 ° 8 Fluid and State Gas ácido Units @ Min. Flow @ Max. Flow 9 @ Norm, Flov MMSCFD 33.5 10 Flow Rate 15.2 30.5 11 Oper. Pressure 335.7 335.7 335.7 psig PROCESS 12 Oper. Temperature 124.9 124.9 124.9 CONDITIONS 13 Density Specific Gravity lb/ft3 1.288 0.755 1.288 0.755 14 iscosity 0.01318 0.01318 15 21.84 lb/lbmc Molecular weight 16 Max. Shut-off Differential Pressure 335.7 psig 17 Manufacturer API 6D / BS 5351 54 Yoke Stem By vendor By vendor 18 Model Long Pattern Cast Steel ACTUATOR 55 Casing Spring By vendor By vendor MATERIALS 19 Body Type 2 Pieces type arragment Trunnion ball 56 Protective coating Yes Full Port 20 Body Size Port Type 57 Painting specifications By vendor 21 End Connec. & Rating 10" - 300# Raised Face ANSI B16.5 58 Supply medium Instrument air Seat Leakage Class ISO 5208 Rate A/Class VI Tight Shut-o 59 Volume per strol By vendor 23 Running torque, units By vendor HYDRAULIC 60 Supply min/norm/max 80/120 psig 24Vdc/Pneumatic/4-20mA VALVE 24 Breaking torque, units By vendor PNEUMATIC 61 Control Signal D1 Stroke test IS (EX i). Fire Safe Code ACTUATOR 25 Yes API 607 Antistatic 62 Diaphragm/Piston size By vendor 26 Valve Characteristic 63 Diaphragm/Piston mtrl By vendor Horizontal 64 Conn. Supply Return By vendor Installation 28 Packing type 65 Tag numbers ZSO/ZSC-250 By vendor 2 Open / Close Bonnet Type Bolted 66 Qty. SPDT (limit switch) Туре 30 Body Material ASTM A216 GR. WCB 67 mechanic IS (Ex il 24 Vdc IS (EX i). D1 ASTM A216 GR. WCB 68 Contacts / Rating 31 Bonnet Material SWITCHES 32 Trim (moving parts) NA 69 Electric conn.size/type 1/2" NPT MATERIALS NEMA 4X. IS (Ex i) VALVE AND 33 Stem Material A182 GR F6 (Note 3) 70 Enclosure ntrínsecamentre seguros TRIM 34 Plug/Ball/Disk Material A182 GR F6 (Note 3) 71 Area classification Cl 1. Div 2 Gr C & D 35 Packing / Seal Viton (Note 3) 72 Housing Coating By vendor By vendor 36 Seat / Seat Spring Filled PTFE (Note 3) 73 Tag number SY-2504 74 Type 37 Gasket Material (Note 3) 3 Way 38 Mfr. and Model 24 Vdc Low Power By vendor 75 Power Supply Body mtr SOLENOID 76 Electric conn 1/2" NPT 39 Spring return - simple, Stroke _{D1} 40 Orientation Top Mounted VALVE 77 Enclosure Nema 4X, IS (EX i) 41 Dimension 78 Area classification Cl 1, Div 2 Gr C & D By vendor 79 Housing 42 Connections: Act - Body By vendor By vendor By vendo 43 Act - Stem By vendor 80 Side Body/ Parts By vendor D1 res / 2 Stroke (Note 5) 44 Torque@min/max supply By vendor (Maximum pressure ANSI) 81 Accumulator unit ACTUATOR 45 Thrust@min/max supply By vendor 82 Position ind./trans /D1 Time: Open / Close -10 Seg. 5-10 Seg. (Adjustable) D1 47 ailure Position Close Reset Ext Push Button MISC D1 85 Filter/Regulator/Gauge Actuator mounted by By vendor Yes 4-20 mA HART 49 requency of operation Emergency 86 Stroke test device D1 (XY-2505) IS (EX i) D1 Yes - fireproofing-epóxico Fire Safe 50 87 Positioner Type No 51 Mfr Calculations Material Hydrotest Yes Yes Yes CERTIFICATE API 598 52 Calibration Seat leak tes Yes Yes

- Shutdown valve shall have a permanently attached S.S tag stamped with the following information as a minimum: Identification tag and P.O number . Seller shall provide a complete valve sizing calculation, and certifications according to the process data.
 - 2. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical
 - compatibilities with the process.

 4. Valve shall be fire safe tested according to API 607

 - 5. To confirm according to recommended installation by vendor.

 - 6. The seller should supply the actuator valve, filter and regulator assembled as a set.
 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
 - 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
 9. Shutdown valve must be provided with the certification of materials and constructive certificates.
 - 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)
 11. The shutdown valve (SDV) does not require any SIL level.
 12. Require Intrisecally safe according to ANSI/UL 913

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 2 de 9

INGEN	IERÍ					INTERCONE CIDO CUPIAG		EM	A DE	F		PCF-GN ocume			
		Hojas	de dato	s Válvulas	s ESD	Vs, BDVs, XS	Vs			Re	evisió	n:		D1	
					SHU	TDOWN VAL	/E (ESDVs)				<u> </u>			
	1	Tag No.					SDV	/-291	2						
GENERAL	2	Service					Valve shutdown gas to high pressure relief system								
OLITZIOLE	3	Line, Vessel, or	Equip No.	8"-PG-29404-D2A1-VA											
	4	P&ID No.	1.11.				CGPFSGP1PF			BRANES	S SKID 1	1-2-3)			
LINE	5 6	Line Size and So Pipe Material	nedule	Pipe Insulation	on			SCH bon S				l N	I/A		
	7	Run of pipe	Design	Press.		esign Temp.				1480 Ps	sig @ 10		20 a 360	°F	
	8	Fluid and State	*				Gas	ácid	0						
	9						Units		@ Min. Flo	w		rm. Flow	@	Max. Flo	
	10	Flow Rate					MMSCFD		13.0			6.0		28.8	
PROCESS	11	Oper. Pressure Oper. Temperate	ıro				psig °F		900.0			00.0 12.3		900.0	
CONDITIONS	13	Density	ai e	Specific Grav	vitv		lb/ft3 -		3.103	0.630	3.103	0.6304	3.103	0.63	
	14	Viscosity			opening crarry				0.01352			1352		.01352	
	15	Molecular weigh	18.25 lb/lbmol												
	16	Max. Shut-off Di		800.0 psig		1			1						
	17	Manufacturer		API 6D / BS 5351 Long Pattern Cast Steel		407114700	54	Yoke	-	Stem	By vendo		vendor		
	18 19	Model Body Type				ent Trunnion ball	ACTUATOR MATERIALS	55 56	Casing Protective co		Spring	By vendo Yes	or By	vendor	
	20	Body Size	Port Type	8"	anagin	Full Port	111111111111111111111111111111111111111	57	Painting sper		S	By vendo	or		
VALVE	21	End Connec. & I		8" - 600# Rai	ANSI B16.5		58	Supply medi			Instrume				
	22	Seat Leakage C	ass	ISO 5208 Rate A/Class VI Tight Shut-off				59 Volume per s				By vendo	or		
	23	Running torque,	By vendor			HYDRAULIC	60	Supply min/norm/max			80/120		/4.00 ··· A		
	24	Breaking torque,	units	By vendor			PNEUMATIC	61	Control Signa	al	/D1\	24Vdc/Pr Stroke te			
	25	Fire Safe	Code	Yes		API 607 Antistatic	ACTUATOR	62	Diaphragm/F	iston siz	e	By vendo	or		
	26	Valve Character	istic					63	Diaphragm/F						
	27 28	Installation Packing type		Horizontal	By vendor			64 65	Conn. Suppl Tag numbers		n	By veno		Spring	
	29	Bonnet Type		Bolted			66		Qty.	Actuatio	n points			Open / Clo	
	30	Body Material		ASTM A216	ASTM A216 GR. WCB			67	Туре		D1	SPDT (limit switch) mechanic IS (Ex ii			
	31	Bonnet Material		ASTM A216 GR. WCB			SWITCHES	68	Contacts / Ra	Contacts / Rating Electric conn.size/type		24 Vdc IS (EX i).			
MATERIALS.	32	Trim (moving pa	rts)	NA			SWITCHES	69	Electric conn			1/2" NPT			
VALVE AND TRIM	33	Stem Material	A182 GR F6 (Note 3)				70	Enclosure	D1		NEMA 4X, IS (Ex i) Intrínsecamentre seguros				
	34	Plug/Ball/Disk M	aterial	A182 GR F6 (Note 3)				71	Area classific	1		Cl 1, Div 2 Gr C & D			
	35 36	Packing / Seal Seat / Seat Sprii		Viton (Note 3				72 73	Housing Tag number	Coa	ating	By vendo SY-2912	or By	vendor	
	37	Gasket Material	ig	(Note 3)	(INULE 3)			74	Type			3 Way			
	38	Mfr. and Model		By vendor Spring return - simple, Stroke test			SOLENOID	75	Power Suppl	у Во	dy matri.	24 Vdc L	ow Powe	r SS	
	39	Туре						76	Electric conn	.size/typ	/ -	1/2" NPT			
	40	Orientation		Top Mounted	l		VALVE	77	Enclosure		/ D1 `	Nema 4X			
	41	Dimension	. D. I.	By vendor				78	Area classific			Cl 1, Div			
	42	Connections: Ac Act - Stem	ı - Body	By vendor By vendor				79 80	Housing Side Body/ P	Coa	ung	By vendo By vendo		vendor	
	44	Torque@min/ma	ax supply	-	1aximum	pressure ANSI)		81	Accumulator		D1\	Yes / 2 S		ote 5)	
ACTUATOR	45	Thrust@min/ma		By vendor				82	Position ind./			Yes			
	46	Time: Open / Cl	ose	5-10 Seg.				83	Handwheel			No/ Di	77		
	47	Failure Position	J L	Close				84	Reset Ext Push B			Yes /	$\sqrt{-}$	D1 \	
	48	Actuator mounte		By vendor Emergency		\wedge		85 86	^			Yes 4-20 mA HART (XY-2505) IS (EX i)			
	50	Eiro Safa		Yes - firepro	ofing-o	oóxico D1		87	Positioner Ty	/DO	/ 51	No	, IO (LA	.,	
	51	Fire Safe Mfr Calculations	Hydro			laterial	Y	es	r ositioner 1)	he	Yes	INU		Yes	
ERTIFICATES	52	Calibration		eak test		onformance		es			Yes	-	API 598		

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 3 de 9

Suntdown vaive snall nave a permanently attached S. Stag stamped with the following information as a minimum: Identification tag and P.O number.
 Seller shall provide a complete valve sizing calculation, and certifications according to the process data.
 Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical

^{3.} Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical compatibilities with the process.

4. Valve shall be fire safe tested according to API 607

5. To confirm according to recommended installation by vendor.

6. The seller should supply the actuator valve, filter and regulator assembled as a set.

7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accessories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.

8. Seller shall select the best actuator option to meet the requirement of Failure Position.

9. Shutdown valve must be provided with the certification of materials and constructive certificates.

10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)

11. The shutdown valve (SDV) does not require any SIL level

12. Require Intrisecally safe according to ANSI/UL 913

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE FFM-F-PCF-GN-ICX-29-001 ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA Documento No. Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: D₁ ON - OFF VALVE (XSV) 1 Tag No. XSV-2505 2 Service By pass Valve SDV-2505 Acid Gas to Fuel Gas GENERAL 3 Line, Vessel, or Equip No. SDV-2505 CGPFSGP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER) 4 P&ID No. 5 Line Size and Schedule 2" - SCH-80 6 Pipe Material Pipe Insulation Carbon Stee 7 Run of pipe -20 a 500 °F Design Press Design Temp. 740 Psig @ 100°F 8 Fluid and State 9 Units @ Min. Flov @ Norm. Flo @ Max. Flow MMSCFD 10 Flow Rate 15.2 11 Oper. Pressure 335.7 335.7 335.7 psig PROCESS 12 Oper. Temperatur 124.9 124.9 124.9 CONDITIONS Specific Gravity lb/ft3 1.288 1.288 0.755 1.288 0.755 13 Density 14 Viscosity 0.01318 15 Molecular weight 21 84 lh/lhmol 16 Max. Shut-off Differential Pressure 335.7 psig 17 Manufacture BS 5351 Stem By vendor By vendor 18 Model ACTUATOR By vendor By vendo 55 Casing Spring By vendor MATERIALS 56 Protective coating 19 Body Type Floating ball 20 Body Size Port Type Full Port Painting specifications By vendo 21 End Connec. & Rating 2" - 300# Raised Face ANSI B16.5 58 Supply medium Instrument air 22 Seat Leakage Class ISO 5208 Rate A/Class VI Tight Shut-of Volume per stroke By vendor 80/120 psig By vendor VALVE 23 Running torque, units HYDRAULIC 60 Supply min/norm/max **D1** 24 Vdc / Pneumatic IS (EX i). 24 Breaking torque, units By vendor PNEUMATIC 61 Control Signal API 607 Antistation ACTUATOR 25 Fire Safe Code Yes 62 Diaphragm/Piston siz By vendor 26 Valve Characteristic 63 Diaphragm/Piston mtrl By vendor By vendor Spring 27 Installation Horizontal 64 Conn. Supply Return ZSO/ZSC-250 28 Packing type By vendor 65 Tag numbers 29 Bonnet Type Bolted 66 Qty. Actuation points Open / Close SPDT (limit switch) 30 Body Materia ASTM A216 GR. WCB Туре D1 mechanic IS (Ex i) 24 Vdc IS (EX i). 31 Bonnet Material ASTM A216 GR. WCB 68 Contacts / Rating D1 SWITCHES 32 Trim (moving parts) Electric conn.size/typ 1/2" NPT MATERIALS NEMA 4X, IS (Ex i) VALVE AND Stem Material A182 GR F6 (Note 3) Enclosure D1 TRIM 34 Plug/Ball/Disk Material A182 GR F6 (Note 3) 71 Area classification Cl 1. Div 2 Gr C & D Coating 35 Packing / Seal Viton (Note 3) 72 Housing By vendor By vendor 36 Seat / Seat Spring Filled PTFF (Note 3) 73 Tag number SY-2505 37 Gasket Material (Note 3) 74 Туре 3 Way 38 Mfr. and Model By vendor 75 Power Supply Body mtrl. 24 Vdc Low Power SS SOLENOID 39 Type Spring return - simple 76 Electric conn.size/type 1/2" NPT D1 Nema 4X, IS (EX i) 40 Orientation Top Mounted 77 Enclosure 41 Dimension By vendor 78 Area classification CI 1, Div 2 Gr C & D 42 Connections: Act - Body By vendor 79 Housing Coating By vendor By vendor 43 Act - Stem By vendor 80 Side Body/ Parts By vendor ACTUATOR 44 Torque@min/max supply By vendor (Maximum pressure ANSI) 81 Accumulator unit No (Note 5) 82 Position ind./trans 45 Thrust@min/max supply By vendor No D1 46 Time: Open / Close 2-5 Seg 2-5 Seg. (Adjustable) 83 Handwheel No/ D1 MISC. 47 Failure Position 84 Reset Ext Push Button Yes Close Filter/Regulator/Gauge D1 48 Actuator mounted by 85 By vendor Yes Stroke test device No 49 Frequency of operation By pass 86 D1 50 Fire Safe res - fireproofing-epóxico 87 Positioner Type No 51 Mfr Calculations Hydrotest Material Yes Yes Yes CERTIFICATE API 598 52 Calibration Yes Seat leak test Conformance Yes 53 Dimensional Drawing

otes: 1. Shutdown valve shall have a permanently attached S.S tag stamped with the following information as a minimum: Identification tag and P.O number.

- Shutdown valve shall have a permanently attached 5.5 tag stamped with the following information as a m
 Seller shall provide a complete valve sizing calculation, and certifications according to the process data.
- 3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3 Vendor shall verify chemical compatibilities with the process.
- 4. Valve shall be fire safe tested according to API 607
- 5. To confirm according to recommended installation by vendor.
- 6. The seller should supply the actuator valve, filter and regulator assembled as a set.
- 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
- 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
- Shutdown valve must be provided with the certification of materials and constructive certificates.
 Valve / Actuator will be supplied according to list of according to the control of Econographic Control (EDP.P.013.1/5).
- 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)

12. Require Intrisecally safe according to ANSI/UL 913

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 4 de 9

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE FFM-F-PCF-GN-ICX-29-001 ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA Documento No. Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: D1 ON - OFF VALVE (XSV) Tag No XSV-2504 2 Service By pass Valve SDV-2504 Acid gas to Sweetening package GENERAL Line, Vessel, or Equip No. 3 SDV-2504 CGPFSGP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER) 4 P&ID No. 5 Line Size and Schedule 2" - SCH 80 Pipe Material Pipe Insulation Carbon Stee 6 740 Psig @ 100°F -20 a 500 °F Run of pipe Design Press. Design Temp. 8 Fluid and Stat 9 Units @ Min. Flov @ Norm. Flov @ Max. Flow D1 Flow Rate MMSCFD 10 15.2 33.5 Oper. Pressure 11 335.7 335.7 335.7 psig PROCESS 12 Oper. Temperature 124.9 124.9 124.9 CONDITIONS Specific Gravity lb/ft3 1.288 1.288 0.755 1.288 0.755 13 Density 0.755 14 Viscosity 0.01318 0.01318 21 84 lh/lhmol 15 Molecular weight 16 Max. Shut-off Differential Pressure 335.7 psig Manufacturer BS 5351 Stem By vendor By vendor Model ACTUATOR By vendor 18 By vendo 55 Casing Spring By vendor MATERIALS 56 Protective coating 19 Body Type Floating ball 20 Body Size Port Type Full Port Painting specifications By vendor 21 End Connec. & Rating 2" - 300# Raised Face ANSI B16.5 58 Supply medium Instrument air 22 Seat Leakage Class ISO 5208 Rate A/Class VI Tight Shut-of 59 Volume per stroke By vendor 80/120 psig VALVE By vendor 23 Running torque, units HYDRAULIC 60 Supply min/norm/max D1 24 Vdc / Pneumatic IS (EX i). 24 Breaking torque, units By vendor PNEUMATIC 61 Control Signal API 607 Antistatio ACTUATOR 25 Fire Safe Code 62 Diaphragm/Piston size By vendor Yes 26 Valve Characteristic 63 Diaphragm/Piston mtrl By vendor By vendor Spring 27 Installation Horizontal 64 Conn. Supply Return ZSO/ZSC-2504 28 Packing type By vendor 65 Tag numbers 29 Bonnet Type Bolted 66 Qty. Actuation points Open / Close SPDT (limit switch) Body Material ASTM A216 GR. WCB Туре D1 mechanic IS (Ex) D1 Bonnet Material ASTM A216 GR. WCB 68 Contacts / Rating 24 Vdc IS (EX i)./ SWITCHES Trim (moving parts) Electric conn.size/typ MATERIALS, VALVE AND NEMA 4X, IS (Ex i) Stem Material 33 A182 GR F6 (Note 3) Enclosure D1 TRIM 34 Plug/Ball/Disk Material A182 GR F6 (Note 3) 71 Area classification Cl 1. Div 2 Gr C & D 35 Packing / Seal Viton (Note 3) 72 Housing Coating By vendor By vendor Seat / Seat Spring 36 Filled PTFF (Note 3) 73 Tag number SY-2504 37 Gasket Material (Note 3) 74 Туре 3 Way with local reset Power Supply Body patrl 38 Mfr. and Model By vendor 75 24 Vdc Low Power SS SOLENOID 39 Type Spring return - simple 76 Electric conn.size/type 1/2" NPT /D1 VALVE Wema 4X, IS (EX i) 40 Orientation Top Mounted 77 Enclosure 41 Dimension By vendor 78 Area classification CI 1, Div 2 Gr C & D 42 Connections: Act - Body By vendor 79 Housing Coating By vendor By vendor 43 Act - Stem By vendor 80 Side Body/ Parts By vendor ACTUATOR 44 Torque@min/max supply By vendor (Maximum pressure ANSI) 81 Accumulator unit No (Note 5) 82 Position ind./trans 45 Thrust@min/max supply By vendor No D1 46 Time: Open / Close 2-5 Seg. 2-5 Seg. (Adjustable) 83 Handwheel No, D1 Failure Position MISC 47 84 Reset Ext Push Button Close Yes Filter/Regulator/Gauge D1 48 85 Actuator mounted by By vendor Yes Stroke test device 49 Frequency of operation 86 By pass D1 50 Fire Safe Yes - fireproofing-epóxico 87 Positioner Type No 51 Mfr Calculations Hydrotest Material Yes Yes Yes CERTIFICATE Calibration Yes API 598 52 Seat leak test Yes Conformance 53 Dimensional Drawing

- valve shall have a permanently attached S.S tag stamped with the following information as a minimum: Identification tag and P.O number 1 Sh
 - 2. Seller shall provide a complete valve sizing calculation, and certifications according to the process data.
 - 3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3 Vendor shall verify chemical compatibilities with the process.
 - 4. Valve shall be fire safe tested according to API 607 & Antistatic Devices, Operation
 - 5. To confirm according to recommended installation by vendor.
 - 6. The seller should supply the actuator valve, filter and regulator assembled as a set.
 - 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
 - 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
 - 9. Shutdown valve must be provided with the certification of materials and constructive certificate 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)
 - 11 The ON-OFF valve (XSV) does not require any SIL level

12. Require Intrisecally safe according to ANSI/UL 913

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 5 de 9

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE FFM-F-PCF-GN-ICX-29-001 **ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA** Documento No. Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: D1 ON - OFF VALVE (XSV) 1 Tag No. XSV-2912 2 Service By pass Valve SDV-2912 Acid gas to Sweetening package GENERAL 3 Line, Vessel, or Equip No. SDV-2912 4 P&ID No. CGPFSGP1PRE24002.1-4 (MEMBRANES SKID 1-2-3) 5 Line Size and Schedule 2" - SCH 160 LINE 6 Pipe Material Pipe Insulation N/A Carbon Steel Design Press. -20 a 360 °F 7 Run of pipe Design Temp. 1480 Psig @ 100°F 8 Fluid and Sta 9 Units @ Min. Flow @ Norm. Flov @ Max. Flow 10 Flow Rate MMSCFD 13.0 28.8 11 Oper. Pressure 900.0 900.0 900.0 psig PROCESS 12 Oper. Temperature 112.3 112.3 112.3 CONDITIONS Specific Gravity lb/ft3 3.103 0.630 3.103 0.6304 13 Density 3.103 14 Viscosity 0.01352 0.01352 15 Molecular weight 18 25 lb/lbmol 800.0 psig 16 Max. Shut-off Differential Pressure 17 Manufacturer API 6D / BS 5351 Stem By vendoi By vendor 18 Model ACTUATOR By vendor 55 Casing Spring By vendor By vendor MATERIALS 19 Body Type Trunnion ball 56 Protective coating 20 Body Size Port Type Full Port 57 Painting specifications By vendo 21 End Connec. & Rating 2" - 600# Raised Face ANSI B16.5 58 Supply medium Instrument air 22 Seat Leakage Class SO 5208 Rate A/Class VI Tight Shut-of 50 Volume per stroke By vendor By vendor VALVE 23 Running torque, units HYDRAULIC 60 Supply min/norm/max 80/120 psig D1 24 Vdc / Pneumatic IS (EX i). 24 Breaking torque, units By vendor **PNEUMATIC** 61 Control Signal ACTUATOR API 607 Antistation 25 Fire Safe Code 62 Diaphragm/Piston size By vendor Yes 26 Valve Characteristic 63 Diaphragm/Piston mtrl By vendor Spring 27 Installation Horizontal 64 Conn. Supply Return By vendor ZSO/ZSC-2912 28 Packing type By vendor 65 Tag numbers 29 Bonnet Type Bolted 66 Qty Actuation points Open / Close SPDT (limit switch) 30 Body Material ASTM A216 GR. WCE Туре D1 mechanic IS (Ex i) D1 31 Bonnet Material ASTM A216 GR. WCB 68 Contacts / Rating 24 Vdc IS (EX i)./ SWITCHES 32 Trim (moving parts) Electric conn.size/typ 1/2" NPT MATERIALS, VALVE AND NEMA 4X, IS (Ex i) 33 Stem Material A182 GR F6 (Note 3) Enclosure D1 TRIM 34 Plug/Ball/Disk Material A182 GR F6 (Note 3) 71 Area classification Cl 1. Div 2 Gr C & D Coating 35 Packing / Seal Viton (Note 3) 72 Housing By vendor By vendor 36 Seat / Seat Spring Filled PTFF (Note 3) 73 Tag number SY-2912 37 Gasket Material (Note 3) 74 Туре 3 Way with local reset Power Supply Body murl 38 Mfr. and Model By vendor 75 24 Vdc Low Power SS SOLENOID 39 Type Spring return - simple 76 Electric conn.size/type. 1/2" NPT D1 40 Orientation Top Mounted 77 Enclosure Nema 4X. IS (EX i) 41 Dimension By vendor 78 Area classification CI 1, Div 2 Gr C & D 42 Connections: Act - Body By vendor 79 Housing Coating By vendor By vendor 43 Act - Stem By vendor 80 Side Body/ Parts By vendo ACTUATOR 44 Torque@min/max supply By vendor (Maximum pressure ANSI) 81 Accumulator unit No (Note 5) 45 Thrust@min/max supply By vendor 82 Position ind./trans. No D1 46 Time: Open / Close 2-5 Seg 83 Handwheel Ng 2-5 Seg. (Adjustable) D1 MISC 47 Failure Position 84 Reset Ext Push Button Close Yes D1 Filter/Regulator/Gauge 48 Actuator mounted by 85 By vendor Yes 49 Frequency of operation By pass 86 Stroke test device No D1 50 Fire Safe Yes - fireproofing-epóxico 87 Positioner Type No 51 Mfr Calculations Hydrotest Material Yes Yes Yes CERTIFICATE API 598 52 Calibration Yes Yes Seat leak test Conformance 53 Dimensional Drawing Yes

- 1. Shutdown valve shall have a permanently attached S.S tag stamped with the following information as a minimum: Identification tag and P.O number
 - 2. Seller shall provide a complete valve sizing calculation, and certifications according to the process data
 - 3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical compatibilities
 - Valve shall be fire safe tested according to API 607.
 - 5. To confirm according to recommended installation by vendor.
 - 6. The seller should supply the actuator valve, filter and regulator assembled as a set.
 - 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
 - 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
 - 9. Shutdown valve must be provided with the certification of materials and constructive certificate
 - 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)
 - 11 The ON-OFF valve (XSV) does not require any SIL level 12. Require Intrisecally safe according to ANSI/UL 913

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 6 de 9

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE FFM-F-PCF-GN-ICX-29-001 ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA Documento No. Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: D₁ **BLOWDOWN VALVE (BDV)** 1 Tag No. BDV-2505 2 Service Blowdown Valve gas to low pressure relief system GENERAL Line, Vessel, or Equip No. 2"-PG-25402-B2A1-VA 4 P&ID No CGPFSGP1PRE25001.6-10 (ACID GAS COMPRESSOR AFTERCOOLER) 5 Line Size and Schedule 2" - SCH 80 LINE 6 Pipe Material Pipe Insulation Carbon Steel N/A 7 Run of pipe Design Press Design Temp. 740 Psig @ 100°F -20 a 500 °F 8 Fluid and State Gas ácido 9 Units @ Min. Flow @ Norm. Flow @ Max. Flow 10 Flow Rate MMSCFD 15.2 30.5 33.5 11 Oper. Pressure 335.7 335.7 335.7 psig PROCESS 12 Oper. Temperature 124.9 124.9 124.9 CONDITIONS 1.288 0.755 13 Density Specific Gravity lb/ft3 1.288 0.755 1.288 0.755 14 Viscosity 0.01318 сР 0.01318 0.01318 21.84 lb/lbmo 15 Molecular weight 16 Max. Shut-off Differen 335.7 psig 17 Manufacturer BS 5351 54 Yoke Stem By vendo By vendor By vendor ACTUATOR 18 Model 55 Casing Spring By vendo By vendor MATERIALS 19 Body Type Floating ball 56 Protective coating 20 Body Size Port Type Full Por Painting specification By vendo 21 End Connec. & Rating 2" - 300# Raised Face ANSI B16.5 58 Supply medium Instrument ai 22 Seat Leakage Class ISO 5208 Rate A/Class VI Tight Shut-of 59 Volume per stroke By vendor VALVE HYDRAULIC 23 Running torque, units By vendo 60 Supply min/norm/m 80/120 psig 24 Vdc / Pneumatic IS (EX i). 24 Breaking torque, units By vendor PNEUMATIC 61 Control Signal API 607 Antistatic 25 Fire Safe Code Yes ACTUATOR 62 Diaphragm/Piston size By vendor 26 Valve Characteristic 63 Diaphragm/Piston mtrl By vendor 27 Installation Horizontal 64 Conn. Supply Return By vendor Spring 28 Packing type By vendor 65 Tag numbers ZSO/ZSC-2505 Open / Close 29 Bonnet Type Bolted 66 Qty. Actuation point SPDT (limit switch) ASTM A216 GR. WCB 67 Type 30 Body Material mechanic IS (Ex j) D1 31 Bonnet Material ASTM A216 GR. WCB 68 Contacts / Rating 24 Vdc IS (EX i)./ D1 SWITCHES 32 Trim 1/2" NPT 69 Electric conn.size/type MATERIALS, NEMA 4X. IS (Ex i) VALVE AND Stem Material A182 GR F6 (Note 3) 70 Enclosure D1 TRIM 34 Plug/Ball/Disk Material A182 GR F6 (Note 3) 71 Area classification Cl 1, Div 2 Gr C & D 72 Housing 35 Packing / Seal Viton (Note 3) By vendo By vendor Filled PTFE (Note 3) 73 Tag number SY-2505 36 Seat / Seat Spring 37 Gasket Materia (Note 3) 74 Type 3 Way with local rese By vendor 75 Power Supply Body matr 38 Mfr. and Model 24 Vdc Low Power SS 39 Type Spring return - simple SOLENOID 76 Electric conn.siz 1/2" NPT D1 VALVE 40 Orientation Top Mounted 77 Enclosure Wema 4X. IS (EX i) 41 Dimension By vendor 78 Area classification CI 1. Div 2 Gr C & D Coating 42 Connections: Act - Body By vendor 79 Housing By vendo By vendor 43 Act - Stem By vendor 80 Side Body/ Parts By vendo ACTUATOR 44 Torque@min/max supply By vendor (Maximum pressure ANSI) 81 Accumulator unit No (Note 5) 45 Thrust@min/max supply By vendor 82 Position ind./trans No No/ D1 46 Time: Open / Close 4-8 Seg. (Adjustable) 83 Handwheel 4-8 Seg. D1 47 Failure Position Close 84 Reset Ext Push Button Yes D1 85 Filter/Regulator/Gauge 48 Actuator mounted by By vendor Yes 49 Frequency of operation By pass 86 Stroke test devic No D1 50 Fire Safe 87 Positioner Type Yes - fireproofing-epóxico No 51 Mfr Calculations Material Hydrotest Yes Yes Yes CERTIFICATES 52 Calibration Seat leak test Conformance Yes Yes API 598 53 Dimensional Drawing

ntly attached S.S tag stamped with the follo

- 2. Seller shall provide a complete valve sizing calculation, and certifications according to the process data
- 3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical compatibilities with the process.
- Valve shall be fire safe tested according to API 607.
- 5. To confirm according to recommended installation by vendor.
- 6. The seller should supply the actuator valve, filter and regulator assembled as a set.
- 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
- 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
- 9. Shutdown valve must be provided with the certification of materials and constructive certificates. 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)
- 11. The ON-OFF valve (BDV) does not require any SIL level 12. Require Intrisecally safe according to ANSI/UL 913

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 7 de 9

INGEN	IERÍ			YECTO INTERCON SAS ÁCIDO CUPIAC		EN	IA DE	F		PCF-GI		X-29-001 No.	
		Hojas de dat	os Válvula:	s ESDVs, BDVs, X	SVs			Re	evisió	n:		D1	
				BLOWDOWN VA	LVE (BDV)								
	1	Tag No.			BD	V-29	11						
	2	Service			Blowdown Valve gas to low pressure relief system								
GENERAL	3	Line, Vessel, or Equip No.			2"-GS-29404-B2A1-VA								
4 P&ID No.							29006.1-3.D (C	OMPRE	SSION	- SUCTIO	N SC	RUBBERS)	
	5	Line Size and Schedule				SCH							
LINE	6	Pipe Material	Pipe Insulat	ion	Car	bon	Steel			1	N/A		
	7	Run of pipe Des	sign Press.				740 Psi	g @ 100	o°F -	20 a 5	500 °F		
	8	Fluid and State			Gas	ácio	do						
	9				Units		@ Min. Flo	w	@ No	rm. Flow		@ Max. Flo	
	10	Flow Rate			MMSCFD		13.1		2	26.2		29.0	
PROCESS	11	Oper. Pressure			psig		325.0		3.	25.0		325.0	
CONDITIONS	12	Oper. Temperature			°F		141.9		1	41.9		141.9	
	13	Density	Specific Gra	lb/ft3 -		1.003	0.630	1.003	0.630	1.0	0.6		
	14	Viscosity		cP		0.01259		0.0	1259		0.01259		
	15	Molecular weight		18.24 lb/lbmol									
	16	Max. Shut-off Differential I	Pressure	350.0 psig							•		
VALVE	17	Manufacturer	BS 5351			54	Yoke		Stem	By vend	OI	By vendor	
	18	Model	By vendor		ACTUATOR	55	Casing	:	Spring	By vend	OI	By vendor	
	19	Body Type	Floating ball	<u> </u>	MATERIALS	56	Protective co	ating		Yes			
	20	Body Size Port Type		Full Port		57 58	Painting spec		IS	By vend	_		
	21	End Connec. & Rating		2" - 300# Raised Face ANSI B16.5					Instrume				
	22	Seat Leakage Class		ISO 5208 Rate A/Class VI Tight Shut-off			Volume per s		_	By vend			
	23	Running torque, units	By vendor		HYDRAULIC	60			′/D1	80/120			
	24	Breaking torque, units	By vendor	ADLOGT Assistation	PNEUMATIC ACTUATOR	61	Control Signa Diaphragm/P			By vend		eumatic IS (E.	
	25	Fire Safe Code	Yes	API 607 Antistatic	ACTUATOR	62	1 1 3 1			,			
	26 27	Valve Characteristic	Harimontol			63 64	Diaphragm/P			By vendor Spring			
	28	Installation Packing type	Horizontal By vendor			65	Conn. Suppl Tag numbers		11	ZSO/ZS		<u> </u>	
	29	Bonnet Type	Bolted		+	66		Actuation point					
	23	Donnet Type	Doiled	ASTM A216 GR. WCB ASTM A216 GR. WCB NA		00	Qty.	Actualic	D1 SPDT mecha			•	
	30	Body Material	ASTM A216			67	Туре						
	04	December Marter Self	AOTA4 AO40			-00	0		/	24 Vdc IS (EX i). D1		· /· \	
	31	Bonnet Material Trim				68 69	- J				•	1)./ -	
MATERIALS,	32	111111	INA		-	09	Electric conn.size/typ		·				
VALVE AND TRIM	33	Stem Material	A182 GR F6	6 (Note 3)		70	Enclosure	Enclosure D1 Area classification		NEMA 4X, IS (Ex i) Intrínsecamentre seguro: CI 1, Div 2 Gr C & D			
	34	Plug/Ball/Disk Material	A182 GR F6	6 (Note 3)		71	Area classific						
	35	Packing / Seal	Viton (Note	,		72			ating By ver				
	36	Seat / Seat Spring	Filled PTFE	(Note 3)	4	73	_				-2911		
	37	Gasket Material	(Note 3)		4	74	Туре	• •		3 Way with local reset			
	38	Mfr. and Model	By vendor			75	Power Suppl	,	dy ptrl.	24 Vdc L		ower S	
	39	Type	Spring return	•	SOLENOID VALVE	76		.sıze/typ	7 D1	1/2" NP		(EV :)	
	40	Orientation	Top Mounte	u	VALVE	77	Enclosure Area classific			Nema 4			
	41	Dimension Connections: Act - Body	By vendor By vendor		1	78 79	Housing		ating	By vend		By vendor	
		Connections: Act - Body Act - Stem	By vendor		-	_	Side Body/ P		aurig	By vend By ven		by vendor	
ACTUATOR	43	Torque@min/max supply		Maximum pressure ANSI)	<u> </u>	81				No (Note			
		Thrust@min/max supply	By vendor	maximum pressure ANOI)	1	82	Position ind./trans.			No (No	\		
	46	Time: Open / Close	4-8 Seg.	4-8 Seg. (Adjustable)	1	83				No/ D	1	$\overline{}$	
	47	Failure Position	Close		MISC.	84		Reset Ext Push Butt		Yes /	\leftrightarrow	<u> </u>	
		Actuator mounted by	By vendor		1	85	Filter/Regula)		
	49	Frequency of operation	By pass	$\overline{}$	1	86	Stroke test d			No		•	
	50	Fire Safe		oofing-epóxico D1	1	87	Positioner Ty			No			
	51		drotest	Material	Y	es	·		Yes			Yes	
				leak test Conformance			Yes						

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 8 de 9

¹ Shutdown valve shall have a permanently attached S.S tag stamped with the following information as a minimum: Identification tag and P.O number.

2. Seller shall provide a complete valve sizing calculation, and certifications according to the process data.

3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical compatibilities with the process.

compatibilities with the process.
4. Valve shall be fire safe tested according to API 607
5. To confirm according to recommended installation by vendor.
6. The seller should supply the actuator valve, filter and regulator assembled as a set.
7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
8. Seller shall select the best actuator option to meet the requirement of Failure Position.
9. Shutdown valve must be provided with the certification of materials and constructive certificates.
10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)

^{11.} The ON-OFF valve (BDV) does not require any SIL level
12. Require Intrisecally safe according to ANSI/UL 913

INGENIERÍA BÁSICA EXTENDIDA PROYECTO INTERCONEXIÓN SISTEMA DE FFM-F-PCF-GN-ICX-29-001 ENDULZAMIENTO DE GAS ÁCIDO CUPIAGUA Documento No. Hojas de datos Válvulas ESDVs, BDVs, XSVs Revisión: D₁ **BLOWDOWN VALVE (BDV)** 1 Tag No. BDV-2913 2 Service Blowdown Valve gas to high pressure relief system GENERAL 3 Line, Vessel, or Equip No. 2"-PG-29405-D2A1-VA 4 P&ID No CGPFSGP1PRE24002.1-4.(MEMBRANES SKID 1-2-3) 5 Line Size and Schedule 2" - SCH 160 LINE 6 Pipe Material Pipe Insulation Carbon Steel N/A 7 Run of pipe Design Press Design Temp. 1480 Psig @ 100°F -20 a 360 °F 8 Fluid and State Gas ácido 9 Units @ Min. Flow @ Norm. Flow @ Max. Flow 10 Flow Rate MMSCFD 13.0 26.0 28.8 11 Oper. Pressure 900.0 900.0 900.0 psig PROCESS 12 Oper. Temperature 112.3 112.3 112.3 CONDITIONS 13 Density Specific Gravity lb/ft3 3.103 0.630 3.103 0.6304 3.103 0.6304 0.01352 14 Viscosity сР 0.01352 0.01352 18.25 lb/lbmo 15 Molecular weight 16 Max. Shut-off Differe 900.0 psig 17 Manufacturer API 6D / BS 5351 54 Yoke Stem By vendo By vendor ACTUATOR 18 Model By vendor 55 Casing Spring By vendo By vendor MATERIALS 19 Body Type Trunnion ball 56 Protective coating 20 Body Size Port Type Full Por Painting specification By vendo 21 End Connec. & Rating 2" - 600# Raised Face ANSI B16.5 58 Supply medium Instrument ai 22 Seat Leakage Class ISO 5208 Rate A/Class VI Tight Shut-of 59 Volume per stroke By vendor VALVE HYDRAULIC 23 Running torque, units 60 Supply min/norm/m 80/120 psig 24 Vdc / Pneumatic IS (EX i). 24 Breaking torque, units By vendor PNEUMATIC 61 Control Signal API 607 Antistatic 25 Fire Safe Code Yes ACTUATOR 62 Diaphragm/Piston size By vendor 26 Valve Characteristic 63 Diaphragm/Piston mtrl By vendor 27 Installation Horizontal 64 Conn. Supply Return By vendor Spring 28 Packing type By vendor 65 Tag numbers ZSO/ZSC-2403 Open / Close 29 Bonnet Type Bolted 66 Qty. Actuation point SPDT (limit switch) ASTM A216 GR. WCB 67 Type Body Material mechanic IS (Ex j) D1 31 Bonnet Material ASTM A216 GR. WCB 68 Contacts / Rating 24 Vdc IS (EX i)./ D1 SWITCHES 32 Trim ASTM A216 GR. WCB 1/2" NPT 69 Electric conn.size/type MATERIALS, NEMA 4X. IS (Ex i) VALVE AND Stem Material A182 GR F6 (Note 3) 70 Enclosure D1 TRIM 34 Plug/Ball/Disk Material A182 GR F6 (Note 3) 71 Area classification Cl 1, Div 2 Gr C & D 72 Housing 35 Packing / Seal Viton (Note 3) By vendo By vendor Filled PTFE (Note 3) 73 Tag number SY-2403 36 Seat / Seat Spring 37 Gasket Materia (Note 3) 74 Type 3 Way with local Reser By vendor 38 Mfr. and Model 75 Power Supply Body patri 24 Vdc Low Power SS 39 Type Spring return - simple SOLENOID 76 Electric conn.siz 1/2" NPT D1 40 Orientation Top Mounted VALVE 77 Enclosure Nema 4X. IS (EX i) 41 Dimension By vendor 78 Area classificatio CI 1. Div 2 Gr C & D Coating 42 Connections: Act - Body By vendor 79 Housing By vendo By vendor 43 Act - Stem By vendor 80 Side Body/ Parts By vendo ACTUATOR 44 Torque@min/max supply By vendor (Maximum pressure ANSI) 81 Accumulator unit No (Note 5) 45 Thrust@min/max supply By vendor 82 Position ind./trans No / D1 46 Time: Open / Close 4-8 Seg. (Adjustable) 83 Handwheel 4-8 Seg. No/ D1 47 Failure Position Close 84 Reset Ext Push Button Yes **D**1 85 Filter/Regulator/Gauge 48 Actuator mounted by By vendor Yes 49 Frequency of operation By pass 86 Stroke test device No D1 50 Fire Safe 87 Positioner Type Yes - fireproofing-epóxico No 51 Mfr Calculations Material Hydrotest Yes Yes Yes CERTIFICATES 52 Calibration Seat leak test Conformance Yes Yes API 598 53 Dimensional Drawing

ntly attached S.S tag stamped with the follo

- 2. Seller shall provide a complete valve sizing calculation, and certifications according to the process data
- 3. Seller shall confirm trim (moving parts) and materials, according to the process requirements and piping class FRD/F-PIB-501 Rev. 3. Vendor shall verify chemical compatibilities with the process.
- Valve shall be fire safe tested according to API 607.
- 5. To confirm according to recommended installation by vendor.
- 6. The seller should supply the actuator valve, filter and regulator assembled as a set.
- 7. Seller shall calculate, verify and provide all the calculations found with the process information given. So that, will be responsible of the selection and any issue that can occur. Seller shall provide the necessary accesories and valve to avoid damage in instruments caused by high Temperature, Pressure or Corrosion.
- 8. Seller shall select the best actuator option to meet the requirement of Failure Position.
- 9. Shutdown valve must be provided with the certification of materials and constructive certificates. 10. Valve / Actuator will be supplied according to list of accepted brands of Ecopetrol (EDP-P-013 V5)

11. The ON-OFF valve (BDV) does not require any SIL level 12. Require Intrisecally safe according to ANSI/UL 913

D1

FFM-F-PCF-GN-ICX-29-001.D1.xls 9 de 9